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Lee - State of Medical Profession further exemplified.

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— " — Pathology and treatment of Hysteria.

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Budd - Malignant Pustule in England -

Guthrie - Addenda to Commentaries in Surgery.

THE STATE OF THE MEDICAL PROFESSION

FURTHER EXEMPLIFIED.

An Additional Supplement TO THE "MEDICAL PROFESSION IN GREAT BRITAIN AND IRELAND."

BY

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(FORMERLY HOUSE-SURGEON TO, AND A GOVERNOR OF, ST. GEORGE'S HOSPITAL.)

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PREFACE.

In my examination before the Parliamentary Committee of 1848 I specified the principal causes that had produced a deteriorated state of the medical profession in this country as being mainly referrible to the absence of any fixed plan of organisation or of legislative superintendence; having in a previous publication given an account of the systems for regulating medical affairs adopted in France, in the German and Italian States, with a view of contrasting their working with that of our system, copies of which I presented to the honourable members constituting the committee.* Since that time, although there has been an improvement in medical education, our organisation remains as defective as ever; the abuses that have heretofore prevailed continuing to exist. The experience of the inefficiency of the Medical Act of 1858 ought sufficiently to have demonstrated the uselessness of any such partial measures for procuring an effective amelioration of the state of matters; nevertheless, a portion of the medical press which occupies itself with professional politics, from which a more comprehensive view of the requirements of me-

* "Remarks on Medical Organisation and Reform, Foreign and English." When it was deemed advisable to make alterations in the medical organisation of France and of Prussia, physicians were commissioned by the Governments to travel in order to investigate and report upon that of other European States. This I did of my own accord, at a considerable sacrifice of time and money.

dical reform might have been expected, continues to restrict itself to the consideration of bit-by-bit legislation, which only tends to postpone indefinitely an effective settlement, to keep the profession in a state of agitation and uncertainty, and to disgust Parliament with so frequently recurring a subject.

Under these circumstances, being convinced that but little material good can be effected until the existing abuses are abolished, and the profession is organised upon a sound basis, as in other civilised countries of Europe, I feel it incumbent upon me to submit to those with whom rests the power of doing justice to the profession a further statement of its condition at the present time (which, in fact, may be regarded as a new edition of that published four years ago), in the hope that it may lead to a just appreciation of what is wanted in order to obtain a satisfactory solution of a long-agitated question so deeply concerning the welfare of the community.

Throughout my endeavours to promote this object, I have been actuated by no interested motive, but solely by a desire to render service; and if in treating the subject I have been occasionally under the necessity of animadverting upon individuals, I trust I am not chargeable with unseemly personality, having restricted my remarks to a reference to their public or official capacity.

LONDON, MAY, 1867.

67, *South Audley Street (for communications).*

8, *Bolton Street (for the season).*

THE STATE OF THE MEDICAL PROFESSION FURTHER EXEMPLIFIED.

"There is perhaps no profession in which accident and chance exercise (in this country) so great an influence as in that of medicine; for while some of its members soon attain to distinction and wealth, others, through no fault of their own, remain in obscurity, still working for the good of their fellow-creatures."—(*Extract from Earl Granville's Speech at the Festival of the Royal Medical Benevolent College. Times, May* 15, 1865.)

"The great success of quacks in England is entirely owing to the fallacies of regular physicians.—(*Adam Smith's "Theory of Moral Sentiments."*)

WE have here specified, in few words, two of the chief causes of the deteriorated condition of the medical profession in this country; and although there has been for many years much discussion of the subject, both in and out of Parliament, comparatively little has been done towards effecting any material improvement in a state of matters which has occasioned so much distress within the profession, and so much injury to the community at large. In pursuance of the object to which my efforts have been directed for many years, I am therefore induced once more to revert to the question of medical reform, which, it appears to me, is best treated by submitting to the consideration of my readers a succinct *resumé* of the opinions expressed upon the principal topics by competent professional and non-professional writers, by making brief comments thereon, and deducing therefrom such conclusions as are justifiable; this being the course I have adopted when treating of the subject on former occasions, as being most likely to lead to the formation of an impartial estimate of it.

I.—THE MEDICAL ACT AND THE MEDICAL COUNCIL.

Previously to the passing of the Medical Act, it was pretty generally expected that its operation would produce a material improvement in the condition of the profession. It soon, however, became evident that little benefit was likely to ensue from so partial a measure, that took no account of long-existing abuses, which, owing to the faulty constitution of the Medical Council, the majority of its members were interested in upholding.*

That such would prove to be the case, I stated in a pamphlet which was published as soon as the provisions of the Act were made known; and also that its chief object, while keeping matters much in the same state as before, was to extract from the profession a large sum of money (under the plea of registration) of which no satisfactory account would be rendered. Numerous strongly-expressed comments subsequently made on the subject, both in medical and non-medical journals, confirmed the justness of my anticipation; and it will be seen, from the following more recent observations, that the inefficiency of the Act and of the Medical Council has become generally apparent; and that the large amount of money derived from the registration fees has not been applied to purposes calculated to benefit the profession. A writer in the "Gazette Médicale de Paris" designated the Act at the time of its appearance as a measure "hatched by the breath of the corporations, which, far from introducing into existing legislation the shadow of a progress—in so far as principles are concerned—has for its sole object the preservation or protection of what are understood to be the particular privileges of these medical bodies, in opposition to the rights of the general body. It has added almost nothing to the advantages formerly possessed by medical men; it has not in anywise altered the previously-existing condition of

* "It requires some little imagination to suppose what would become of the profession under the stagnant influence of a Council composed of its own members, venerable in age and hardened in opinions."—*Times*, April 2, 1863.

medical education, and it has formed a pretext for levying an additional tax upon practitioners."*

A distinguished member of the profession in Scotland (Mr. Syme) remarked, in his "Observations on Medical Education," published in 1864: "That the Medical Act, which we have heard a distinguished solicitor characterise as one of the most bungled acts that ever passed the Legislature, and which Baron Bramwell said from the bench could hardly have been drawn up by a lawyer, has failed in some of its most important objects, is notorious. There can be no doubt that the existing Act was constructed through the influence of selfish considerations, and completely ignoring the great principle of medical reform—that the privilege of practice should be equal to the extent of qualification in the sense of education."

From the Irish division of the empire, we have recorded on this topic the expression of opinion of the annual meeting of the Cork Medical Protection Society, in the "Dublin Medical Press" (March 1864), on which occasion Professor O'Connor proposed the following resolution: "That after an experience of five years, and nothwithstanding the expenditure of large sums of money drawn from the profession, we feel bound to declare that the Medical Registration Act has failed to afford the public and the profession the protection which was anticipated; that we have great reason to complain of the inefficient administration of its provisions by the Medical Council." The speaker further observed, if there was one feeling more than another which existed in every branch of the profession, it was that of universal disappointment at the result of the Medical Act of 1858. He could not say the Council had effected any one of the objects in view of which it had been created. It had certainly published a Register, but he thought this step had left the profession in a much worse position than before, for while it failed to purify its ranks of disreputable and incompetent interlopers, it stamped with a mark of authority men who possessed very inferior qualifications, and raised them to a level with those who had laboured hard to obtain first-class degrees and licences. Such a system held out to students inducements to obtain the easiest and most worthless qualifications, and to licensing bodies to reduce the standard

* See further extract from this journal in the Addenda.

of medical education to a minimum in the race for students.

Dr. Popham seconded the resolution. He said that the whole profession were unanimous on the point, that the Council, weighed by the standard of public utility, had been found wanting. He did not, however, share the disappointment of Dr. O'Connor, for he had never expected much from a medical congress which included the representatives of nearly twenty medical bodies, the interests of which in many respects were conflicting. Each representative was supposed to carry out the particular interest of his own corporation, and the result showed that their concert was most harmoniously inharmonious.

An influential English medical association—the Manchester Medico-Ethical—in a petition to the House of Commons, after specifying the deficiencies of the Medical Act, and stating that the Council represented certain corporations and vested interests, and not the medical practitioners of the country, prayed the House, in consequence of these deficiencies and the admitted failure of the Act, to give its attention to the subject, and to devise such measures to prevent existing abuses as in its wisdom seemed most fit. Turning to the remarks of the medical press, we find the writer of an article in the "Lancet," when commenting on the above petition, recommended the getting up of similar ones in different parts of the country, and terminating his remarks by saying: "It is evident, from the course hitherto pursued by the Medical Council, we have nothing to expect from them. Indeed, it is questionable whether the institution of that body has not been detrimental to the progress of wholesome reform. We must therefore act totally independently of our so-called government."

The writer of a leader in the "Dublin Medical Press" (May, 1864), referring to the close of the seventh session of the Medical Council, observed: "The mountain so long in labour has not brought forth even a mouse. Truly, the profession has had to pay dear for its 'King Log.' All our metropolitan journals appear anxious to witness the death of this expensive body, or to make it really of some particular use to the profession, and to the public at large. The Council last year was just as wise, and possessed all the information which it possesses now; it discussed the very subjects which it has again discussed this year."

On the same occasion the "Medical Times" remarked:

"When we come to business done, we find that almost the whole consisted of votes of thanks and votes of money."

The "British Medical Journal" of about the same date said: "The Council sits year after year as a mere talking body, in the end doing little or nothing. The expense of the twelve days' sitting may be moderately estimated at 1,300*l.*; and at what result has it arrived in regard to medical education, the subject on which, beyond all others, it was expected at least to bring forth something definite? Simply this, that it has done this year just what it did last year. If the Council proceeds in this way year after year, men will naturally ask whether it is not a mere farce that is enacted, and whether a Council is of any worth that goes on, as Mr. Syme is reported to have expressed it, 'doing actually nothing except deceiving the public by publishing year after year a list of persons supposed to be qualified, many of whom are not qualified."*

The Council has published a British Pharmacopœia. Dr. Watson, in his address on being re-elected to the Presidency of the College of Physicians, remarked, in reference to it; that "he was only expressing a general and deep-rooted opinion, when he said that the work had occasioned great disappointment and perplexity, and that many of the changes that had been effected were not only injudicious but highly dangerous. He had adopted the plan of writing his prescriptions in the old manner, thus saving great trouble and avoiding the risk of mistakes." The

* "This registration," says the writer of a previous article in the same journal (April, 1863), "has been the milch cow that has enabled the Council to live and operate. During the five years that have elapsed since the Medical Act passed, the profession has paid down 49,908*l.* for the honour of being registered according to Act of Parliament, and of possessing a Medical Council. Many medical men say the Register is not worth 50,000 pence, and boldly ask, 'Of what earthly use is it to us?' It is the Old Man of the Mountain; we have it on our necks and must wear it. Yes, 50,000*l.* we have paid down, and about 4,000*l.* per annum we are paying at present and shall pay for the future, thanks to the Medical Act."—"Why," asked "Punch," "should the registration of medical men's titles cost more than the registration of births and deaths, unless the object is to tax medical men for some exclusive object. Surely a shilling is quite enough to ask a man to pay for obliging him to furnish the public with a statement of his qualifications, by the publication of which he gets nothing whatever more than the ability to maintain a law-suit against any patient who will not pay him his bill."

President's observations appeared to meet with the assent of the assembly.*

The "Medical Circular" likewise remarked: "If there has not been much actual business transacted, there has been at least an abundance of talking. We must admit, with infinite regret, that the beneficent results are scarcely at all apparent. The avowed object of the Medical Act was to introduce uniformity of education and qualification among the different examining boards, and to allow freedom and reciprocity of practice throughout the divisions of the United Kingdom. These were the ends for which reformers strove and struggled through a long series of years; and the only appreciable result at present is, that the higher distinctions have been pretty well swept away, and all ranks and orders of the profession have been jumbled together into a heterogeneous and chaotic commixture, and, like the gold diggers in a new country, each one must take care of himself, and fight his own way. The medical corporations, instead of being anxious to improve their curricula, are too often actuated by the "Dutch auction" motive, and lower their standards to suit the lowest bidder; and the Medical Council has been hitherto powerless to shame the wrong-doers and to correct the recalcitrant offenders against its own regulations. Almost the only corporate bodies which are able to take matters with a high hand and to advocate and adopt a high standard are the Universities of Oxford, Cambridge, and London; but the reason is not difficult to discover, for the two former are abundantly endowed from immemorial antiquity with pecuniary resources, and the latter is a well-paid pensioner of the State."

The following observations on this subject occur in the medical journals with reference to the session of the Council in 1865, showing that no amelioration had ensued since the preceding year:—

"The Medical Council is a very costly instrument, and has hitherto proved very cumbrous and inefficient. The causes of this inefficiency lie chiefly in the inherent defects of its constitution. It is a parliament of close boroughs. There is a terrible item on the debtor side of the account—some 40,000*l.* of expenditure—there is little on the creditor side. The earnestness, the energy, the ability, and good-will of

* An improved British Pharmacopœia has just been published.

individuals are overwhelmed by the diversity of opinions and interests, the loquacity, the testiness, the obstructiveness, and the timidity of the body as a whole. In a subsequent number the same journal ("Lancet," April, 1865) observes: "We feel bound to intimate the grave doubts which a review of the whole proceedings of the session must create, as to the competency of the Council, as at present constituted, to conduct, satisfactorily, the business entrusted to it. The members are for ever wrangling about the interests of their respective corporations. Every leading question is discussed with a special reference to the interests of licensing bodies, and these are constantly paramount to the broad views of the general welfare which such a council ought to entertain. Each speaker perpetually appears as member for such a university, or for such a college. He openly intimates that the body which he represents will not do this or that; that its interests will be affected, and so on through all the chapter.*—(April 22.)

"The medical debating society known as the General Medical Council has simply proved a failure."—(*Ibid.*, June 17.)

The "British Medical Journal" observed (March 11): "A year has passed, and we find nothing since added to its balance-sheet of things actually done, except of course a further addition to its annual expenditure. It has up to the present time given us a Pharmacopœia and a Register, and for these blessings the profession has paid some 50,000*l.* Year after year has the Council of Medical Education met and met, and talked and talked, and recommended and advised; but

* "The following passage, which occurs in the "Review of the Year," 1864, strongly contrasts with the above and with other articles in the "Lancet" condemnatory of the Medical Council, which it states "can have, and their proceedings *ab initio* prove have had, but *one object* steadily before them—*the honour of the medical profession. Its interests, its advancement, its independence* have formed at various discussions *so many topics for their inquiry and decision.*" This inconsistency appears the more glaring from the perusal of the remarks made a few weeks later (Feb. 1865). "The whole proceedings of the Council" says the writer, "have proved a five-act comedy, 'Much Ado about Nothing,' each act occupying for its rehearsal one year. For this a very large sum of money has been received from the profession, and in return they have had afforded them a legal position without protection, a deliberative body without authority, an association between the profession and the State which has hitherto proved of little advantage to either. The control exercised by the Council over the licensing bodies has proved practically of no avail."

each revolving year has found the matter of medical education left just where it was the preceding year."

"Seven years spent in mere talking," says the writer of a leader in the "Dublin Medical Press" (April 5), "and the adoption of certain recommendations, all of which have been treated with utter contempt by the great majority of the examining boards.

"The Council has but obeyed the natural law of its constitution as representing rival interests, and doing nothing to put down the demoralising and deteriorating influence of the underselling system, and the nominal examinations conducted by some of the licensing bodies. We regret to believe that this ruinous system is on the increase, and that it has a fearful effect in inducing students to squander their time until within a few months of their examination, and then availing themselves of the services of a grinder."

The writer of an article in a prior number of this journal, referring to the amount of registration money annually expended, says: "What other returns than registration have we for this sum? *Vox et præterea nihil.* A large proportion of this expense is for fees and travelling expenses in the General and Branch Councils. It appears that each of the twenty-three members of Council receives on an average 382*l.* a-year for his *services*. Little did the profession think when they agreed to the Medical Bill that they were taxing themselves at the rate of 5,000*l.* a-year for no good result. It is for them to say whether this state of things is to continue, and whether the lethargy of medical reform is to be for life or death."

The "Medical Circular" remarked (April, 1865): "Instead of a number of gentlemen coming together to carry out an Act of Parliament in a manner most conducive to the welfare of the many, we have a packed assembly representing the interests of the few, and to those interests almost all other objects have been sacrificed. Nearly all are influenced in their speeches and in their votes by the probable effect that will be produced on the corporations they happen to represent; and thus they are for the most part delegates of particular interests rather can committees for the good of the profession."

Again, on the close of the session for that year, the writer remarked (July): "The Medical Council has brought to its close another session of laborious trifling, doing nothing with

the greatest possible amount of verbosity and display. A variety of routine business has been transacted of no particular importance to anybody. An efficient Council can only be obtained by a more fair and complete method of professional representation."

The "Medical Press" and "Medical Circular" (now combined in one journal), in its number of the 31st January, 1866, contains the following observations on this subject: "The Medical Act is a perfect delusion and a snare, so far as the majority of medical practitioners are concerned. They enjoy no privileges whatever by its operation. Education and honesty of purpose are now opposed in the field of practice to ignorance and dishonesty, and the latter pair of qualities are triumphant. Quackery is as rampant as ever, and medical titles are unblushingly and impudently assumed in order to delude the public, and the Medical Council have repeatedly declared their helplessness to assist the profession in the vindication of its rights. If, therefore, the present state of things is to continue, it will be just as well to save the expenditure incurred by the working of the Act, and leave the profession to protect itself in the best way it can. The machinery has now evidently come to a dead lock, and the Legislature and the Government must determine whether any efforts are to be made to set it in motion. At present it is notorious that Sir G. Grey has no sympathy with the medical profession, and that he is quite indisposed to take any measures to redress the grievances that press upon our body; and private members of the Houses of Parliament are unwilling to take the initiative in any proposition that is not likely to be supported by the Government."

Respecting registration, the writer observes: "We cannot wonder at the dissatisfaction, and even indignation, which is now universally expressed at the hardship of medical registration, and we are not surprised that many practitioners have declined to pay the fee demanded of them for the privilege of having their names inserted in the Register; its payment presses heavily on the resources of many of the poorer members. We understand that many of those who have omitted to register have done so on principle, and that they are prepared to take the consequences, whatever they may be, of such a course.*

* I declined to register on this account, considering the registration-fee an imposition upon the profession, from which they would derive

"The feeling is now becoming so general that it is worth while to inquire what are the advantages of registration, and what are the disabilities entailed by its omission. What, says the hard-working and honest practitioner, can be the use of paying a pretty heavy fee for a registration which confers no advantage whatever and no protection? The fact is, that medical registration, with its accompanying penalty of five pounds, is a perfect farce, except so far as it brings money into the coffers of the Medical Council.

"An attitude of passive resistance on the part of the profession is therefore not to be condemned, but should rather be encouraged; and if the supplies were withheld, the energies of the Medical Council might possibly be further aroused, or they could resign their appointments."

Even the respected President of the Medical Council (Dr. Burrows) is reported ("Medical Times," July 15) to have said at the annual dinner of the Fellows of the College of Physicians: "Great measures had, indeed, been expected of the Council, but the difficulties were very great, *owing to contending interests* that had to be overcome; and there was great difficulty also in bringing about co-operation between the members of the Council themselves, *returned as they were by so many corporate bodies; each corporation thinking naturally for itself*, and not taking a broad and comprehensive view for the interests of the whole profession."

The writer of an article in a literary journal, on "The General Medical Council," remarks:—

"The Council was endowed with immense power, and had ample means. Everything appeared to promise great achievements; but, alas! experience has shown that the 'consummation so devoutly to be desired' is as far off as ever, and that the dreams that we indulged in in 1858 are no more realised than they were at first. The Council commenced operations, but 'how not to do it' seems to have been their guiding measure, and, as a consequence, 'as you were' seems to have been the *mot d'ordre* which has been practically issued to the medical men of Great Britain.

"What good has either the public or the profession derived from the Register, which was to effect such marvels for the professors of medicine?

no material benefit or protection. As respects the public, the Register is not to be compared to Churchill's Directories, for the information it imparts respecting members of the profession.

"Thousands of pounds were expended on the new Pharmacopœia; the greatest secrecy was adopted in its preparation: at last it appeared; but what a muddle!

"Such, then, has been the progress of the Council: little has been done to protect the interests of those who really uphold the dignity of medicine, and nothing has been done to raise the educational standard.

"In April last the sitting extended over a fortnight, and was characterised by a good deal of noisy discussion; which, to make matters worse, extended rather to minutiæ than to principles. Indeed, this desire to avoid generalities and to squabble over detail is quite a marked feature of this body.*

"Apparently, the Council forgets that it is a body representing a large section of educated society, and when questions arise which interfere with local interests, it loses respect for its dignity in the desire to give pecuniary advantage to a certain number of favourite institutions. It has become, as a contemporary has well expressed it, a 'parliament of rotten boroughs.'

"We would urge, therefore, upon the profession the propriety of appealing to Government to *have the Council reconstructed*, for it seems to us that *sauve qui peut* is too much the order of the day. Indeed, apart from the sacrifice of important principles to petty interests, it seems to us that some of the members are *hardly qualified to deal with all the questions* that come before them. To us the transactions of the Council appear an *interminable muddle of wordy disputes about matters of no real import*. The Council seems to revel in jabber, and to exhibit a most remarkable horror of everything in the shape of progress. It does work, but the work done is of no benefit to the profession."—(*London Review*, June 24, 1864.)

From this concurrent testimony it must, I think, be sufficiently apparent that no material improvement of the profession is to be looked for from a Council constituted as is the present one. The inefficiency of the Medical Act is no less evident; and it is now intended to apply to Parliament for an amendment, which merely proposes to effect an alteration in the registration and to confer additional powers upon the

* Referring to the proposed resolution respecting compulsory registration, the writer adds: "This is a very grave and serious resolution, and fortunately has to come before the Government before it can be acted upon."

Council for better regulating the proceedings of the corporations, of which, as we have seen, the members are for the most part the interested delegates. On the last day of the year 1864, an intimation was given in the "Lancet" to its readers of the intention of the Council to undertake a complete revision of the Act. "In anticipation of their deliberations," the writer adds, "we shall discuss the several clauses, and we invite from the profession the expression of their views."* The spirit of prophecy is, however, no more

* On a considerate review of the course pursued by the "Lancet" for many years with reference to medical reform, the most just conclusion at which an impartial person must arrive is, I think, that its conductors have sought to avoid bringing the question to a satisfactory issue, but have rather been solicitous to keep up the agitation in order to afford matter for its pages likely to excite interest, and thus make up for the deficiency of the kind of scientific or professional intelligence from which the more advanced members could derive information that they contained some years ago; and at the same time to give the journal opportunities of appearing as the champion of professional rights and interests, by loudly declaiming against the particular instances of abuse that so frequently occur owing to the absence of any efficient medical organisation. The writer of a leader that appeared some years ago (July, 1861), on adverting to the disorganised condition of the profession, remarked with apparent complacency: "All these questions yet remain in a most unsatisfactory state, and *promise to afford abundant occupation to the medical reformer for considerable time.*" Such was the consolation given to the profession after many years of fruitless agitation, and of deferred hopes of amelioration, notwithstanding that, with a little good-will, and a determination to strike at the root of the most prevalent abuses, an effectual measure of reform might have been obtained within a brief period; but this it seems would not have suited the "Lancet," for it will be remembered that this journal continued to advocate registration (a purely subordinate matter) as being a panacea for the evils that beset the medical body, and that its late proprietor had a Parliamentary Committee sitting for a long time to take evidence, and to discuss the provisions of his Medical Registration Bill, which, as might well be anticipated, came to nothing. The "Lancet," moreover, hailed the passing of the existing Act as being calculated to prove an efficient legislative measure, though, if it did not seek to throw dust in the eyes of the profession, a very slight degree of consideration respecting the composition of the Council might have shown, one would suppose, to writers of so much experience in medical politics, that it was not likely to be of any advantage; and it was not without reason that the writer of a post-obituary notice of Mr. Wakley in the "Medical Times" observed: "It must be remembered that the reform of abuses is a trade, and one not without its profits; and that it is sometimes as much the interest of the reformer to nurse a grievance, and make the most of it, as it is for the monopolist to keep up the monopoly for his own private benefit." It will also be remembered that, some years ago, an attempt was made to get up a testimonial for Mr. Wakley, on account of the prominent part he had taken in medical reform. The attempt was a complete failure, notwithstanding circulars were sent by the committee to members of the Legislature, to all the coroners of England and Wales, and to every medical practitioner in the three kingdoms. "The first disappointment," said the account (taken from a London political journal) in the "Dublin Medical Press," "was from Mr. Wakley's parliamentary colleagues; for, with the exception of the members for Middlesex, Lord Llanover and Mr. Edwin James, no encouragement was received from that quarter. Mr. Walter, M.P. (proprietor of the 'Times'), in a letter addressed to Mr. Edwards, appeared to express the general opinion of those gentlemen, which was to the effect that, much as they respected Mr. Wakley, they did not consider his senatorial career so pre-eminent as to merit such an exceptional distinction as a public testimonial; further, in Mr. Walter's opinion, that his services as editor of the 'Lancet' had been sufficiently rewarded by the success of that publication." After some months of exertion and active correspondence the sum collected amounted to 460*l.*; after the expenses were paid there remained only 240*l.*

The "London Review" remarked (February, 1865): "The 'Lancet' is more of a newspaper than a scientific periodical, and is notoriously more devoted to professional gossip than to the advancement of science."

required to predict that any revision of the Act, emanating from the Council, is no more likely to procure the abolition of abuses from which the profession and the public have so long suffered, than it was required to foresee that the Act itself would prove almost useless in producing any materially beneficial results. In the previous year (February, 1863) the "Dublin Medical Press" remarked, respecting a further amendment of the Act: "Twice has it been amended without improvement, and, after four years and a great expenditure of money, the profession remains just as it was." There has, however, been no more mention of a "complete revision," the only alterations contemplated being those above stated.

Even supposing a more perfect method of medical education to be attained, this could only be productive of a prospective and far-distant good effect upon another generation, and even then it would not suffice of itself to obtain for the profession the amount of respect and consideration which it ought to command. "I believe," justly observed a correspondent of the "British Medical Journal" (May, 1864), "that education will never prevent unprincipled men from setting their sails to catch the first gale of popular caprice, and sheering off into the practice of any humbug which pro-

mises to fill their pockets. I believe it will never prevent unprincipled men from subscribing to legitimate medicine, in order to obtain qualifications to practise the most lucrative forms of current quackery."*

Medical education in general has, indeed, been greatly improved of late years, and a much better informed class of practitioners than in former times is the necessary consequence of such improvement; and yet we find that, owing to the absence of any efficient medical organisation, and the consequent persistence of abuses, the profession does not even stand so high in public estimation as it did formerly, and that the various forms of quackery and irregular practice which, owing to the same cause, have been from time immemorial more prevalent in this country than elsewhere, have been on the increase, and are now more rife than at any previous period.

Any such contemplated amendment of the Medical Act is therefore to be deprecated, both because it would not reach the causes which have produced the deterioration of the profession, and would not prevent a renewal in a very short time of the agitation for an effectual reform, and because it would have the effect of deterring Parliament from any further consideration of the subject, at least for several years.

At the sitting of the Medical Council of May 24, 1866, on the motion of Dr. Andrew Wood for an amended bill, Sir Dominic Corrigan, in proposing an amendment to the motion, said he was "under a deep conviction that a more mischievous bill, or one more useless to the profession, or more likely to be badly amended by the Legislature, could not be devised than the bill adopted by the Council. If the Council applied for a Royal Commission to inquire into the working of the Medical Acts, with the view of framing a report that may lay the ground for a Medical Bill, they would set themselves right with the Legislature and the public. But if they went forward with their present wretched bill, it would be thrown out, or amended in such a way as to leave the profession and the public worse off than before."—(Report of Proceedings of the Council, in *Lancet*, June 2.)

* A correspondent of the "Lancet," after observing that nothing of consequence had been done by the Council, added, "it is true that much is promised in the way of education, but we much doubt if the fathers will rest satisfied with eating sour grapes, merely because it is promised that the sons' teeth shall not be set on edge."

II.—ABUSE OF THE LICENSING POWER.

The great abuse that has been and is made of the power of conferring licences to practise medicine, is owing to the circumstance that the amount of compensation obtained by examiners is made dependent upon the number of candidates for diplomas who present themselves for examination. This practice is peculiar to this country. Medical examiners in the States of continental Europe receive a fixed remuneration for their services, whatever may be the number of candidates examined. The principle of remunerating examiners in proportion to the number of candidates is in itself, I need hardly say, most objectionable; but it is doubly so when it is considered that a large proportion of the members of our medical corporations, and consequently of their Examining Boards, have possessed little, and in many instances no, special claim to professional distinction, but have been raised to these posts of prominence by means of their appointments to physicianships and surgeoncies in hospitals, obtained for the most part by means of the derogatory and unprofessional practices that commonly prevail in the determination of the elections.

The evils entailed upon the community by this iniquitous system have been strongly animadverted upon both in medical and non-medical journals, as also by other individual reformers beside myself. Thus, a great many years ago, the eminent Dublin surgeon, Mr. Carmichael, observed on this subject, when presiding over a meeting of the Medical Association for Ireland: "There are eighteen [now more] chartered corporations or colleges empowered to grant licences to practise, which, instead of competing with each other to supply for the public service the most highly-qualified and well-informed practitioners, on the contrary, exert a miserable rivalship only in the accumulation of money; for, in proportion to the number of candidates upon which any college confers its diploma, so much the greater number of fees it obtains, and consequently the public is inundated with incompetent and half-educated men. This state of the profession loudly calls for legislative interference to prevent a continuance of the evils which must, in consequence, be

inflicted on society. I trust that Mr. Warburton's bill [then before Parliament] will embrace all the great principles of reform advocated by your Association; but if it does not lay the axe to the root of the evil, and deprive the several existing corporate bodies of their licensing power—who thus, in the abandonment of all principle, shamefully sell their honours to the highest bidder, but lowest in point of competency—they may as well allow the present system of misrule and abuses to remain unmolested." Sir Dominic Corrigan, who is a member of the Medical Council, observed on this head, in a public lecture: "There are about nineteen of these colleges and universities in the United Kingdom; many of them are mainly dependent for their incomes on the fees received on graduation. Step by step each college descended below its neighbour in the sliding scale, until it has come to this, that now a candidate rejected at one college has beforehand prepared for his immediately setting out for the next and lowest in the scale, that will gladly *sell its diploma on the lowest terms*. This is the present state. Who is to blame for this? Neither students nor colleges, but a higher power than either, *the Legislature, that permits this discreditable state of professional education and examination to continue*. If it merely concerned the profession itself, the Legislature might very justly say, 'Look to your own professional interests, and take care of yourselves.' But the question is not of this nature; it concerns the public much, the profession little."* These and other animadversions were without effect. Some of the medical journals have, however, of late been strongly commenting upon this topic. "The rivalship in the different licensing bodies for the possession of the fees still goes on," said a writer in the "Dublin Medical Press" (June, 1864), "each striving to undersell the other in the facility with which they permit their diplomas to pass from their strong box into the students' pockets; and the result is the lamentable state of ignorance described by Professors Parkes and Sharpey among men who had been pronounced competent to deal with the lives and limbs of their fellow-men.

"The overstocking the profession with men who, perhaps, might worthily fill the ranks of barber-surgeons, follows, and

* "The question of medical reform," said a writer in the *Athenæum*, "has been made too exclusively a professional one. The interests of the public are not less concerned in the abolition of the present monopolies than are those of the profession."

the consequent lowering of the whole tone of the profession in the eyes of the public. Legislation, *on a sound basis*, would provide a remedy for this state of things and its attendant ills."

A leader in the "Lancet" (June, 1865) contains the following remarks on the subject: "The returns of the Director-General of the Navy, and the speech of Dr. Parkes in 1864, show very painful results, discreditable to the whole profession, and degrading us all equally in the eyes of the public. At present it is perfectly clear that a number of men get into the Register and practise who are dangerously ignorant of the elementary parts of professional knowledge, and that certain examinations which entitle men to a place on the Register afford no guarantee of fitness."

An article on "Medical Education and Examination" in the "Medical Times" (May, 1864) contains the following observations on this subject: "It must excite the gravest astonishment and reprehension that men so grossly ignorant of their profession as these diplomatised candidates proved to be could have found it possible to obtain any qualification from any licensing body whatever. How can we wonder that medical men should but too often make such a pitiable figure in practice, in the witness-box, and before the educated public in general, when we hear of such confessions of gross incapacity and 'dulness all over' as Dr. Parkes has given us from the Army papers?* The divided responsibility of the licensing bodies has probably much to do with it, and so, between the various stools, candidates who would disgrace any body of educated men slip into the profession. The whole debate [in the Medical Council] on education was valuable as amply showing the hopelessness of looking for any definite scheme of education or examination at present from such a body as the Medical Council. The speeches irresistibly force upon us the impression that each man thinks more of the particular college or corporation he represents than of the public good. He gives to his own party what is due to mankind."

* The Army Board rejected 31 out of 120 candidates: the Navy Board 21 out of 49. The inference to be drawn from these returns is this: that nearly one-third of those who are declared by Examining Boards having a pecuniary interest in the statement to be fully qualified to practise the healing art amongst all Her Majesty's subjects, are found by independent Boards to be more or less ignorant and unqualified to treat Her Majesty's soldiers and sailors."—(*Medical Times*, April 15.)

The writer of a leader in the "Medical Circular" (March 23) makes the following remarks with reference to this subject: "The love of ancient institutions and the horror of centralisation which characterise the British nation have in many cases obstructed the progress of improvement by permitting the continuance of abuses, even after they have been proved to be such. Hence, the Medical Act, while it apparently conferred great powers upon the Council, made it at the same time comparatively useless by tying its hands in respect to the reform of the medical corporations.* It therefore happens that nearly all the anomalies of the pre-existing systems of education and examination have been strengthened and confirmed by the measure in question, and any attempt at uniformity is necessarily made to take a downward direction, because, while some of the educational and licensing bodies are aiming at raising the standard, a few are determined to keep it depressed, and the minority is strengthened by the force of custom and usage and vested rights. One monstrous and fundamental error in the constitution of most of the Examining Boards is to be found in the system of making the salaries of the examiners dependent upon the number of successful candidates whom they turn out upon the public. We have had notorious and very flagrant instances in very late years where certain collegiate institutions have sprung up suddenly from poverty to comparative wealth by the sale of diplomas to all who choose to buy them." †

* There has been no desire manifested on the part of the majority of the Council, who are delegates of the corporations, to effect any material reform in them.

† The "Medical Times" remarked with reference to the M.D. diplomas conferred by certain colleges: "Lawyers and men of the world now do not hesitate to express their contempt for the degree of M.D., which dignifies many who have little depth of education." And with respect to the degrees illegally conferred without examination by the Edinburgh College upon all medical applicants during the "year of grace," the writer of a leader in the "British Medical Journal" observed: "When we find a college of physicians which has had more than 200 years of existence, suddenly, on the occasion of the famous 'year of grace,' putting forth a new claim, exercising a novel function, which all the world had previously believed was, in modern days, vested solely in Universities (and in a stray Archbishop)—that of granting degrees in medicine—we naturally say, 'But pray give us the terms of your charter, or the words of the Act of Parliament, upon which this new and surprising claim is based.'"

The facile acquisition of licences to practise from the competing Boards, and other defects of our medical organisation, have on several occasions supplied a theme for comment to foreign medical journals. "The licence to practise," says a writer in the "Union Médicale" (May 31, 1864), "is obtainable on conditions so varied, and in many cases so easy, that it is completely delusive. Owing to this circumstance, and to the liberty that is accorded of teaching without any guarantee of competency being required, there has resulted so pernicious and dangerous an anarchy that, accidents, mishaps, and lawsuits aiding, the evident want of the introduction of a little order into this strange confusion of studies and titles made itself generally felt, hence the origin of the Medical Act.

"On the interpellation of Colonel French in the House of Commons on the 13th inst., the right of conferring the doctorate without examination, granted by Henry VIII. to the Archbishop of Canterbury, has been publicly admitted by the Secretary of State. On the other hand, official examiners have been recognised, without any title or proof of knowledge respecting the subjects of examination with which they were charged. Lastly, there is a complete absence of any legal prescriptions for procuring uniformity in those examinations, or for the regularity [of attendance on lectures] and authentic proof of the required studies, neither is there any condition of age or of preparatory instruction, but, instead, a collection of superannuated, incoherent, contradictory laws. Such is the English medical code.

"To make a clear sweep [*table rasé*] and to introduce a new uniform legislation, would certainly be the shortest way to remedy this state of matters; but English formalism, and especially the absolute and sacred respect entertained for public liberties and vested rights, are opposed to this mode of proceeding. Hence, during the six years it has existed, the Medical Council has altered and modified nothing in the constituted fundamental order of the ancient state of things. The obligation to register has been followed by some prosecutions on account of the illegal exercise of medicine, but that is all. The system of teaching, with all its irregularities and defects, remains, with the exception of the apprenticeship system; and the *baccalaureat-es-sciences* is required by the principal Universities. The same uncertainty respecting the value of acquired grades exists as heretofore; yet the Council has not been able to bring itself to propose

another programme, notwithstanding that in an excellent speech Dr. Parkes exposed the vices and dangers of the actual system of teaching and of examination, as was manifested by the incapacity of many of the candidates who passed [corporate] examinations subsequently to pass the examination required for admission into the military medical service.

"This passive *rôle* of the English medical parliament, it may well be supposed, is not at all to the taste of those whom it [nominally] represents, and who suffer from existing abuses. Public opinion is hostile to it, and the medical press loudly reproaches it with its long speeches, its inefficiency, and the nullity of its acts."

The institution which has, with good reason, been most generally animadverted upon with reference to the facility it affords for passing the examinations, is the College of Surgeons of England. Before this Board by far the greatest number of candidates for licences to practise in England present themselves for examination; and when it is considered that the examination, such as it is, has almost exclusively reference to surgery, while the great bulk of practitioners throughout the country are called upon to practise *medicine* (strictly surgical cases being of comparatively rare occurrence), there need be no wonder at the complaints of inefficiency that are so frequently made. Referring to the exclusion of such examination before this Board, the "Lancet" observed (April 22): "The College sends forth to practise as surgeons persons whom it has never examined as to the use of medicines, the art of prescribing, the common laws of chemistry as they bear upon medical art and practice, and the ordinary property of drugs, and the manner of dealing with them.* It is a remarkable fact," the writer added, "that the College has appointed to itself examiners in each of the several departments by which *profit might be gained by granting special licences;* but with the most sublime indifference to the real interests of the public, and to its duties as an examining body, it has continued obstinately to ignore the claims of all those branches of collateral study which are essential to practice, but which *hold out no prospect of gain*

* It is now determined that in future candidates for the College diploma, not possessing a medical qualification, shall undergo an examination in medicine before examiners from the College of Physicians (paying, of course, *an extra fee*).

to the finances. There is no body in the profession which performs its functions so imperfectly and unsatisfactorily."

With reference to the examiners of this Board, the writer further observed: "The charter provides for the election of examiners out of the bounds of the Council. This has been laughed at. Examiners have been elected solely from the Council, and the condition of election has been to 'keep friends' with the examiners, so that when the time came their votes should be secured. Thus the examiners have held the reins, and have driven the College into a very ugly corner. They have been singularly obstructive, and have maintained a system which is an abuse of the meaning of the charter, and has perpetuated the worst forms of nepotism and inefficiency."

The "British Medical Journal" likewise remarked on this point (July, 1864): "The office of examiner, by a constant system of re-election, has been made a life appointment, though the charter of 1852 made it quinquennial. The Court of Examiners is supreme in the Council, and no councillor has any chance of obtaining the sweets and rewards of an examiner's office who makes himself obnoxious to the Court of Examiners. It is a notorious and admitted fact that Fellows seek to enter the Council, not for the sole purpose of performing the duties of a councillor's office, but mainly that they may thereby enter the portal which, under the misdirection of the Council, has been hitherto the only entrance to the Court of Examiners. Through the improper influence of the Court of Examiners within the Council, the voice of honest reform is stifled, and the most flagrant abuses are perpetrated; and as the present system exists only on the perpetuation of abuses, the councillor soon learns that to destroy existing abuses would be to kill the goose which shall lay for him (he hopes) that golden egg, an examiner's office."*

"We venture to affirm that in the latter half of this nineteenth century, and under the force of modern reforming ideas, there is not to be found in this country in operation at the present time another instance of such management of affairs. No man ought to have the power of electing or assisting to elect himself into an office of honour and money value. The fees are in fact a head or poll-tax. The Court

* The average estimated value is at least 400*l.* per annum.

of Examiners, which receives the fees, is *all-powerful in the Council, which fixes the amount they shall receive for examining.*"

"We maintain," says a writer in the "Medical Press and Circular,' January, 1866, "that in the general policy pursued by the Council and in the system adopted for the examinations, one of the principal objects always held in view is the aggrandisement of the College funds. For this reason, the College [of Surgeons] has for a very long period kept down its standard of qualification to the lowest possible level, in order to invite candidates within its portals. For this reason it has created a class of Fellows, from most of whom a money test only has been demanded; for this reason, a perfectly unnecessary and separate diploma has been created in midwifery; for this reason, the College has devised a separate and, as we believe, a mischievous diploma in dental surgery. The examiners ought to have no other aim or object in view than to secure an efficient class of practitioners for the public; and we again assert that no body of examiners, however personally honourable, can possibly act in this independent manner, when they know that not merely their own salaries, but the maintenance of the institution to which they belong, are dependent upon the issue."

The inefficacy of the means proposed to prevent a continuance of the abuses of the licensing system by the appointment of visitors of the examinations must be evident upon very slight consideration. In the sitting of the Council reported in the "Lancet" of June 9, 1866, when the question of renewing the visitations for the ensuing year was brought forward, Dr. Alexander Wood moved that "the suggestions made by the visitors be embodied in a separate report in the shape of recommendations to be sent down to the various bodies. It would then be one of the duties of the visitors *next session* to see whether the bodies had adopted the suggestions. He did not say that *any steps ought to be taken* in case of their not doing so; but *perhaps next year, if the defects remained strongly marked,* it might be for the Council *to consider* whether it should not deal more specially and strongly with them, so as to bring their examination more into conformity with what was conceived to be creditable to medical men."

Dr. Andrew Wood said in looking over the report several things had struck him. A great deal appeared to depend upon the individual or individuals who conducted the visitation. He felt that some of the reports were exceedingly partial.

Sir Dominic Corrigan said he should move the following amendment to Dr. Alexander Wood's motion: "That visitation of examinations carried out by members of the General or Branch Medical Councils, being a reciprocal visitation by the representatives of the several licensing bodies of one another's examinations, is faulty in principle, and therefore can never command confidence. That any visitation of examinations would be worthless which did not include every examination, inasmuch as partial visitation could only testify as to the actual examinations visited (necessarily a very small proportion), and be no evidence whatever of the character of the examinations not visited (the larger proportion);—that visitation of every examination would be impracticable, inasmuch as, in addition to preliminary examinations, there are annually about three thousand five hundred professional examinations in the United Kingdom for degrees or licences. The Council was on its trial before the public, and what was the course it adopted? It had adopted a system of visitation of examinations to which, as far as he knew, there was no parallel anywhere to be found, from the House of Commons down to the smallest corporation in the kingdom. It was a course which was condemned by the two highest authorities in the country having the care of our soldiers and sailors. What was it? It was nothing more or less than a proposal to inspect themselves. There was an old Scotch proverb, 'Call me and I'll call thee,' and this plan seemed to be remarkably founded upon that principle. Now suppose, when the House of Commons was about to be reformed some years ago, and accusations of corrupt practices were made, the parties accused had said, 'We will inspect one another and send in such a report as to show that we are very moral, very pure, and independent,' what would have been thought of such a proposition? Yet this was exactly what the Medical Council had proposed to do. Or, again, suppose that when, some years ago, the managers of lunatic asylums became objects, justly or unjustly, of observation, those managers had come forward and said, 'We will inspect ourselves and send you in reports of our inspections, which shall satisfy you that all the charges of mismanagement and so on which have been brought forward against us are unfounded in fact.' Would such re-

ports as these have inspired confidence? Certainly not; and therefore in the present case he felt bound to move, as an amendment, that the proposed visitation was inefficient, because, being an inspection of themselves, it never could inspire confidence."

In answer to a question by Dr. Quain as to what he would suggest ought to be done, Sir Dominic replied that a Board of Examiners should be established not connected in any way with the Council, but consisting of independent men. His amendment was lost by a majority of 15 to 2.

III.—MEDICAL SCHOOLS AND CLINICAL INSTRUCTION.

NOTWITHSTANDING the general improvement that has taken place of late years in medical education, the schools are still in a very defective state, especially as regards the more practical department of clinical teaching, which circumstance is mainly attributable to the prevalent practice of hospital elections being determined by extra-professional influences which are but little likely to produce efficient teachers, and to the absence of any guarantee of capability of the teachers (as commented upon in the "Union Médicale" just quoted), as also to the fact that teaching is too often pursued, not so much for the purpose of imparting sound instruction, as from motives of a purely speculative character, with a view, by means of the publicity thus afforded, of obtaining success in practice. Hence the great increase of schools of late, with comparatively few teachers of acknowledged ability. "In London, and no doubt in other places," says a writer on Medical Education in the "British Medical Journal" (February 6, 1865), "schools of medicine have been unnaturally forced into existence. A given number of medical men united about a hospital or elsewhere have discovered that they wanted to teach medical students. Instead of waiting till the students came to seek their instruction, the instructors, having in view not simply the instruction of the student, but other objects of a kind much more personal to themselves, have sought the students. Wherever this nursery of medical schools into existence has prevailed, no doubt much injury to medical education has resulted. The professors should be made for the chairs, not the chairs for the professors." *

* Dr. Jacoud, who had a special mission from the French Government to inquire into the state of medical education in Germany, states in his published report that in each Faculty of Medicine there are ordinary professors, extraordinary professors, and private teachers, and that the funds for payment of the professors are derived from fixed emoluments paid by the State, or by the particular University, if rich enough—the amount of remuneration being increased in pro-

In an article in the "Social Science Review" (October, 1862), the inferiority of the teaching in several of the English medical schools is with reason ascribed in great measure to the increase of schools in connexion with hospitals of late years. "How the governors of hospitals were ever inveigled into the movement," the writer observes, "we cannot say, but certain it is that, the example once set, every hospital in the metropolis had a call to teach, and now every hospital has its school. Its effect on schools has been to raise six where there should be only one; its effect on teachers has been to raise twenty where there should be only one; its effect on the election of teachers has been that lecturers are now systematically propagated, not on the basis of their knowledge, their aptitude, or their love for their work, but, *often in spite of their grossest defects*, on their alliance with particular hospitals. Its effect on education has been to render that the most stagnant, slipshod, ridiculous practice ever conceived."

The "Medical Times" recently observed on this head (February, 1866): "Taking the schools altogether, the lecturers number in proportion to the students about one to four and one-third, but in some of the smaller establishments every two students get a professor to themselves."

"Among schools and professors we have the anomaly of competition under monopoly! A few students and a few fees to divide every year, and eleven schools, little and big, to share them. Which out of the eleven will go to the wall, and what will they do to avert their fate? The spectacle is a sorry one. Medical teaching is now a hospital monopoly—eleven close schools have it all to themselves. A fresh bid takes place every year. Meetings to raise prospectuses take place; new deans are appointed, new dodges are discussed. Sometimes the fees are raised, sometimes they are lowered.

"In plain words, the struggle of the schools is to secure the greatest number of entries. One of them had last October an entry of thirteen students. There are sixteen lecturers at this school. The money value of some thirty-six lectures, which take an hour each in delivery, is, at the lecturers' own estimate, two shillings and ninepence farthing each. We have heard of but one thing rising in absurdity above this—to wit, that one of these same sixteen lecturers has been known to offer a course of lectures for nothing, and has deservedly found himself at the appointed hour *vis à vis* in the theatre with the college porter—such is the effect of competition under monopoly.

"A certain number of students have to be milled into examiners, and then passed through the licensing sieves into the market for general consumption. Ordinary students well know that not much is wanted of them, or that, provided they can get their certificates by flattering punctuality in opening their note-books, they may dream or whistle away the dreary hours of recognised talk, in the confident assurance that two or three months' cram at last with the convenient college tutor or recognised grinder will make all safe for them."

Having in a former publication ("The Medical Profession in Great Britain and Ireland") pointed out the differences that exist between the systems of medical education adopted in this country and the most highly-civilised continental countries, it is not my intention on the present occasion to revert to this important part of medical reform, respecting which several eminent members of the profession have recently publicly expressed their opinions.* I will therefore merely advert to its most essential department, as being more directly connected with the subject of which I now treat—viz., clinical instruction, the prevailing inefficiency of which in several institutions has been repeatedly remarked upon in some of the medical journals. Some of these remarks I have quoted in a former pamphlet. Other, if not the same, writers in medical periodicals have since reverted to the same topic. The following passage occurs in the "British and Foreign Medical Review" (October, 1864): "The great fault of the system of medical instruction in England seems to be that a variety of medical knowledge is imparted to the student in the form of lectures, but it is not serviceable to him, in that it is not, strictly speaking, clinical.† A competent clinical

portion to the length of service (in Vienna). Private teaching, he adds, "is open to all doctors of medicine *after special examination*, the nomination being made by the Faculty. A constant emulation is excited by this organisation among the different members of the educating body, and this emulation is the corner-stone of the building. True there is no free teaching, but this official teaching, conceived in a spirit of perfect liberality, supplies all that can be desired."

* Professors Syme, Balfour, Bennett, and Wood, of Edinburgh, Mr. Callender, of St. Bartholomew's Hospital, and others.

† Dr. P. M. Latham remarked some years ago, respecting the

teacher can make known to his class all that is to be taught in medicine far better at the bedside than in the amphitheatre. Any one who has listened to Oppolzer or Skoda, of Vienna, must be convinced of the great advantage that the Viennese student has in this respect over the English. We hope to see the day when the medical teaching in this country will be more strictly clinical; when far less importance will be attached to *paper work*, and far more to real clinical knowledge in our medical examinations."

A leading article, on "Hospitals and their Staffs," in the "Medical Times" (September, 1863) contains the following passages: "It is most deplorable to think *what rich mines of science are left unworked, what stores of facts lost* for want of time (or ability) to observe and record them; *what countless opportunities for the increase and growth of knowledge are thrown away for the lack of trained or intelligent workers;* what scant use is made of the tide of disease ever flowing through our hospitals.

"As to teaching others, clinical teaching becomes perforce almost a farce, except for the few students who are clinical clerks or dressers, and have therefore to get up cases for the physician or surgeon. That our schools do send forth (some) admirably well-taught and well-trained practitioners, and that some noble monuments of the value of our hospitals as places of study and original research are produced, we are not absurd enough to deny; but we do affirm that our schools *do turn out numbers of half-trained and half-educated men, and that a lamentably large amount of material runs to waste, and vast opportunities for the improvement and increase of knowledge are lost in our hospitals;* and we further assert that this is largely owing to the too great labours laid upon our hospital physicians and surgeons."

It is not, however, I apprehend, so much to the excessive labours, as to the deficiency of capability, that these results are often attributable. Many of our hospital physicians and

abundance of lectures students are required to attend: "More than a quarter of a century ago I presumed to bear my moderate testimony against them. But my voice was a very feeble one. It was no match at all for the edicts of halls, colleges, and institutions new and old, which were rivalling one another in the ruinous amount of taxation they levied on the time and thought of medical students with their hundreds and hundreds of lectures inflicted upon them without mercy."—("A Word or Two on Medical Education.")

surgeons and assistants who are not over-burdened with private practice have plenty of time to make their opportunities of observation available for increasing the stock of professional knowledge, and to devote to clinical instruction. We find that those whose time had been much occupied in private practice have often done the most in these respects. Besides, the amount of hospital work generally done in England is relatively small as compared with that done at most foreign hospitals—where prolonged *daily* visits are made, and information is imparted, either at the bedside or in a clinical lecture after the visit, upon the most interesting cases. Nevertheless, time is found by the majority of foreign hospital physicians and surgeons who have acquired reputation or distinction for doing somewhat towards promoting the progress of medical science, or towards improving the practice of their several departments, as well as for imparting clinical instruction.

In the biographical notice of Dr. Graves prefixed by Dr. Stokes to "Studies in Physiology and Medicine," is the following extract from an introductory lecture on medical education, delivered by Dr. Graves in the Meath Hospital: "A well-arranged and sufficiently extensive hospital contains everything that can be desired by the student, but unfortunately his improvement is seldom proportioned to the opportunities he enjoys. Whence this deficiency? How does it happen that many attend hospitals day after day, and year after year, without acquiring much practical knowledge? This may be attributed to the want of ability or diligence on the part of the student, or to an injudicious and careless method of teaching on the part of the hospital physician.

"The charge of inexperience is not necessarily confined to the beginner; it applies equally to many an old practitioner, whose errors have grown, and have increased in strength, during a long succession of years; because, from a defect in his original education—from the absence of a properly directed clinical instruction—he commenced practice without having previously acquired the power or habit of accurate observation; because he had not in his youth been taught to reason justly upon the facts presented to his view; because, not having learned to think accurately, he contracted a loose and careless mode of examining the progress of disease, and the effects of remedies; and consequently the lapse of time has had no other effect upon his errors than that of rendering

them more inveterate. Such a man has generally an overweening confidence in his own judgment; he never detects or is conscious of his own mistakes; and, instead of improvement, years bring only an increased attachment to his opinions—a deeper blindness in examining the results of his own practice; and do not such persons abound in every branch of the profession? Believe me, gentlemen, the quacks who cover our walls with their advertisements vend not annually to the community more poison than is distributed according to the prescriptions of your routine and licensed practitioners; and yet the science of medicine is improving daily, and treatises on the practice of physic are every day multiplying. Why, then, is society so infested? Many circumstances concur to produce this effect; but the most influential is undoubtedly that which now occupies our attention—I mean a system of clinical instruction radically wrong, because it does not teach the actual practice of medicine."

The following observations, which appeared in the "Lancet," are stated to be from the pen of an accomplished physiologist and teacher of great experience: "We have plenty of clinical lectures, medical and surgical; but formal discourses, differing but little from the regular lectures, and often, it must be confessed, more calculated—as, indeed, they are frequently designed—for the medical journals than for young students, will not give that practical and, so to say, technical familiarity with the multitudinous and involved phenomena of diseases which is indispensable to successful practice. It is thorough, repeated, and real instruction at the bedside which is demanded, where the student can freely question his teacher, and compare the oral instruction with the physical objects before his eyes; thus combining the evidence of the senses with the reflections of the mind, by which alone durable impressions are made.

"Somehow or other, either owing to haste, indifference, or manner, on the part of the teacher, our students do not seem to get that insight into the indications and discrimination of disease which the ample means afforded by our great hospitals ought to secure. Of course, a great deal in all teaching *must depend upon the teacher himself*. When so much depends on personal qualifications, it is difficult for the authorities to prescribe a remedy; but all who are familiar with the system of practical instruction in some of the continental schools must be aware that in the English system there is *much room for great improvement*, and it is impossible to doubt that an enlightened review of the whole of this department would produce a successful result."

Dr. P. M. Latham observed on this head, in an article in the "British Medical Journal" (February 6), headed, "A Word or Two on Medical Education": "So unlike all other things are medicine and the practice of it, that indications of treatment had need to be pointed out to the most intelligent student with the care and patience that you would teach his letters to a child. But in order to this, you must have the *right men for physicians to hospitals*, and they must choose the right men for their clinical clerks."

The writer of a leader on "Introductory Lectures" in the "British Medical Journal" (October, 1864), likewise remarked: "There is a decided want, however, which we should fail in our duty to omit to mention—that is, of some more general efficient system of clinical instruction. This cannot be too fully or openly recognised, in order that a remedy may be found without delay."

"We cannot shut our eyes to the fact," says the writer of a leader in the "Medical Circular" (March, 1864), "that the teaching at some of the medical schools is not such as to attract students, or to engage their attention. In many cases the teachers are too much engaged in private practice to enable them to devote the necessary time to the instruction of students; but in other instances—and those are unfortunately too numerous—*the lecturers do not possess the requisite qualities* to make them efficient teachers."

Thus it will be seen that one chief reason of the imperfect practical education which medical students too commonly receive—viz., the frequent inefficiency of the teachers—has of late become more apparent. Many years ago, when treating of hospital elections, I endeavoured to direct more attention to this cause of inefficiency, by pointing out how unlikely it was that physicians and surgeons who obtained hospital appointments by means of the indirect and unprofessional agencies that are so commonly brought to bear upon the elections, would prove to be either efficient clinical instructors or calculated to make the great opportunities afforded by these institutions available for the promotion of medical science.

Another chief cause of the inefficiency of a large proportion of the practitioners who are annually sent forth with

them more inveterate. Such a man has generally an overweening confidence in his own judgment; he never detects or is conscious of his own mistakes; and, instead of improvement, years bring only an increased attachment to his opinions—a deeper blindness in examining the results of his own practice; and do not such persons abound in every branch of the profession? Believe me, gentlemen, the quacks who cover our walls with their advertisements vend not annually to the community more poison than is distributed according to the prescriptions of your routine and licensed practitioners; and yet the science of medicine is improving daily, and treatises on the practice of physic are every day multiplying. Why, then, is society so infested? Many circumstances concur to produce this effect; but the most influential is undoubtedly that which now occupies our attention—I mean a system of clinical instruction radically wrong, because it does not teach the actual practice of medicine."

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diplomas from the various licensing boards, and one that has been but little adverted to by those who have treated of medical reform, is referrible to the separation that has existed in theoretical and practical education between medicine and surgery; for, while most of those gentlemen who take degrees in medicine in the Universities and receive their clinical instruction in metropolitan hospitals to qualify them for practice as physicians pay little or no attention to surgery; on the other hand, the great majority of students who are being educated in England for general practice, attend for the most part to surgery during their hospital attendance, to the comparative neglect of medicine, which, as we have seen, has not formed a subject of examinationat the Royal College of Surgeons, whence the great majority obtain their licences to practise, and very often without seeking to obtain any other qualification; nevertheless, almost all the cases they have subsequently to treat during their professional career are medical.* Consequently their knowledge of internal pathology must be very superficial, and the more general bearings of questions relating to medical and surgical practice cannot be fully apprehended by them. Thus it is that there are so many hospital physicians who do not even pretend to have a knowledge of surgery, and so many hospital surgeons who are no physicians, going through the ordinary routine duties attached to their office more or less efficiently for a long series of years, without adding to the stock of professional information, or otherwise benefiting the profession.† When,

* From the account drawn up from the "Medical Register," and published in the "British Medical Journal" (March, 1867), it appears that the number of persons practising with only one qualification (surgery) amounts to 3,741, of whom 2,156 are members of the College of Surgeons of England. "Nearly one-fifth of the whole practitioners of the country," says the writer, "are practising under a diploma given without examination in medicine, materia medica, or botany, which would not be accepted by the Poor-law Board, by the authorities of the Army and Navy, and others. As a matter of law, in practising medicine they are doing that which the law does not recognise, and which their legal status does not justify. Now that by law persons possessing single qualifications in medicine and surgery are only qualified to practise as such, and according to their qualification, it will assuredly not fail to attract serious attention that upwards of 5,000 out of a total of 20,000 practitioners are not qualified by law to practise more than one department of their profession."

† The writer of a biographical notice of the late Dr. Hope remarked of him: "Although he restricted himself almost exclusively to the practice of medicine, he determined from the first to study the two branches equally, and was accustomed to observe that his knowledge of surgery was ever afterwards of the greatest use to him, and that it gave him a confidence which he could never otherwise have enjoyed. He therefore proceeded so far as to pass his examination before the College of Surgeons."—(*"Eminent Medical Men," published by the Religious Tract Society.*)

moreover, it is considered that many of the clinical teachers become examiners in the licensing boards, there will be no further room for surprise that so many imperfectly qualified practitioners should have swelled the ranks of an overcrowded profession.

Mr. Carmichael, in his speech already quoted, made some forcible remarks upon the injury inflicted upon the profession and the community by the prevailing system of hospital election, excluding highly-qualified men from occupying positions in which their abilities would be conducive towards promoting the progress of science, and increasing the efficiency of the profession; and these remarks are to a great extent still applicable at the present day. "Talent," he said, "depends upon its own powers, and is therefore fair and open in its conduct. Those who want it resort to cunning and underhand dealing; therefore we usually find stupidity and trickery go hand in hand. Do they [the highly-qualified] not see their places occupied by a description of men who are by no means qualified for the office they so preposterously assume? Do they not see those subtle seniors of the profession upholding, by every means in their power, their aspiring but inefficient allies in the situations which *they* ought to possess, heedless alike of the injury inflicted on the members of their own profession, and upon society at large? Lastly, do they not see that if this most baneful system, arising from the most decided selfishness, and a total want of the *esprit de corps*, continues, that the highly-educated physician and surgeon will be effectually ousted from every participation in public confidence and professional emolument? Now, gentlemen, looking at this plain statement of facts, let me ask, if matters be allowed to take their present course, who would have the hardihood or folly to enter into the medical profession, except by commencing his career as an apothecary's shopboy, and snatching such opportunities as may occur to run to the schools of medicine to swallow a few mouthfuls of anatomy and the theory of physic and surgery, that

may give him a smattering to support his pretensions? None others could have a chance of even a moderate livelihood. Such, gentlemen, is the pleasing prospect our junior brethren have before them, if reform does not place the profession on that footing on which it ought to stand—a profession that once was admired for containing men deeply versed in every branch of human knowledge—but as it now stands, what gentleman would permit his son to enter into it?"

"Ignorance and intrigue," said a writer in the "Medical Times," "take the place of knowledge and worth, alike to the injury of science and humanity. Success on such occasions depends not upon ability or discernment, or even competency, but on interest, wealth, and family influence. Talent is frozen into hybernation and repose by the uncheering and heartless institutes of the colleges. The sunshine of patronage is bestowed through the chilling influence of monopoly, and the natural consequences are, that in the councils and in public institutions, instead of men of originality, of genius, of great discoveries, like Harvey or Hunter, we have a stunted, dwindled, degenerate crop of intellect, of mental cripples, the offspring of the pernicious atmosphere in which they moved and had their being.

"Contrast their places with their performances, the offices with the men—the association becomes an axiom. The evil does not rest here, it affects all. Few will enter the lists to contend where the prize is adjudged by a junta whose selection means servility or congeniality with their narrow principles—whose talent means dulness, and whose judgment is the award of elective predestination."

A writer in the "Times" likewise observed on the occasion of an election at St. Bartholomew's Hospital: "Whatever else may be jobbed in England, no jobbing must creep in here. Let there be no suspicion as to the capacity of those who are named to educate the young men who in after-life are to be the medical practitioners of the country. If there be any class of institutions more than another which should escape the influence of unfair practices and corrupt dealings, it should be our hospitals. The trustees of such institutions have a most sacred duty before God and man to discharge, and they will not, we are confident, be found wanting in the hour of need to the cause of the sick and the poor."

"If the governors of our hospitals had aimed in a special manner at the excluding all vigour and originality from the medical staff," said also the "Lancet," "they could have devised no better scheme than the one now in force. We find feebleness, rottenness, and decay in a system upon which the practical education of our profession depends. Shall every foreigner who knows the working of continental hospitals be filled with pity, wonder, and amazement? Shall we see a system adopted that would swamp any Government and give force to any administrative reform association?"

"The hospitals, as regards professional elections, are mostly all either close or venal. Fair play there is none," said a writer in the "Morning Post" on this subject.

On the occurrence of a vacancy in the assistant-physicianship at St. Thomas's Hospital, some years ago, the following invitation to candidates appeared in the "Times": "The governors, under a deep conviction that the efficiency of the medical department can only be maintained by electing to fill the highest offices those who are most distinguished by their talents, character, and acquirements, without regard to any other consideration, are prepared to receive all persons as candidates who may be duly qualified to fill the same."

The "Lancet" also remarked, on a similar occasion (Dec., 1856): "The trustees of the Southern Hospital at Liverpool have wisely adopted a proposition made by the medical men of the institution, that in future the election of the medical officers shall be solely guided by the merits of the candidates. It will be greatly to the benefit of the public hospitals if this plan be generally adopted. At present, it is but too frequently that not the best man, but the most active canvasser, who succeeds, and many a most desirable officer is thus lost, because he is unwilling or unable to undertake the labour or afford the expense of humbly soliciting from individual voters their 'most sweet voices.'"

"Hospital physicians and surgeons," the writer added, "are, by virtue of their office, bound to be the especial teachers of the profession. If they do not use their great opportunities so as to advance the knowledge and practice of their science and art, they are guilty of a species of immorality. They ought not merely to sustain, but to carry on the practice of medicine, so that we may hand it down with its discoveries

and improvements to our successors. When proved to be incompetent for such purposes, they ought to be extruded from the courts of our hospitals even more relentlessly than the man who fails merely from weight of years. It would be invidious to mention names; and yet the sacred interests of science and humanity demand that offenders of the kind we have hinted at should not be spared. Instances abound."

After particularly specifying two London hospitals as being remarkable for deficiency in this respect (one of them being St. George's), the writer adds: "We venture to say that, taking the profession through, not one medical practitioner in fifty could give even the names of the physicians and surgeons of that hospital correctly, so little have they done to make themselves known. Who ever expected or dreamt of improvement in medicine at such hands? The hospital physician or surgeon who wastes his opportunities of contributing to the advance of medical science is not only idle himself but the cause of idleness in others."

On the occasion of Mr. Abernethy being appointed surgeon to St. Bartholomew's, this eminent man gave utterance to the following remarks: "It is of great consequence that those who are elected to such situations should not only be men of science and of regular education, but, also, that they should possess zeal, and feel an interest in the prosperity and improvement of their profession. Any person may perform the duties of an hospital in such a manner that cannot be readily objected to.

"In order to ensure the appointment of persons of this disposition, it is indispensably requisite for the governors deliberately and impartially to scrutinise into the character and conduct of the candidates, so that they may give their votes to the most deserving. If governors of hospitals were but informed how the most worthy professional men labour to acquire knowledge—that some die, and few escape lingering illness, from exertions that nothing but enthusiasm could incite and support—they would never give their votes without that deliberate and anxious inquiry which I am recommending. They could not do an act so cruel to the candidate, and so injurious to society—injurious because it tends to repress meritorious exertions by showing their inefficiency in promoting worldly prosperity."

"No one has a right to hold an hospital appointment,"

says the Commissioners' Report on the Dublin Hospitals, "simply for his own advantage, either direct or indirect; but, in return for the benefit he receives from it, he is bound to impart to the students the results of his experience; and if he is unable or indisposed to give up the requisite time for attendance on the patients, and for the elementary clinical instruction of the pupils, he ought not to retain an office that might be more advantageously filled in relation both to students and patients."

IV.—SOME EVIL CONSEQUENCES OF THE PREVAILING ABUSES.

The great injury to the community that has resulted, and continues to result, from the unchecked prevalence of the above-specified abuses, must, I think, be evident on very slight consideration, and need not therefore now be dwelt upon; but looking merely to their effects upon the profession itself, we find what might *à priori* be expected, a general state of deterioration in public estimation, and impoverishment (and in not a few instances positive distress) affecting a large proportion of its number. Several years ago the "Lancet" observed with reference to this subject: "That the profession is deplorably overstocked is notorious. Everywhere medical men are jostling each other for the merest crumbs of practice and emolument. Considerable numbers are annually squeezed out of the profession; many die prematurely, worn out by desperate competition. At the root of these evils, and many more, we are convinced that our *hospital* [election] *system* has much, and indeed the most to answer for."

From the continued persistence of the causes, these evils, far from undergoing any diminution, have gone on progressively increasing, as is proved by the extracts I gave from various medical periodicals in the pamphlet to which the present remarks are supplementary. Since the date of its publication similar statements have been repeatedly made, without, however, any efficient remedy being had recourse to. In March, 1863, the same journal, approving a suggestion for the creation of a professional Health Assurance Society, remarked: "The poverty of the great mass of the profession speaks 'trumpet-tongued' in the long and melancholy list of applicants for relief to our benevolent funds and benevolent colleges." Again, in the following May: "It is notorious that amongst the mass of practitioners the struggle even to obtain a respectable living is arduous and sometimes overwhelming, and that many succumb before they can provide for their families. This is painfully illustrated by the constant appeals that are made to charity, and by the still-increasing

lists of applicants to the Medical College, and by other facts known to us all."

Again, in a more recent number (February, 1865), when treating of the injustice done to the medical officers of poor-law and dispensing institutions, the writer observes: "Youth finds him [the medical practitioner] struggling with difficulties, and old age too frequently overtakes him without provision. The records of the English and Irish professions afford many illustrations of circumstances of medical practitioners—educated gentlemen—whose families, struggling in all the pride of decent poverty during their parent's life, are left at his death entirely unprovided for. Our several English medical charities sadly demonstrate this fact."*

An article in the "Dublin Medical Press" on "Local Associations" (March, 1864), contains the following observations on this point: "Medicine stands pre-eminent among all other professions for the number of its grievances and the little attention generally accorded to its complaints. Plenty of kicks, and a remarkable paucity of halfpence. Hard fare and bad pay has been the daily treatment of medical men. From the State authorities downwards the world seems to be of the one opinion, that the doctor has no right to the emoluments or the respect accorded to the members of other professions. The State has no rewards for the medical man; no matter what distinction he may have achieved by his talents, or what services he may have rendered by his labours."

After adverting to the prizes held out, and the reward for labours in other professions, the writer adds: "Far different is the doctor's lot; he must start on his up-hill journey, facing poverty, struggle on to keep life and soul together, look forward to a poverty-stricken old age, and die with the knowledge that he leaves his family destitute. Even if a medical man be ever so successful, the best he can hope for is a com-

* Appeals by advertisement in the public and medical journals for assistance on behalf of aged or invalided members of the profession, and of families left destitute, are of frequent occurrence. Adverting to the comparatively small number of subscribers to the Society for the Relief of Widows and Orphans of Medical Men, a writer in the "Lancet" (June, 1864) remarks: "Strange, indeed, that in a calling so uncertain, so perilous, in which the vast majority of its members, after lives of toil, anxiety, and self-denial, sink to the grave without having had it in their power to provide for those nearest and dearest to them, so few should avail themselves of the advantages offered to them by this society."

petency to live on. For every pound he must labour to the day of his death.

"The cause must be first admitted and recognised [before the fit remedy can be applied]. How does it happen that medical men—every one of whom ought to occupy a social position within the rank of gentlemen—are treated with so little consideration, and their complaints with so little attention? Simply because they act, when they act at all, individually and not collectively."

While fully concurring in the observation that the cause of the evil must be ascertained before the evil is likely to be removed, I cannot agree with the writer in his opinion that it is owing to its members not acting collectively that the profession does not meet with due consideration from the public. The true reason is mainly to be attributed to the causes I have specified as having tended to produce its deterioration. Under existing circumstances, the profession cannot sufficiently respect itself to be greatly respected beyond its pale; for the strong competition, occasioned by its being overcrowded, and the encouragement that is so often given to pretenders devoid of any professional claims to public patronage, not unfrequently compel men who otherwise would scorn to adopt any unprofessional or derogatory means to have recourse to them to a certain extent, in order to keep their ground and to maintain their families.*

In a previous publication I have shown that the Governments of the respective States of whose medical organisation I have treated, exercise a careful supervision over all matters relating to the medical profession; and that it is to the want of any such legislative supervision in this country, and to the

* The writer of an article on "Medical Practice among the Poor" in "Household Words" observed several years ago on this point: "The profession looks to an undiscerning public for patronage that is much too unwisely and too unequally distributed. It is full of struggling men whose competition would be fierce were it not restrained by gentlemanly feeling, and a rigid code of etiquette. The folly of the ignorant among the public opens many a profitable path to meanness. Worldly advantages are offered most freely to all medical men who will be 'humbugs;' and indeed it is well known that, so far as we can do so with honour, we have all sought to satisfy the public by including a very considerable mass of humbug in the routine of our daily practice. We are not to blame for the heart-burnings that arise among ourselves, owing to the generally impoverished state of the profession."

circumstance that the regulation of medical affairs has been left to the numerous corporate and licensing bodies, amenable to no superior control, that such crying abuses have prevailed; that the profession, being wanting to itself, has become lowered in public estimation; and that it is to the diminution of the confidence of the public in it that quackery of various kinds has become so prevalent. Hence, also, it is not surprising that, while in other countries efficient measures are adopted on like occasions, the profession in this country should often be found unequal to deal rationally with a calamity occurring within its province, and deeply affecting the public health. On the opening of the medical schools in October, 1865, the "Times" made the following just observations on the profession, at the time when the cattle disease and the cholera were making great ravages in various parts of Europe:—

"There is probably no profession which in its aggregate or corporate capacity excites so little the interest of the public. The medical profession, standing apart from politics and divinity, having no strong hold on the attention of the extra-medical classes, being effectually *separated from the State*, and very imperfectly connected with anything else, *is left to go on in its old way*, very little troubled with criticism or interference from without, and having its course of action determined almost entirely from within. The result of this has perhaps been that medicine is not sufficiently regarded as a practical science, subject to the same laws and conditions, and admitting of the same tests and verifications as other sciences, but rather as a secret and traditional mystery deposited in the hands of a few persons, and neither to be touched, handled, or discussed, except by its initiated and privileged professors. Hence the horror that has always been expressed of quackery, and the establishment of a canon of orthodoxy quite as rigorous and exclusive as any that has ever been established by the strictest theological dogmatist. The days are, however, coming when this position of the medical profession will become untenable. Medicine will, we foresee, be summoned, before a long time has elapsed, to give an account at the bar of public opinion of its claims to take rank among the sciences, of the incontrovertible principles on which it rests, and the general conclusions to be drawn from them.

"We turn to the medical profession for aid and counsel in

the difficulties impending over us, and we are sorry to say that, *as seems almost invariably the case* under such circumstances, the answers we receive are so vague and contradictory, as to afford us little or no guidance. As they differ about the disease, so they differ about the remedy. Each practitioner has his own remedy [for cholera], and nobody has any confidence in the remedy of his neighbour. Great as has been the progress of physical science in the matter of the morbid pathology of the human body, it is slow and unsatisfactory in the extreme. In lectures and treatises we have an appearance of scientific accuracy, but when we come to practical tests, such as are afforded by a new epidemic, we sink down at once to the purest and most abject empiricism.

"It may undoubtedly be that nature guards the true secret of the character and remedy for these dreadful scourges, and refuses to yield them to the most patient and careful investigation. But before we can acquiesce in such a conclusion, and sit down contented in our ignorance, we should like to have an assurance, which we are far from feeling at present, that those methods which have been crowned with such splendid success in the other branches of physical inquiry have been steadily and perseveringly applied to the pathology of disease, and have only failed of effect because the problem is one which transcends the means of inquiry furnished by the existing state of science."

V.—PREVALENCE OF EXTRA-PROFESSIONAL INFLUENCES, AND DISCOURAGEMENT OF THE CULTIVATION OF MEDICAL SCIENCE.

The reason why medicine does not in this country take the rank in science which it should do, and why important questions relating to medicine that might probably be resolved so often remain enveloped in obscurity till elucidated by investigations pursued elsewhere, is referrible to the discouragement to which the cultivation of medical science is subject on the part of the Government, the medical corporate institutions, and the public generally. This discouragement, or absence of any encouragement, and the consequent frequent failure of men of high scientific qualifications in acquiring consideration and support, are likewise features peculiar to our medical system as compared with that of the principal continental countries. Indeed, numerous instances might be adduced to prove that high professionally-scientific qualifications have acted as a bar to success, and have met with opposition and annoyance from colleges and the jealousies of professional cliques or official colleagues; and the number is by no means small of men who had acquired reputation and distinction by their labours, but who did not possess adequate independent means, who have been obliged to emigrate, or who, when remaining in their country, have succumbed under the combined influences of disappointment of their just expectations, the anxiety consequent upon financial difficulty, and the *tracasseries* to which they are subjected.

"We believe," said a writer in the "Medical Times," "that never in the history of our profession was an amendment of its laws more imperatively required than at the present time, and never would remedial measures be received with greater thankfulness and unanimity. The evils under which we groan cry aloud for redress. Legal and illegal practitioners, the well-qualified, the half-qualified, and the unqualified, all press against one another in the race of life; and where all is uncertain, the arm of the law is feeble to protect educated or half-educated aspirants, or to punish the pretender. The learned and ignorant have the same chance

of reaching the goal of success in practice; or rather, the advantage is on the side of the latter. Those who obey the existing laws are in a worse position than those who systematically break them; and those who have toiled and spent their funds in mounting step by step the laborious ladder of professional qualification, find, when they hope they have arrived near the top, that they are displaced by quacks and pretenders who have never mounted the ladder at all, and who have been admitted into the citadel of public confidence by their ingenuity in imposing on the credulity of the multitude." *

Under these circumstances, there need be no cause for surprise that there should have been, for a long time past, a great deficiency of scientifically-eminent men in the ranks of the profession, for, as Dr. Copland justly observed in his "Dictionary of Medicine, "what is neither honoured nor rewarded must necessarily cease to be sufficiently, ardently, and patiently cultivated."

As corroborative of these remarks, I will adduce a few of the opinions that have been expressed on the subject, and two or three cases in point. Quotations on this head might be greatly multiplied.†

"Science and starvation," said the writer of a leader in the "Times" (August, 1858), "are proverbially almost interchangeable terms." "In medicine alone," said Dr. Marshall Hall, "improvement is without recompense." "The

* Let us turn to contemplate for a moment the more flowery picture presented by Sir B. Brodie to pupils about to pursue the medical career: "You have undertaken nothing which energy, perseverance, and upright and honourable conduct will not enable you to accomplish. It cannot, indeed, be predicted of any individual to what extent he may attain professional success, but having had no small experience in the history of those who have been medical students, I venture to assert that no one who uses the proper means for the purpose will fail to succeed sufficiently to gratify a reasonable ambition.—(*Lecture.*)

† "Every member of the profession," said a writer in the "Dublin Journal of Medical Science," "knows only too well that he has nothing to hope for from Government assistance. Let him devote the energies of his life—let him wear out his constitution, toil day and night, to relieve the sick, or labour for the literature of his profession, he can hope for no public honour or reward. Let him ruin his fortune or wreck his health for the public weal, he will drop into his grave, as far as regards the ruling powers of his country, 'unwept, unhonoured, unsung.'"

pretender too often carries off the prize."—("Medical Critic.") "In no age, in no country, in no profession, has intellect ever been so much wronged as in the medical profession in in England."—(Professor Gamgee on "Hospital Appointments" in the "Medical Times.") "The records of professional history bear testimony to the fact that men of the highest scientific celebrity are those on whom the favours of the British Plutus rarely wait."—(Dr. Scoffern's "Philosophy of Common Life.") Referring to the misrepresentations so often made to medical students in the introductory lectures delivered at the commencement of each medical session, a writer in the "Medico-Chirurgical Review" (October, 1862) remarked: "In no profession, certainly not in ours, is success the reward of merit, even when of a higher kind than that of industry alone. Men may work as Harvey worked, and be hooted and put under ban for the very excellence of their work, dying, as Harvey might have died, under their work, and the ruin which it wrought." The author of "Eminent Medical Men," already quoted, adverting to the opposition experienced by Harvey on his making known his great discovery of the circulation of the blood, which caused a falling off of his practice, states that "even after its truth was generally recognised he does not appear to have been particularly successful in practice," which he ascribes in great measure to the circumstance that Harvey "disdained those arts of gaining the confidence of the public by which so many succeed."

We are told in M. Pichot's "Life of Sir Charles Bell" of the vexations and opposition this eminent man experienced from the jealousy of his colleagues, which induced him to resign the chair of physiology in the London University soon after he had obtained it, and that his scientific reputation stood greatly in the way of his advancement, and after he had obtained a world-wide reputation, "his income diminished in proportion as his honours increased." When, consequently, he was obliged to leave London, after his removal to Edinburgh he stated that not one of his colleagues in the University called him into consultation, except when forced by the desire of the patient. At Bell's death, his widow, being left inadequately provided for, received a Government pension of 100*l.* a-year.*

* "The prevailing cast of my mind," wrote Sir Charles, "was to

A late President of the College of Physicians (Dr. Paris), who wrote several highly-estimated professional works, admitted that he published anonymously a useful and entertaining scientific work in a popular form ("Philosophy in Sport made Science in Earnest"), being apprehensive that the affixing his name to it would produce a diminution of his practice—which, however, was at no time large. At his demise his family likewise became a Government pensioner to the amount of 150*l.*

The writer of the biographical notice of a late distinguished physician (Dr. Addison, of Guy's Hospital), published in the "Medical Circular," remarked: "He was in the most characteristic sense a scientific physician, and the pattern of philosophical physicians. As a practitioner he did not win great popularity, but it must be added he never sought it, content rather to possess the good opinion of experts in science than to take fees by cultivating popular applause. He was comparatively unknown to the public, who scarcely do more than appreciate the superficial qualities of the man, but his profound knowledge could not be unknown to the profession, and he acquired the higher honour of being consulted by his professional brethren."

After the demise of Sir John Forbes, a writer in the "Athenæum" observed: "He was not what would be called a successful physician; the metropolis will not tolerate even in appearance attention to other pursuits than prescribing at the bedside."

I have adverted to several instances in which men of high qualifications have succumbed, or been forced to emigrate, in consequence of the discouragement and opposition they experienced in their endeavours to advance themselves in a manner commensurate with their claims. An additional instance may be cited—that of Mr. King, who, having acquired distinction abroad, failed in the attempt to make his abilities available on his settling in London. On the occasion of a vacancy in the post of assistant-surgeon at St. George's Hospital, he came forward with the highest testimonials, considering as *bonâ fide* the advertisements requesting candidates to send in their claims to the committee. He was, however, told by Sir B. Brodie that it would be useless

gain celebrity and independence by science, and this was, perhaps, the most extravagant fancy of all."

for him to persist in the attempt, not having been educated at the hospital. A late esteemed metropolitan teacher, Mr. Dermott (who himself succumbed beneath the adverse influences referred to), said, with reference to this case, in his last introductory lecture: "Thus a man may be reduced to beggary by following the same course that infallibly leads to distinction in France; for without patronage medical men will not get preferment in England. Poor King, on leaving a foreign land to exercise his talents in his own country, lost sight of all his bright prospects, and died the victim of despair."

I can from my own experience confirm the general correctness of the statements I have quoted with respect to the little estimation in which professional or scientific qualifications are held, when not backed by influential connexions, patronage, or adequate private fortune. I have had considerable professional advantages, which I took great pains to make available for rendering service. Hundreds of times early in winter mornings have I hurried to attend, at a distance from my lodging, the medical and surgical practice in continental hospitals. Several of the most eminent surgeons of Europe—some after long knowledge of me—gave me testimonials expressive of their opinion of my professional qualifications.* I obtained four prizes offered for the best essays on important practical subjects that had been much discussed, by medical bodies, and as an acknowledgment of their estimation of my works several of the principal foreign medical societies conferred upon me their diploma of membership. Well, declining to attempt to succeed in my profession by adopting any indirect or unprofessional means (for which opportunities were not wanting), I thought I might trust to my professional claims, which in any other country would have enabled me to occupy a position for which I had striven to qualify myself, and what I did I did as a matter of duty; but as respects any advantage accruing to me therefrom, it proved to be not of the slightest use, and I might just as well have spared myself the pains I took, and have thrown into the street the money I had expended. Appointments to fill up vacancies in the medical staff of hospitals are professedly said to be determined by superiority of testimonials and qualifications, and few persons who would offer themselves

* See Addenda.

as candidates for the post of assistant-surgeon could show testimonials equal to those I possessed; on two occasions of the occurrence of a vacancy at St. George's I came forward as a candidate, and declining to have recourse to the pernicious and derogatory means of personally soliciting votes, I sent round to the Governors copies of my testimonials, together with the critiques of the works I had then published. On the last occasion I was, however, told, both by the then senior physician and senior surgeon, that it would be useless for me to persevere, as the medical staff had decided to support a particular candidate, Mr. Charles Hawkins, Sir B. Brodie's private assistant, who, however, did not succeed, the election being made a party question, and his opponent having influential supporters, and being an active canvasser. In fact, I soon perceived that I had no chance—though the objection made against Mr. King's not having been educated at the hospital was not applicable to me—of obtaining a similar appointment by fair and professional means, and knowing the result of former elections when highly competent candidates were unable to contend against the then predominating influence, I gave up the attempt, being unwilling to subject to inconvenience those Governors who would have voted for me. My prospects in this direction being thus destroyed, instead of remaining throughout the year in England, probably succumbing beneath difficulties and the stagnation of my faculties, or of emigrating, which have been the fate of many men of considerable abilities, I adopted the course I have since pursued, endeavouring to be of service in another way.*

* It will readily be perceived from what has preceded that there is but little inducement for persons, however highly qualified, not having influential connexions, or adequate private fortune, and who are averse from having recourse to extra-professional proceedings, to enter into it. Even the political and non-medical journals have frequently adverted to the pernicious agencies that are brought to bear upon hospital elections. On the occasion of the prevalence of the cholera some years ago, "Punch" called the attention of his readers to the sad condition of the medical profession, observing: "There are hardly any medical appointments in your [the Public] gift. The offices of physicians and surgeons to your hospitals are obtained by private influence and jobbery. And how does the popular practitioner grow rich? Mainly by composing fashionable nerves, ministering to petty ailments, and humouring the caprices of the sickly or the silly. This is why the quack succeeds so much better than the regular professor. Now, what intelligent and high-minded man will engage in a beggarly and dishonoured profession, success in which, such as it is, can only be obtained by means that are contemptible; or, having entered it, can be expected to follow it up if he can get a decent livelihood otherwise? Can you wonder, worthy Public, that you do not possess so much medical talent as you would wish, especially just now? Do you not see, my enlightened Public, that you are especially interested that the medical profession should be made worth the while of men of science and ability to follow?"

Of the many men of superior ability who have succumbed, or who have been forced to emigrate, no further account has been taken. Some of the latter have obtained, through special interest, consulships or other public appointments abroad, and here and there we hear of one becoming distinguished in his new career, as Mr. Palmer, the editor and annotator of the complete edition of Hunter's works, who subsequently became Sir H. Palmer, and President of the Legislative Assembly at Melbourne.* Sir Rutherford Alcock, long our envoy in Japan, and now in China, may also be cited as a case in point.

Exceptions to the rule of success in the medical career being attained by influences of an extra-professional kind, and independently of the possession of private fortune, do, however, sometimes occur, as in the instance of Dr. Hope; but at what cost did he achieve success? We are told in a biographical sketch of him that "he had no private connexion, the sole advantages which he possessed were his natural powers of mind and his superior education. To these alone would he look, under Providence, for success; but they proved amply sufficient. He had formed, however, much too favourable an estimate of his profession. Being favoured with a good constitution, it had long been his custom to work with but little intermission from seven in the morning to twelve at night. When writing his work on 'Diseases of the Heart,' he frequently sat up half the night. His name is added to the list of victims who have ruined even robust health by overtasking their powers of body and mind."—("Eminent Medical Men.")

Dr. Hope died at the age of forty. The more immediate cause of his death is, however, referrible to the over-exertion and mental worry occasioned by the unexpected opposition he

* Mr. Palmer's prospects of professional success in England were likewise destroyed by the failure of his attempt to oppose the then predominating influence at St. George's Hospital on competing for a vacant assistant-surgeoncy in that institution.

met with, and the withholding of support on the part of his colleagues on the occasion of his having to compete for his succession to the office of physician at St. George's Hospital, where he had long officiated as assistant-physician. A full account of the circumstances connected with this event is given in Professor Grant's "Life of Dr. Hope," his biographer remarking: "His decided superiority, his early reputation, his unvarying success, raised much jealousy, and caused many eagerly to listen to any misrepresentation to his disadvantage. *He had not one professional friend to whom he could apply for counsel in any trying emergency.*" Dr. Hope is reported to have said that he would not have the cruelty to bring up his son to his own profession.

A correspondent of the "Lancet" (August, 1864) noted the circumstance, that none of the most distinguished members of the profession brought up their sons to it, observing, "It is not a little singular how few of the great names of the profession of a few years back are now to be found in it," and after citing several distinguished names, he asks, "What does this betoken?" It betokens, I conceive, that a perfect acquaintance with the state of the profession, and of the drawbacks to be encountered, together with the little value of such success as could be achieved, was quite sufficient to deter them from so doing.

The premature demise of Mr. Morton, who had acquired considerable distinction at a comparatively early age, was attributed to the unfair and illiberal proceedings of some of his colleagues, on the occasion of a vacancy in the surgical chair of University College caused by the death of Mr. Liston.*

It is, however, not unusual for medical and literary commentators, who take but a superficial or a partial view of the career of the occasionally successful medical men distinguished for their great ability, to hold them up after their decease as illustrations of what may be accomplished by ability combined with diligence and perseverance; while seldom is any account taken in these post-obituary eulogiums of the extraneous influences by which their advancement had been, if not

* The "Daily News" remarked on this occasion, "If the Council had been the Committee of St. George's Hospital, with Sir B. Brodie at its head, electing one of that gentleman's assistants to a vacant surgeoncy, they could not have set to work in a more hasty and suspicious manner."

mainly occasioned, yet greatly promoted. Thus, on the demise of Sir A. Cooper, his high professional qualifications were adduced in some of the journals as being the exclusive cause of his success, without any intimation being given of the probability that but for his relationship to the eminent hospital surgeon, Mr. Cline—through whose support he obtained the assistant-surgeoncy to this hospital at an early age, by whom also his advancement was otherwise favoured—he would very likely have passed his life in obscurity, without having any opportunity afforded him of making his abilities available for serving the profession as well as for promoting his own interests.

To take a more recent instance, some of the commentators on the career of Sir B. Brodie ascribed his success solely to his high professional ability and scientific acquirements. In a notice of his recently-published collected works in the "Athenæum," the reviewer observed: "His great reputation seems built upon his anatomical and physiological studies. Brodie's science made his fortune." If, however, Sir Benjamin had only had his scientific and professional claims to trust to at an early period of his course, he would never have been successful to anything like the same extent that he was; it is even doubtful whether he would have succeeded in a degree at all commensurate with his abilities. He tells us in his "Autobiography" that he was induced to enter the profession from having in it influential connexions, and this, together with his introduction to Sir Joseph Banks's scientific meetings, and to the high society congregated at Holland House, as also to his being the private assistant of Sir E. Home, and obtaining at an early age the assistant-surgeoncy in St. George's Hospital, were the main elements of his advancement. This is admitted by a writer in the "Medical Times," who remarked, "Few men launched their bark on the tempestuous ocean of life under more favourable circumstances." A writer in the "Medical Circular" likewise observed, "He was fortunate in his relations, and had both the shrewdness and the industry to profit by the advantages he enjoyed."*

The "Dublin Quarterly Journal of Medicine," in reviewing his "Autobiography," likewise says: "The history of Sir B.

* Reference is made to Sir B. Brodie's scientific labours in the Appendix.

Brodie is that of a man surrounded by the most favourable circumstances; his great merit consisted in his having cultivated all the advantages he was possessed of."

The success of an accomplished scientific living physician (Sir H. Holland) is in great measure to be ascribed to the aristocratic connexions he formed in early life.

The "Athenæum" reviewer, from the premises stated, urges upon the rising generation of practitioners the arduous cultivation of medical science as being conducive to success in the profession.* There are, however, as I have shown by numerous quotations, abundant proofs of the small influence which the acquisition of a professionally scientific reputation, when not backed by extraneous advantages, has in procuring the material advancement of its possessor, even when it is not (as is not unfrequently the case) an impediment thereto. We have had few men within the present century, if any, more distinguished scientifically in the profession or whose labours have tended more to produce right views of the physiology and therapeutics of the nervous system than Sir Charles Bell; who, moreover, was a most judicious and skilful surgeon, and an accomplished lecturer, and we have seen the results of his labours, in so far as his personal advantage was concerned.

On the other hand, the number of physicians and surgeons who have occupied high positions in the profession, or who have enjoyed a high degree of royal or public favour, without possessing any professional or scientific claims to distinction, has been relatively large. In his "Autobiography," Sir B. Brodie thus speaks of two of the royal physicians of his day: "With great natural sagacity, he [Sir W. Knighton] had *most agreeable and engaging manners, and the result was* that he obtained in the course of a very few years a very large practice. He was indebted for the long continuance of the Regent's favour more to his *engaging manners, his knowledge of the world, his habits of business, and his usefulness*, than to anything else. With much practical knowledge of the profession, *he had no scientific attainments.*

* Nevertheless, the writer of a critique on a work of Dr. Ramsbottom's which appeared some time ago in the same journal, remarked on this point: "It is not the man who knows most of disease, who studies hardest, or who is best able to serve the profession, who gets on the best. In nine cases out of ten it is the mere pretender who carries away the greatest prize."

Of Sir H. Halford it is said: "He was a clever and sagacious physician, with a great deal of practical information, but *without any of that scientific knowledge which is necessary for a right knowledge of disease.* He was on the whole a very useful and skilful practitioner, but *his views of disease were limited*, and he was too apt to be content with relieving the present symptoms instead of tracing them to their origin, and making it his object to remove the cause that produced them."

Sir M. Tierney may be cited as another instance of royal favour and success being obtained by extra-professional influences. So also several of the physicians most in vogue in the preceding reigns—the Matons, the Warrens, &c., though efficient routine practitioners, had no recognisable claims to eminence, nor did they do anything to benefit the profession. The only exceptions that I can call to mind of a scientific physician being in large practice at that time are Dr. Wilson Philip, prior to whom may be mentioned Dr. Baillie.

As respects the physicians of Her present Majesty, no one would be disposed to contest the claims to distinction of Sir James Clark, who, however, is said to have owed his introduction to royalty (Prince Leopold) to an accidental circumstance. By the Prince he was presented to the Duchess of Kent, and thus became the physician to her Royal Highness and the Princess Victoria. Of the late Dr. Ferguson nothing need now be said. Sir Charles Locock owed his introduction to the Queen to the patronage of the Duchess of Sutherland, but had no valid claims to professional distinction.*

* Sir Charles, being ambitious of becoming a member of Parliament on the last election, put up for the Isle of Wight on the ground of his being a Protestant (though he had no connexion with the island), in opposition to the former member, an influential local resident, and a Catholic, but was defeated. In his published address to the constituency, Sir Charles spoke of the "proud position he occupied in the profession," but it would be difficult to say what there is in it for him to be proud of. One or two medical journals, nevertheless, urged medical men to give him their support, as being an efficient representative of the profession, but he has never manifested any interest in medical matters of a public nature, and a writer in the "Medical Circular" (June, 1864) remarked on this occasion: "His age (seventy) unfits him, and his infirmity of deafness: his retirement from the profession long ago to escape its wear and tear is in itself an admission of his incapacity to take upon himself the active duties of a member of Parliament. To expect such a man to stand up in the House to defend the interests of the profession is preposterous.

If we look to the general ranks of the profession, we find, in like manner, a great preponderance of extra-professional agencies over professional or scientific claims as tending to the occupancy of responsible posts, the acquisition of frequently undeserved titles of distinction, and of such success as may be attained in the medical career.*

If we look to the medical literature of a few years back, we find that but few works of a standard character have been produced; those publications that have appeared being for the most part elementary lectures, students' manuals, and treatises on some particular disease or class of diseases which added little or nothing to what was already known on the subject, but which, being continually advertised, have served the purpose of keeping the author's name before the public, as the special practitioner to whom they should apply for the

Besides, I have no belief that Sir Charles's enthusiasm for his order is so great as to lead him to move a muscle in our behalf. I do not like his address to the electors. The present member possesses many claims to their support, from his well-known popularity as an extensive landowner, and as a tried public servant, and yet Sir Charles, an untried public man and a perfect stranger to the electors, has the cool assurance to oppose him solely on account of his religion."

* Referring to the election of Fellows of the Royal Society, the writer of a leader in the "Lancet" observed: "Admission to this society depends upon the arbitrary decision of a few men acting upon no definite test of merit. In fact, the election, as now conducted, is a mere formality, a solemn farce." Accordingly, we may see enrolled among the Fellows the names of several members of the medical profession, as well as others, wholly unknown in the scientific world, and in no otherwise distinguished, unless by rank or fortune. The writer of the review of the year 1864, in the same journal, likewise observed with respect to the elections to the fellowship of the College of Physicians: "The elections of last June left many unpleasant impressions in the minds of many. There are those who affirm that under existing regulations professional distinctions and individual merit are tantamount to a corporate disallowance of their just claims; and that an election to the fellowship, which should be regarded as a *premium honoris*, is but the result of a happy coincidence in voting among professional supporters, or a fortunate majority over personal opponents." A correspondent of the "British Medical Journal," who signs himself, "M.D.," remarks respecting the election of Fellows of the Royal Society (June 24, 1865): "I have been somewhat behind the scenes for some years. The elections are for the most part carried by favour. Men utterly unknown to science are elected, while those who have done good service are rejected. You would do well to compare the names which are now suspended with those of the elected during the last four or five years."

treatment of the particular disease; and which have been intended more for general than for professional circulation.

Several years ago a distinguished American professor (Caldwell) who visited this country, recording his opinion of British medicine in the last edition of Paine's "Institutes of Medicine," quoted the "Lancet," which represented the works on pathology and the practice of medicine then published as being "deficient in originality and richness of materials." "Look," says the veteran editor, "at the state of British pathology: of what does the majority of our books on the subject consist? Of compilations, of old views cooked up as new discoveries; of annotated translations, or at least of able and comprehensive digests of materials that were already before the public in other forms." These observations, it must be admitted, are not so applicable to the present day; as several of the works emanating from the medical press bear evidence of scientific research and much practical knowledge of the subjects treated of. The public is, however, seldom competent to distinguish such from publications of an ephemeral character.

The writer of an article on "Reform in Medical Literature," that appeared some years ago in the "Dublin Medical Press," observed on this point: "The inducements which favour the circulation of worthless literary productions are ten times stronger than those which lead to the sale of valuable treatises. Notoriety rewards the author, and money the publisher of an ephemeral volume; while obscurity and doubtful profit but feebly stimulate exertion on behalf of works of enduring character. Then, the duty of inflicting punishment on literary offenders is an ungracious one, and is seldom discharged, except in return for similar services, or to settle old accounts; and thus has reviewing become a source of deception rather than a means of information, and the best remedy against superfluous book-making and excessive case-making has become nugatory."

In a subsequent number, when treating of quackery, the writer observes: "The publicity given to communications in medical journals, and the circulation of those journals in circles not professional, afford great temptation to use these organs of scientific communication for advertising purposes. Hence the reproach now often expressed as to the publication of trivial matters, and the incessant repetition of reports of cases, all of the same character, to 'keep one's name before

the public.' In truth, it has come to this, that people are now puzzled to define where regular practice ends and quackery begins, so easy seems to be the transition from one to the other."

Another objectionable means frequently adopted of acquiring notoriety which must not be passed over without notice is the formation of special hospitals or dispensaries for diseases that are perfectly treated in the ordinary hospitals. The getters-up of these institutions are persons of no recognisable professional reputation or adaptation for the treatment of these special diseases. A writer in the "Medical Critic" observed on this point a few years ago: "Another remarkable feature of the present age in medicine is the existence of special hospitals. They represent, not the knowledge of the few, but the ignorance of the many—the dishonest ignorance that tries to pass itself off for knowledge, and undertakes duties for which it has never been at pains to qualify itself."*

* Some good illustrations of the various indirect modes adopted with a view to obtain or increase a practice are given in an article "On the Modern Practice of Physic," published in "Household Words," which concludes with the following exhortations: "Ladies and gentlemen, you certainly will benefit yourselves, if, when you select your attendants from the coming race of practitioners, you look, less than your forefathers have looked, to tact and exterior manner, and institute a strict search after skill and merit. Attend, I entreat you, less to the recommendations of your nurses and neighbours, and prefer physicians among those who have obtained honour among men really qualified to pass a judgment on their attainments. Now, if a man labours much in his profession when he ought to be dining out and winning good opinions by his urbanity and the geniality of his deportment, he is commonly said to be a theorist, and left to eat the cover of his books. That the use of a little more discrimination on the part of the public in the choice of their medical attendants would stimulate students more than all the introductory lectures that were ever spoken, and in time exalt the whole profession—strengthening much its power to do good—I think I can make evident."

A writer on medical ethics remarks on this point: "In order to show the readiness with which the public commit errors in their estimate of comparative success, suppose a case which not unfrequently occurs. Here are two rival physicians side by side; the one is really skilful, and if the results of his practice could be justly estimated, he would obtain great credit for success. He engages in medicine, not as a mere trade, but as a noble science. He pursues a straightforward, honourable, and quiet course, resorting to no tricks to acquire practice. The other, on the contrary, is unskilful, cares little for medicine as a science, depends upon artifice rather than real merit to obtain practice, and though he may desire to be successful, he desires more that he may have the reputation of being so. The issue which is made by these two physicians before the public is a false one. Though the unskilful practitioner loses more patients than the other does, in proportion to the whole number who come under his care, yet he perhaps does not lose so many in proportion to the number of those which are considered bad cases by the community; for he makes many cases bad which need not have become so, and besides represents many as being bad that are really not attended with any danger."—("Physician and Patient," by Dr. Hooker, edited by Dr. Bentley; chapter on "Good and Bad Practice.")

When, on the other hand, we look to the state of the profession in France or Germany, we may perceive that before any of its members can attain to a prominent position in the public eye, he must have shown that he has done something to deserve it, there being but few exceptions to this rule. Most of those who have there risen to eminence have succeeded by means of their own efforts and abilities, without any other assistance than such as is afforded by a more efficient medical organisation, and by the Governments, which encourage those of the rising generation of practitioners who give evidence of the possession of superior capabilities, by throwing open to professional competition the access to posts of responsibility favourable to their development, and by conferring rewards upon those who distinguish themselves.

A writer in the "British Medical Journal" (December, 1863) remarks on this head: "They manage these things better in France; the Government publicly acknowledges the importance of scientific medicine. On the 16th instant, for example, we find the Minister of Public Instruction 'assisting' at the meeting of the Academy of Medicine. He wished thereby to show the Academy the great interest the Government took in their labours. 'The Academy,' he said, 'is the council of the Government in matters touching the public health, and in this sense its doings are worthy of the greatest attention. By the aid of medical science the mean life of man has been prolonged twelve years during the last half-century. Go on, gentlemen, in this direction, and continue to prolong human life.'"*

* The reviewer of the recently-published "Code Medical," in the "Gazette Médicale de Paris," remarked: "On perusing it we may be assured that medicine in France, both as a science and as an art, is fixed on a broad and firm basis; that its part and position in society are worthily appreciated by the public; and that, notwithstanding certain imperfections and regrettable omissions, there is no country in Europe where this noble profession, *considered as a public institution*, is organised in a manner so conformable to its high mission."

In France, the indirect means so frequently had recourse to in this country to achieve success in the medical career would be of little or no avail, and any practitioner who attempted to employ them would be regarded with contempt by his compeers. Persons who are the most calculated to excel in these means, it is scarcely necessary to say, are most likely to be deficient in skill, and are not unfrequently so in conscientiousness; and from one or other of these causes, or from both combined, cases are often retained longer under treatment than they need to be, and their gravity is magnified in order that the medical attendant may get the greater credit on the patient's recovery; his main object being often to extract from patients or their friends as much as possible.

"There are many," says the writer in the "Medical Critic" whom I have already quoted ("On Free Trade in Physic," January, 1863), "who have no love for science whatever, and who have but a limited sense of duty, who still go through the outward forms of attendance upon the sick in a punctual and methodical manner. From such men there proceeds an atmosphere eminently favourable to the development of quackery. If the doctor be rapacious, and bent only on extracting the utmost 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 quacks immensely. People can get rid of them, but they are afraid to let such a doctor gain a footing in their houses. So they go to anybody who they think will help them to stave off the evil beginnings of a bill, or perhaps to avoid them altogether. Then some will probably be injured by treatment, and will improve if it be discontinued. If these should by any chance go to a quack or homœopath, and receive some inert medicine, lo! a wonderful cure has been effected. 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."

CONCLUDING REMARKS.

The reasons why the medical reform question has not been satisfactorily settled long ago may be reduced principally to three: 1st. The supineness and indifference to medical matters on the part of the Government, which, instead of instituting a Commission of Inquiry, from which an unbiassed account of the state of the profession might have been obtained, has contented itself with the partial information derived from parties interested in upholding antiquated usages, and in maintaining intact existing abuses under the plea of "vested rights," whose combined influence has sufficed to render nugatory any attempt made for procuring an effectual reform.* 2nd. The general prevailing deficiency of

* "The organisation in corporations, as it now exists," said, several years ago, the "British and Foreign Medical Review"—"that is, the organisation of a very small minority in the profession, even in the metropolis, the objects of which are rather selfish than professional, rather personal than public—medical practitioners in general, licentiates of the College of Physicians, of Apothecaries' Hall, graduates of the Universities of London and Edinburgh, and members of the College of Surgeons—with regard to all these, we may say that they can exercise no direct influence on their respective corporations whatever: they have no share in the government, no voice in the council. An organisation of the medical profession should place the practitioner in such a position that he should have an opportunity of sharing in the government of the profession; so that, while it subjects him to discipline and rule, it permits him to have a voice in the legislation that binds and controls his actions. It should enable the profession to express its sentiments as a unity, whether as to professional ethics and moral relations, or mere worldly interests; in short, the organisation should be that of a republic of men of letters and men of business. At present we have disorganisation and disunion; to a privileged class alone are accorded the privileges we have mentioned. This incontrovertible defect is at the root of all the agitation and disturbance and recrimination which have annoyed, vexed, and unsettled it for at least the last half-century. During the whole of that period there has never been an entire cessation in the clamour, and at intervals the whole of the profession has been profoundly agitated. What is more astonishing is, that scarcely any progress has been made towards a state of repose and order. The Medical Registration Committee of 1848 is hardly in advance of the Medical Education Committee of 1834—similar narrow notions, similar prejudices expressed, and even,

acquaintance with medical questions among members of Parliament. 3rd. The absence of any representation of the profession in Parliament, by which such ignorance might be removed, and its interests watched over.

On this latter head the following very apposite observations appeared in a journal of large circulation ("Illustrated London News," February, 1863), prefatory to a biographical notice of the (then) only medical member of Parliament (Mr. Brady): "The boast of Great Britain that all classes of her community are represented in the Houses of Parliament, and their interests faithfully and adequately cared for, is true only in a limited sense. The Law, the Church, the Army and Navy, the seats of learning, the colonies, commerce, railway interests, trade, indeed, in all its branches, find utterance and representation in the great Senate of the nation. But what of the medical profession? Are its interests guarded and advanced? Is its importance vindicated as it should be? This, one of the learned professions, the importance of which is of individual application to every member of the community, occupies a position which the most superficial examination must prove to be at once anomalous and unworthy. We pass by with a glance the fact that no eminence of skill or of talent, no life-long devotion to the cause of that science which is most important to the interests of suffering humanity, can avail to win for its possessors those coveted distinctions which are the prizes of the successful lawyer, the triumphant general, the naval commander, or the statesman, who has toiled by a path not a whit more laborious to renown. To such the peerage opens its time-honoured ranks; but where is the head grown grey in the service of medical science that has ever borne a coronet? Our business is rather with the wider aspect of the question, rather with the consideration of how the great science of medicine is protected and fostered by parliamentary representation, than with the rewards open to the righteous ambition of its professors. It is represented by a mere unit. Its interests and its rights are legislated for by men who

in some instances, by the same men. Nay, in 1848 we have hardly so perfect a reiteration of plans of education and organisation as in 1834. We repeat, that a want of means whereby the profession at large can express and enforce its opinions as to medical politics is solely at the root of all these evils, and until this defect be remedied, there never can be peaceful progress in the medical republic."

have no personal experience of its difficulties, no professional appreciation of its requirements. How inadequate its representation is may easily be deduced from the difficulties by which the reform of the most flagrant abuses is beset, resulting from the supine indifference which is but a natural result of the absence of professional knowledge, and its indispensable authority. It is useless to expect that men fully engaged with other questions will devote time, and painfully tax their attention, unassisted by professional knowledge, to combat the difficulties which encompass the question of medical legislation. There are but few who will hesitate to acknowledge the impregnable position of importance occupied in the social system by the medical profession. Every day's experience of the teaching of life shows that. Is it, then, unreasonable to require that the profession should receive a corresponding parliamentary importance? We have but to contrast the state of things in continental countries with that in our own to lend additional light to the question, why, in our comprehensive system, are our medical schools and colleges misrepresented? While to this demand no satisfactory answer can be given, there must remain a serious defect in the system towards whose perfection it is the duty of all to strive with the utmost of their will and ability.*

* The following observations were made after the late elections in a leader of the "Medical Press and Circular," February, 1866, headed, "Should the Medical Profession be Represented in Parliament?"—

"Very few members of the medical profession are elected to seats in the Lower House; they are chosen from political motives rather than professional experience. They are usually men who have given up their practice, and they are certainly not the most eminent in the profession.

"While no body of men is so ill represented, there are no men who so well represent all classes of the community. They are pre-eminently the friends of the poor; they are conversant with social questions, the working of charities, and the various attempts made for promoting the public good. Above all, they have a knowledge of sanitary measures, of disease and remedies of every form; and what unprofessional men learn from reading and conversation they understand by experience.

"The consequence of this state of neglect of medical interests is apparent. No profession is at this moment in such confusion—a vast conflict of vested interests; physicians, surgeons, private medical schools and colleges in England, Ireland, and Scotland; some claiming monopoly, others professing to have rights, and contradicted by the assertions of the rest. The whole system appears to be one of hopeless

Upon a general review of the preceding considerations, there need be, I think, no difficulty in perceiving in what respects reform is most urgently required in order to ensure to practitioners the full exercise of their rights, and to place the medical profession in the position which it ought to occupy as a national institution, and in public estimation. Consequently, any such amendment of the Medical Act as is now proposed would be productive only of very slight advantage; existing abuses would still prevail; and its adoption by Parliament would have a prejudicial effect upon the progress of medical reform, by causing the question to be shelved for an indefinite period.* Moreover, the spread of quackery and unlicensed practice would be but little checked by further empowering the Medical Council to prosecute offenders. Indeed, except in some glaring instances, the utility of legal prosecutions in these cases may well be questioned. On giving his evidence before the Parliamentary Committee on this point, Sir Astley Cooper expressed his opinion as to the uselessness of prosecutions in similar instances, and that the most effectual means of eradicating or of lessening the amount of quackery would be to improve the condition of the profession, so that the public might have more confidence in their medical advisers. Other eminent men who have given their attention to the subject have expressed a similar opinion, and I should say, from what I have had an opportunity of observing, that in proportion to the more perfect medical organisation of a country (which affords the public a guarantee for the efficiency of its medical practitioners) so much the less do quackery and irregular practice receive encouragement; whereas, on the other hand, these evils are the invariable consequence of a defective system under which the public is supplied with a large proportion of incompetent medical attendants. Notwithstanding the general improvement in medical education, and the great advance that has been made in medical science since Adam Smith wrote his standard work, yet, owing to our inefficient medical organisation, the quotation from it which I have prefixed to these observations is nearly as applicable to the present day as it was to the time when it was penned.

confusion, so that no man could be expected to give or form an opinion but a man who had known by experience the value of conflicting claims."

* After the passing of the Act of 1858, a writer in the "Lancet" (August, 1859) observed: "It should be remembered that Parliament legislated, not because it had any fancy for the subject of medical policy, but because it was absolutely nauseated and disgusted with the whole question. It was completely sickened and tired out, and allowed something to be done which many who supported the bill regarded as an evil rather than encounter the annoyance of further agitation."

These remarks are corroborated by a recent writer whom I have quoted ("Medical Critic and Psychological Journal"), who observes: "Charlatanism is by no means confined to illegal practice. To see the fullest-fledged charlatanism we need not go beyond the bounds of the profession. The most refined quacks stalk under cover of a legal qualification. The Register may perhaps be held *in terrorem* over the most arrant of those, but after all the only check upon them must be in the tone adopted by the body of the profession."*

Again, "Is it not obviously true that the prosperity of quackery is the measure of want of confidence in legitimate medicine? 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."

Mr. Carmichael observed several years ago, in his speech already quoted: "The community at large is much more deeply concerned than we are in our exertions in the cause of reform. We only look to the preservation of character and our rank in society, but they have to look to the preservation, not only of health, but of life. Ere long, they will be awakened to a just sense of having none but well-educated practitioners, to whom they may with confidence entrust their health and lives."†

* "The profession," said one of its most esteemed members (Dr. Wilks), "is not injured by Morison or Holloway, but by those ten thousand worse charlatans who, under sanction of the law, are eating away our very vitals. Let us look to ourselves; the disease is an internal one."

† Dr. Priestley, in an introductory lecture to the Middlesex Hospital School, justly remarked that the various medical associations formed for the purpose of redressing abuses, and advancing the interests of the medical profession, were apt to dwell more on the hardships inflicted on the men themselves, than on the inevitable and graver consequences which must ensue to the public as the result of these. The member medical, he added, cannot suffer without the

An unbiassed statement of the causes of the deteriorated condition of the profession such as I have presented, greatly elucidates the confusion, or state of chaos, as it has been termed, in which medical affairs have been involved up to the present time. Though a small number of interested individuals may find their advantage in the continuance of the present disorganised state, and be averse from any change, yet all classes of the community suffer more or less from the inefficiency and overcrowding of the profession, and the consequent increase of pushing pretenders, irregular practitioners, and empirics; while the profession suffers from its being lowered in public estimation and confidence, and from the very prevalent impoverishment of a large portion of its members, from which many of those occupying prominent positions are relatively not exempt.* The zealous cultivators of medical science likewise suffer from the want of due encouragement; their numbers are consequently diminished, and the progress of science is materially impeded.

We see, therefore, in the medical system of this country causes operating to deteriorate the profession that are not met with elsewhere in Europe—viz.:—

1. The absence of any legislative supervision.
2. The regulation of medical affairs being left to a number of corporate bodies and universities having conflicting interests.
3. Examiners for medical and surgical diplomas in those bodies having a pecuniary interest in the number of candidates who present themselves for examination, and consequently the overcrowding of the profession, and the introduction into it of many imperfectly qualified persons.

whole body politic suffering likewise, and he should rejoice, as well for the sake of our common humanity as for the credit of our noble profession, to see the major evil more frequently put to the front, and the effect of conditions which lowered the status of medical men shown oftener in the aspects they bore to the welfare of the mass. There was no disguising the fact that it was easier to grow rich by adopting some kind of charlatanry than by following legitimate physic. It was useless to disguise the fact that there were among themselves faults which called loudly for reformation, and which, so long as they continued, must shake public confidence in them.

* The late Mr. Guthrie stated before the Parliamentary Committee that such was at that time the state of poverty of several of the examiners of the College of Surgeons, that the examination fees were a most important consideration for them, and that, in consequence of the advanced age and incapacity of some of them, it was proposed to pension them off upon that fund.

4. The prevalence of favouritism, undue and extra-professional influences, in the election to hospital appointments, and the consequent frequent inefficiency of the teachers in the practical departments of medicine and surgery, and likewise as respects the treatment of hospital patients. Moreover, the great opportunities presented by hospitals for promoting the progress of medical and surgical science are by this means often made but little available for this purpose; while, by the frequent exclusion of highly-qualified gentlemen from the staff of hospitals, a vast amount of talent by means of which these opportunities might have been made conducive to this object and to the public welfare, has been lost to the country.
5. The election, without regard to superiority of qualification, of gentlemen who have held hospital appointments to examinerships, and into the Medical Council, as delegates of the various corporate bodies, whose interests alone they have sought to promote.*
6. The separation in education of medicine from surgery; the too exclusive attention to surgery on the part of a majority of students who in their after career are called upon to practise *medicine*, and the existence of a large proportion of medical practitioners who possess only a surgical diploma.
7. The absence of a due appreciation of professional and scientific claims, which restricts the number of zealous cultivators of medical science, and not unfrequently occasions the ruin or expatriation of highly-qualified men, whose talents might otherwise have been made available towards adding to the stock of knowledge, and promoting the welfare of the community.
8. As a consequence of the last-specified and other causes, the frequent adoption of various indirect and unprofessional

* In my pamphlet on "The St. George's Hospital Medical Staff," I extracted from the Medical Directory of that year a list of the titles and qualifications of the representatives in the Medical Council of the corporate medical institutions and universities of England, from which it appeared that, with the exception of the President (Dr. Burrows) none could lay claim to distinction from their ostensible professional or scientific labours. Indeed, some of them have shown themselves to be especially obstructive as regards reform. Thus, Mr. Arnott and Dr. Storrar moved and seconded a resolution at a meeting of the Branch Council for England, to the effect that "the Branch Council are of opinion that it is not expedient at the present time to engage in fresh legislation." On which a writer in the "Lancet" observed: "This resolution will take the profession by surprise."

means of attempting to succeed in practice, by which ill-feeling and jealousies between members of the profession are fostered, the profession itself is lowered in public estimation, and the extension of quackery is favoured.

The principal requirements to be embodied in a bill for the effectual correction of abuses and for improving the medical organisation of this country appear to me to be the following:—

1. A suitable representation of the medical profession in Parliament, and an efficient legislative superintendence of medical affairs, such as exists in the other civilised countries of Europe.

2. The formation of a competent and disinterested Medical Council for regulating the details connected with medical matters, under the supervision of the Secretary for the Home Department, and accountable to Parliament; and periodical reports of its proceedings to be published. (The Council needs not be wholly composed of medical men, but those forming its most essential part should be well known, irrespectively of their connexion with particular institutions, and should be elected by the votes of members of a certain standing in the profession.)

3. The numerous bodies now empowered to grant licences to practise to be superseded by three central licensing boards, one in each of the capitals of the empire; the licentiates in medicine, surgery, and midwifery who pass the examination at one or other of these boards being authorised to practise in any part of the United Kingdom.*

* On a late occasion of the annual meeting of the Edinburgh Medical Society, Professor A. Wood observed, in regard to the expediency of combining and concentrating the too numerous licensing boards: "I must state it as my conviction that there is no one measure that would do more to equalise and make efficient medical examination and testing than the formation of combined boards for licensing in medicine and surgery; composed in England of the Colleges of Physicians and Surgeons, and the Apothecaries' Company; in Scotland, of the Colleges of Physicians and Surgeons, and the Glasgow Faculty; in Ireland, of the Colleges of Physicians and Surgeons, and the Dublin Apothecaries. Thus there would be constituted only three instead of nine licensing boards."—(*British Medical Journal*, April, 1864.)

Many years ago, in my "Remarks on Medical Organisation and Reform," I advocated the formation of three licensing boards—one in each of the capitals of the empire—not, however, to be composed of members of the existing corporations, of which the central examining boards should be entirely independent.

4. The universities, colleges of medicine and surgery, and Apothecaries' Companies, to be empowered as heretofore to grant degrees and diplomas to licentiates who pass their examinations, and who may wish to practise medicine (as physicians) or surgery separately, or both combined. No medical degree or diploma, however, to be conferred upon any one who has not passed the examination at one of the central boards.

5. In no case should examiners have a pecuniary interest in the number of candidates presenting themselves for examination; their compensation should be by a fixed stipend, as it is in other countries.*

6. Among the chief functions of the Medical Council may be specified the supervision of hospitals, both as regards their internal management, and also the competency of the medical officers and lecturers attached to these institutions. Private schools should also be subject to the supervision of the Council, as affording a guarantee of the competency of the teachers.†

* A correspondent of the "Lancet" (May, 1864) remarked on this point: "An attentive perusal of the report of the Medical Council has only confirmed an opinion entertained by me as well as by many others—viz., that a body vested with the power of granting licences to practice should be entirely unconnected with and independent of the old educational or corporate bodies. It should be appointed by and responsible to the general Government, which is the abstract representative of the interests and well-being of a nation, as well as the custodian of its purse. As long as there are rival interests to be promoted and differential advantages to be obtained will it continue to be detrimental to the cause of sound medical knowledge that the universities, colleges, or schools of any corporation, should have the power of granting the *ad practicandum* licence."

† Professor H. Bennett, of Edinburgh, observed in a lecture on "Medical Education:" "Such lectures as are good and well-delivered do not occasion loss of time to the student. If the lecturer knows little of his subject, reads a monotonous compilation, is incapable of fixing the attention of his class, or has not sufficient means for illustration or experiment, his lecture can produce little effect. The chief thing is that pains should be taken *to obtain good instructors*. It is the lecturers to whom the fault of the inutility of lectures is to be attributed."

The following passages on medical teaching occur in an article, "The Medical Teachers' Association," that appeared in the "Medical Times and Gazette" of May 18, 1867:—

"The system and management of medical teaching is imperfect and wasteful to a degree almost incredible; and of this many proofs might easily be given. Up to this time there exists no common bond of union between the teachers. Medical teaching is with us a private speculation. Every hospital which can succeed in having a hundred

7. Due encouragement should be given by the Legislature to the cultivation of medical science by conferring suitable distinctions and recompenses upon such persons who prove themselves entitled thereto.

8. In the practical department of education means should be adopted for ensuring on the part of students that a greater share of their attention be directed to internal pathology and therapeutics than has heretofore been the case, instead of to surgical pathology and operations.

(The formation of the central examining boards would greatly tend to achieve this object, as persons could not then practise medicine under a mere surgical diploma.)

and odd beds must needs have a medical school attached to it; and no matter whether the various members of its staff have or have not the faculty of teaching, each one must undertake to lecture on some subject required by the medical curriculum of the day. Hence, in the nature of things, arise jealousies and rivalries between the several schools, and the success of each becomes more important than the advancement and perfection of medical education. The consequence is that mere lecturing holds the first place in our system, and men enter the profession absolutely ignorant of the practical bed-side work that awaits them, and have to learn clinical medicine and surgery on their private patients. This state of things is far less possible under the system of endowed chairs and academies of medicine which obtains on the Continent; and it is by the establishment of some such system that we must look for the improvement of medical education in England. At present, the greater number of lectureships are actually a tax on the holder's pocket; and very few indeed pay well enough to induce the most able man to undertake them, and devote to them the time required to make his teaching anything like full and perfect."

In a letter in the same number of the "Journal" Dr. Lionel Beale remarks on this head: "It may be quite true that the clinical practice of our wards—the very highest branch of teaching—is meagrely and unsystematically handled. But if this be so, who is to blame? Is there really much demand for careful clinical teaching in London in these days? The majority of students only require certificates that they have attended. Is it therefore to be wondered at that many students should be careless about attending to this and other branches of study of real importance? Examiners examine in some things, but not in clinical medicine, nor in certain branches of scientific knowledge of the utmost importance to medicine, and he (the student) naturally concludes that his examiners consider these things of very little importance. Of course he agrees with them in opinion, and acts accordingly. It seems to me but fair that the public and the profession should know that the teachers are not responsible for the wretched state of medical education at this present time."

Though there is much reason in these remarks, nevertheless it cannot be denied that, owing to the existing system, many of the teachers are scarcely competent to perform the duties they undertake.

APPENDIX.

A PENDANT TO THE "AUTOBIOGRAPHY" OF SIR BENJAMIN BRODIE.

"If you would know a man's character, look what he does in trifles, and you will be able to form no inaccurate notion of what he would do in greater things."
—(*Sir B. Brodie's Discourse to Students.*)

When treating of medical reform on a former occasion, I stated in a postscript, as directly bearing upon the subject, my conviction, deduced from facts within my own knowledge corroborative of the statements of other unprejudiced parties, whom I quoted, that Sir Benjamin Brodie, notwithstanding his high professional qualifications, was not a fit person to be allowed to take any prominent part in the regulation of professional affairs; that his influence had been exerted in a manner detrimental to the interests of the profession, and that this opinion was shared by a large proportion of its more advanced members, who had paid attention to the course of events relating to it for several years past. Being again impelled to revert to the subject, with every disposition to respect the adage, *de mortuis*, &c., I might have let the matter of that postscript rest, although the reasons which induced me to append it still exist, but for the partial statements and misrepresentations that have been injudiciously made by some of Sir Benjamin's friends, and in some of the medical journals, tending to convey to those who are not better informed an erroneous impression both of his character and conduct. I therefore deem it incumbent upon me to controvert these partial assertions by an appeal to facts, instead of allowing them to pass in silence; both in self-justification, to prove that I was not wrong in what I had previously advanced, and in order that the profession at large, as well as other persons who take an interest in medical matters, may, on the fair grounds of *audi alteram partem*, be enabled rightly to estimate the real state of the case; for it has reference, not merely to the individual, but also to the evil results arising from the absence of any legislative supervision of the profession.

Sir Benjamin Brodie's eulogists, while in some instances expressing opinions directly at variance with those formerly held by them on the subject, have restricted themselves to making general assertions of an adulatory nature, without supporting them by a single valid fact. I am far from ascribing this circumstance on the part of some of them to an intention wilfully to mislead; but much may be placed to the account of partisanship, much also to that of deficiency of accurate

information, or of others who, not having had sufficient opportunities of knowing much of Sir Benjamin, may have derived their estimate of him from the representations of partial journalists, or from *ad captandum* discourses to students, delivered chiefly with a view to their publication, rather than from substantial grounds on which a just inference might be based. In either case, however, an impartial inquiry will disprove these unmerited eulogies, and I doubt not will justify the conclusion at which so many others as well as myself have arrived respecting this question, which I repeat is not to be regarded as one of a mere personal nature, but as one affecting the greater question of medical reform.

To quote a few of the eulogies published respecting Sir B. Brodie. One of his staunch partisans, Dr. Acland, Regius Professor of Medicine in the University of Oxford, prefixed to the last volume of the "Proceedings of the Royal Society," and also published separately, a biographical notice, which in several passages contradicts itself. Thus, it begins by stating that Mr. Brodie "had in early life no particular advantages," yet a few pages further on it states that "Dr. Denman, Dr. Baillie, and Sir R. Croft, eminent and admirable men, were connected with his family by marriage; that through Sir Everard Home he formed the acquaintance of Sir Joseph Banks; that at the age of twenty-five he became assistant-surgeon to St. George's Hospital, and that in 1811 he began to be a frequent visitor at Holland House." The author then goes on to designate him as being "a gentleman according to his own definition of the word," adding, "He did to others what he would desire would be done to him; *he despised nothing but moral meanness.* He had not the common faults of common men, for he had not their object; though he became rich, he *had not unduly sought riches;* though he was greatly distinguished, *he had not desired fame; he was beloved* (!) *not* having courted popularity; he deferred exclusively to none; he accepted what came to himself unasked; GAVE HIS OWN FREELY TO ALL WHO NEEDED, and sought help from no one but for public ends."

The author terminates by characterising his biography as "a delineation too feeble for so complete a man," adding, "In the quality of his mind *he was not unlike the Duke of Wellington.*"*

Another of Sir Benjamin's personal friends, Dr. Forbes Winslow, designated him in the "Medical Critic" (since discontinued, but of which Dr. Winslow was the editor) as "a great and good man, gifted with an order of intellect which *in any age would have accomplished mighty results.*" A third friend, Dr. Mackesy, in a public discourse spoke of the loss *the nation, the educated world, and the profession in particular* had sustained by his decease, and of "the great influence he steadily brought to bear in raising our social status." "No man," he added, "entered more feelingly into the hardships of the toiling and struggling practitioner."†

* It will be remembered that Dr. Acland is the delegate of his university in the Medical Council, and that it was he who proposed Sir B. Brodie for its president. In a former pamphlet I quoted from the Medical Directory his professional titles and qualifications.

† Dr. Mackesy, whose name was doubtless previously unknown to the profession in Great Britain, is a wealthy Irish provincial physician, who, though neither scientifically nor professionally distinguished, was elected President of the Royal College of Surgeons of Ireland.

The following observations were likewise made by some of the organs of the weekly medical press. On his retirement from active life, the "British Medical Journal" observed (March, 1861): "Sir B. Brodie is a man whose whole conduct throughout his long career stands before us as a model for imitation. In all cases of doubt or difficulty in which the interests of the profession have become entangled and compromised, the eyes of the profession have looked to Sir B. Brodie for a hopeful solution of the difficulty."

The "Dublin Medical Press," which it may be noted *en passant* formerly said "no man had more enemies in the profession than Sir B. Brodie" (and not without reason), remarked in 1862, "His aim and effort were ever directed to the advancement of the public status of medicine and its disciples rather than to his own aggrandisement."

"It would be difficult to conceive of any man," says a recent writer in the "Medical Times," "who in person, speech, writing, or *deed* gave greater evidence of thoroughness, truth, and sobriety, and of the absence of anything glaring or ostentatious."*

The "Lancet" also thus recently eulogised Sir Benjamin: "The great surgeon, the not less great philosopher, the accomplished gentleman. It may be truly said that this century has not witnessed a man who has done so much to raise the profession in public estimation and confidence. He steadily looks to the benefit of mankind as the supreme end and object of his art."†

That members of the medical corporations, representatives of those bodies in the Medical Council, personal adherents, and supporters of the system of misrule which Sir B. Brodie has been instrumental in upholding, should sound his praises, is only what might be expected; but that some medical journals should have re-echoed their voice, in some instances in opposition to their previously-expressed sentiments, can only be accounted for, when not referrible to intentional misrepresentation, by the supposition of their being of late years under the management of different editors, not sufficiently conversant with the state of things at an earlier period; for there was nothing in the conduct of Sir B. Brodie during his later years that would justify a reversal of their prior estimation of it, and in so far as I am aware, there is no distinguished and unbiassed member of the profession cognisant of the facts, who could be found to endorse this extravagant panegyric;

* This statement, it will be seen, strikingly contrasts with the extract I have introduced further on from the same journal.

† The fulsome adulation of Sir B. Brodie in the "Lancet" of late years is best controverted by a reference to its pages of a prior date. Among other absurdities is the following passage: "Such a man as Sir B. Brodie would add lustre to the House of Lords. His elevation to the peerage would obtain for the Prime Minister *the gratitude of the profession, and the admiration of the whole civilised world.*

The "Medical Times" remarked on this occasion: "The 'Times' has given an official denial to the report [of a peerage about to be conferred], which is generally regarded as a piece of clumsy flattery of a man who, for two-thirds of his life, was the object of incessant abuse in this very journal."

The "Medical Circular" characterised the report as "a mere HOAX, and a most injudicious one, on the part of the 'Lancet.'"

The "Dublin Medical Press" remarked on this occasion: "The proposal to admit Sir B. Brodie as a peer was indignantly scouted by the Government in the House of Lords."

while, on the other hand, there have not been wanting unprejudiced persons whom it has induced publicly to express their dissent from these one-sided assertions. Thus, a writer in the "Medical Circular" (May, 1865) under the signature of "Vigilans," referring to the *outré* praises bestowed upon Sir B. Brodie in a review of his "Autobiography" and works in the "Lancet," remarks that he is there pourtrayed "in colours which he most certainly did not deserve," and in disproof of which the "Lancet" itself may be quoted when the late baronet was plain Mr. Brodie.* "I say," the writer adds, "he was *not* a man of a singularly open and liberal mind; I say he was *not* a 'perfectly honest' though he was 'a very courteous and accomplished man.' But courtesy is often another word for deceit, and his accomplishments may have embraced *deceit, trickery*—aye, and *knavery*. From a personal knowledge of the man, my obituary notice of him would be brief. He was an accomplished surgeon, but of his personal character, *the less that is said of him the better*. I have very grave doubts, indeed, whether great success in medical practice is possible associated with genuine honesty."

Without, however, dwelling upon the unfounded assertions of interested "friends" or partisans, let us judge from actions, and we shall see how far they are justified by a reference to facts. Where is there any one fact showing that the influence of Sir B. Brodie "was employed in raising our social status?" or that the present century "has not witnessed a man who has done so much to raise the profession in public estimation and confidence?" Why, it is a matter of notoriety that the profession has become more and more lowered in public estimation and confidence within the last thirty or forty years—in short, ever since Sir B. Brodie took an active part in its affairs; to which circumstance I conceive this deterioration to be in some degree owing. Can the charter which he caused to be forced upon his reluctant colleagues in the Council of the College of Surgeons by earwigging the Minister of the day (who bore the odium of passing the measure, its originator keeping concealed in the background), be considered as having tended to raise the social status of the profession †

* The alliance between the parties appears to have dated from the time when Sir B. Brodie gave his evidence in favour of Mr. Wakley, junior, in a trial consequent on an inquest held at the Free Hospital on a fatal case, in which Mr. Wakley (one of the surgeons) was implicated. Subsequently, when the conduct of another surgeon of this hospital was likewise subjected to judicial inquiry, on account of a fatal case, the tone assumed by the "Lancet" with reference to it being in opposition to this surgeon, was strongly condemned by the profession, and the journal was in consequence on the point of being excluded from the library of the Medico-Chirurgical Society, when at the meeting in which the question was to be decided, Sir B. Brodie, who did not attend the meetings for discussing professional subjects, came to the rescue, and made one of his sophistical speeches, which, aided by a strong party muster, averted the exclusion by a small majority.

† The late Mr. Guthrie declared that forty-nine out of every fifty members of the profession were opposed to the charter, which created by arbitrary selection, and with but little regard to superiority of qualifications or professional standing, a higher grade of Fellows, above the whole body of members of the College, all of whom legally possessed equal rights and privileges.

When this question was brought under consideration in the first Parliamentary committee on medical reform many years ago, Sir Anthony Carlisle, on being questioned, replied: "I am of opinion that if you elevate one grade in the profession of surgery you degrade the others. You must then have two diplomas, and all who possess the first would feel themselves injured. We have no right to set up another class of surgeons. Men must make themselves eminent. I do not think that institutions can do it for them. There would be great danger in the experiment; I think it would fail."

Dr. Webster, of Dulwich, remarked on this subject at a public meeting: "A superior grade in the College of Surgeons was a favourite scheme of Sir B. Brodie's, in accordance with a paper published in the "Quarterly Review." The same state of things has created heart-burnings in the College of Physicians for 200 years."

† The "Medical Circular" observed on this head: "As the recognition of the principle was merely a concession to the reiterated demands of the profession, we cannot give Sir B. Brodie much credit for the construction of a charter on that basis, and inasmuch as that concession was associated with great injustice, we do not well see how he can be excused of all blame."

Nevertheless, in an adulatory biographical sketch that appeared several years ago in the "Lancet," no public measure or act could be brought forward on behalf of Sir B. Brodie beyond this charter, which the writer considered as beneficial on account of its provision with reference to the election of councillors, giving credit to Sir Benjamin for the "introduction of the representative principle into the College of Surgeons."† Such a principle has, however, never been acted upon.

If the profession has looked up to Sir B. Brodie for relief or assistance in "cases of doubt or difficulty," it has looked in vain, for no instance can be cited in which so just an expectation from one possessing such influence has been either realised or satisfactorily responded to; nor, indeed, can any instance be adduced by his partisans in which Sir Benjamin's influence has been so exerted in a manner calculated to benefit the profession; though doubtless there has been plenty of talk and of pretended interest which may have led many persons to suppose that his influence had been or would be exerted for this object. Again, can a single instance be adduced of his giving "his own freely to all who needed," or of his influence being employed, or of personal effort being made on his part, to relieve or assist the "toiling and struggling practitioner?" The only persons whose advancement Sir Benjamin has sought to promote, have been hangers-on, or private assistants, upon whose subserviency he could count, but who, it is scarcely necessary to say, were never likely to distinguish themselves; the latter having doubtless paid a handsome premium for the privilege of being drawn in his wake from the obscurity in which they would otherwise have justly remained. On the other hand, it is well known that, in order to bring forward his *protegés*, he has retarded the advance of some and destroyed the professional prospects of others, men who had given proof of high ability, of which I have cited some examples.

It may farther be asked whether Sir B. Brodie's defence of the proceedings of the College of Surgeons Examiners (which had repeatedly been highly censured) was calculated to benefit the profession, when, on a comparatively recent occasion, on application being made to him, as President of the Medical Council, by bodies of practitioners from different parts of the kingdom for redress against the shameful conduct of the Court of Examiners in admitting to the College membership persons who it was known had not gone through the

course of study required by law, he attempted, in a published reply to these applications, to justify this conduct by a reference to the "vested interests" preserved under the Apothecaries' Act of 1815, and by sophistical reasoning that would not pass current with any thinking person.

Sir Benjamin Brodie's evidence before the Parliamentary Committee was as unsatisfactory as could be; and if he gave up when he did the posts of examiner at the College and of surgeon to St. George's Hospital, was it really, as has been said by one of his adulators, in order to make way for junior men, or was it not rather because he found his time might be otherwise occupied more profitably to himself?* It is a very common thing for physicians and surgeons, who have acquired large practice through their connexion with hospitals, to give up their posts in these institutions when the object of this connexion has been achieved. So unpopular was Sir B. Brodie with the hospital students, on his retirement from the surgeoncy, that the attempt to get up a subscription among them, under the auspices of his private assistant, Mr. Charles Hawkins, in order to present him with a suitable testimonial, failed, and only a bronze medal with his profile could be produced from the proceeds.

This unpopularity among those connected with the hospital, as well among the profession, was fully deserved, for the whole proceedings of Sir Benjamin connected with the elections, and with the management of its affairs, tended in no small degree to lower the profession in public estimation, and were highly injurious to the institution itself, as was acknowledged by most of the medical journals, and by some of the organs of the political press of the day; causing it to be designated as "a focus of intrigue," and rendering it, as a school of practical medicine and surgery, during the predominance of his influence, inferior to most of the other large metropolitan hospitals.

The "Lancet" (January, 1856) adverted to the "sorry figure made by this hospital in the 'pass' and 'honour' lists of the London University in the annual competitions, which bring together all the foremost students of the kingdom."

As respects the financial mismanagement of this hospital, which a few years ago attracted some share of public attention, we read in the volume of the "Lancet" for 1834: "The board of management, though professing to be open to every governor, is composed of the medical officers of the hospital, and the expectants and dependants attached to Sir B. Brodie, who are all rigidly punctual in their attendance, and vote as he may wish. These parties, having supreme control at the weekly board, proposed a committee to amend the laws, and then *nominated themselves and their friends* as that committee. They then drew up a code which proposed *to give unlimited power over the funds* of the institution, and *over all the offices, to the weekly board*. The great body of governors were not made sufficiently aware of the importance of inquiring into the business of the institution, or they would undoubtedly have attended more fully, and not left its

* "The business of examining candidates [to men who have obtained wealth] becomes after some time very irksome, being very little compensated."—(Brodie's "Autobiography.")

arrangements in the hands of the medical officers and their immediate friends."*

This state of matters did not fail to produce baneful effects, and the number of subscribers, especially in the district where the hospital is situate, greatly decreased. Some years afterwards a glaring instance of malversion of the funds gave rise to indignant comments in several of the journals, as well as on the part of individuals—viz., the grant voted by the weekly board of 200*l.* per annum towards paying "the rent, taxes, and repairs of the premises in Kinnerton-street," which Sir B. Brodie admitted was his property, he having formed there a medical school, with the object of supplanting the efficient school next door to the hospital, that had been established several years previously by Mr. Lane (who was opposed by Sir Benjamin on his thrice canvassing for the assistant-surgeoncy at St. George's). The part of the report published by the board respecting this job, falsely stated that the measure had "obtained the direct support of the governors," the vast majority of whom knew nothing about the matter. On this occasion, a correspondent of the "Lancet" wrote: "There is an account in a recent number of the board's voting 200*l.* a-year to support an unsuccessful speculation of Sir B. Brodie's, notwithstanding the opinion of one of the most eminent lawyers of the Chancery Bar that such misappropriation of the funds of the charity was illegal."

The grounds on which the proposition for the grant was made are thus stated in the report issued by the board (1849): "The medical officers and lecturers are unanimously of opinion that *it is reasonable that the governors of the hospital should provide lecture-rooms for giving instruction in anatomy and chemistry*. They have arrived at this conclusion, after a careful inquiry into the practice of other hospitals, and after satisfying themselves that *it is indispensably necessary to the welfare of this institution* that the pupils who are to be employed as house-surgeons and dressers *should be taught anatomy and chemistry in connexion with the hospital*."

The falsity of such reasoning must be evident on the slightest reflection; for how could the welfare of the charity be affected by the pupils deriving their anatomical and chemical instruction from any particular school, even supposing it to possess teachers of the highest reputation? If other metropolitan hospitals have anatomical schools attached to them, they have been able to cover their own expenses; but if not, they would never have been allowed to appropriate to this purpose funds subscribed exclusively for the benefit of the sick poor. In this instance, moreover, there was no occasion at the time for the formation of another school in this part of the town, as was proved by its not succeeding. When the subject was subsequently brought before a general board, Sir B. Brodie affirmed that his school had been rendered necessary by the bad conduct of the pupils of Mr. Lane's school. This aspersion was indignantly refuted by one of the

* At a meeting of the governors (July, 1834), the Earl of Roseberry in the chair, "held for the purpose of considering the new law for the regulation of the hospital, the amendment which was proposed in opposition to the measure brought forward by the board, and advocated by its adherents, was negatived by a small majority (38 to 31). Of the majority twenty-eight were medical governors dependants of Sir B. Brodie."—(*Lancet.*)

teachers present (Dr. Wilson), on which Sir Benjamin left the room without replying; neither did he answer a letter subsequently written in the joint names of Mr. Lane and Dr. Wilson, requesting to know on what grounds he had made this charge.

Some years later, the number of West-end students having increased, the Kinnerton-street school more than covered its expenses; nevertheless, the 200*l.* *a-year has still been drawn from the hospital funds on its account—the sum thus appropriated now amounting to not much less than* 4,000*l.* *

From the letters which were published in the "Times" about six years ago with the signature of "A Governor," it appeared that of the 225,000*l.* which St. George's Hospital possessed when the committee of management—subject, as we have seen, to Sir B. Brodie—was formed, there remained *nothing*. The Board has since been repeatedly soliciting by advertisement aid from the public. "Had the weekly board," remarks "A Governor," "contented themselves with spending the interest of their capital, in addition to their other sources of income, they would now have had an endowment of 350,000*l.*, with the produce of which they might have relieved the sick for ever, and they would have been in as good a financial position as any hospital in London. The management of the hospital," he adds, "practically rests with a very small number of individuals, though it is theoretically supposed to be under the control and management of many hundred governors, over whom, however, the blame of mismanagement can be spread should anything go wrong. One of the most intelligent and benevolent supporters of the hospital [Mr. Holland] resigned his office [of treasurer] when the present system of improvident expenditure was resolved upon, causing his earnest disapprobation of it to be recorded in the minutes of the weekly board."—("Times," July 16, 1860.)

A few days after the publication of this letter, a gentleman also wrote to the "Times," stating that he had been requested to reply to it, but that a worse choice of a defender of the management could hardly have been made, inasmuch as he cordially concurred in the justness of "A Governor's" observations. He likewise adverted to the comparatively little support the hospital received from its

* Prefixed to the recently-published "St. George's Hospital Reports," is an account of the hospital school by Dr. Page, the senior physician, who says on this subject: "Some disagreement having arisen between Mr. Lane and a majority of the medical officers of St. George's, it *was deemed advisable by the latter* to have an anatomical theatre and lectures more closely connected with the hospital staff, and under their entire control. Suitable premises were accordingly engaged in Kinnerton-street. The capital was advanced by Sir B. Brodie. In 1849 the whole financial arrangements of the school were reconsidered, and put upon a *juster* footing. It was thought expedient to bring the subject of the finances of the school under the consideration of the governors of the hospital. After a careful deliberation, a majority of governors (the weekly board) decided that aid ought to be given to the support of the school, and voted a grant of 200*l.* per annum. Though inadequate to defray the rent and other expenses of Kinnerton-street, the grant is a gratifying earnest of the recognition of the school, and of *the interest felt by the governors in the education of medical students.*"

This account appears to be the only literary production of Dr. Page, whose qualifications are thus specified in the "Medical Directory:" "Physician to the Economic Life Society, Physician to St. George's Hospital, and late Lecturer on the Theory and Practice of Physic, late Faculty Student Christ Church, Oxford."

wealthy neighbourhood, many of whose residents *contributed to other London hospitals.*

The "British Medical Journal" of that date published an article on "Hospital Extravagance," the writer of which, after mentioning St. George's Hospital as "a glaring instance of profligate expenditure and cringing supplication for increased means," added, "enormous sums have been from time to time bequeathed to it, but the governors, or rather *the active clique who always manage these things*, elected to live upon their capital instead of their income. Notwithstanding that a very cornucopœia of wealth has been showered upon this hospital, it is obliged to confess that its expenditure exceeds its income by 6,000*l.* a-year, and, what is worse, the very springs of charity appear to have been dried up in its wealthy neighbourhood, the richest quarter of London contributing only 780*l.* per annum towards its funds." The writer of a leader in the "Medical Circular" does not, however, ascribe the disappearance of the hospital funds solely to a profuse expenditure, as he observes: "We have organised the vice [corruption] into a system. There are Sir John Dean Pauls amongst us yet—good men, charitable men, until they shall be found out. This large sum is gone, irretrievably gone, and instead of being independent, as they might have been, the governors [board] are suing for public charity to keep them out of the maze of trouble into which they have been plunged."

Thus we see that for thirty years the affairs of St. George's Hospital have been managed by a board subservient to Sir B. Brodie, which has been able to carry out its objects, both as respects the disposal of the funds and the nomination to vacant offices, notwithstanding the strong opposition that has at times been made by independent governors who sought to promote the welfare and improve the efficiency of the institution for the objects for which it is designed. During nearly the whole of this period Sir B. Brodie was the acting trustee (the funds are vested in the names of the trustees), a connexion of his (the late Mr. Serjeant Thompson) being treasurer during the greater part of it, the other treasurer resigning in consequence of the financial mismanagement, and protesting against the proceedings of the board.*

We further see that under this management the large property the hospital possessed has disappeared, and that the 200*l.* a-year illegally granted by the board in 1848 for a purpose wholly unconnected with the objects the charity has in view, has ever since been paid, notwithstanding the alleged reason for the grant has for many years ceased to exist, and notwithstanding the want of funds, for an increase of which the board has been soliciting public aid. Moreover, as respects the elections of medical officers, we see that while gentlemen of acknowledged high capability—to some of whom I have referred in a former pamphlet—have been, through the undue influence exerted by Sir B. Brodie, prevented from occupying posts to which their claims entitled them, others have been allowed to fill those posts who have had no valid title to preference, and who were never likely to do credit to

* In the annual reports of the hospital affairs, prefixed to the list of subscribers, there appear among the instances of the "liberality of individual benefactors" and of "private munificence" the two prizes competed for by the hospital students, bearing the designation of Sir B. Brodie's and Mr. Thompson's prizes, the value of the former being 5*l.*, that of the latter 3*l.*

their nomination.* Consequently, with two or three exceptions (specified in "The St. George's Hospital Staff," pp. 39-40), little or nothing was done during those years by the medical officers towards contributing to the stock of medical or surgical knowledge, while, as regards practical instruction, this school was extremely inefficient.

Those persons who have been present at the delivery of Sir Benjamin's addresses to students, in the board-room of St. George's or elsewhere, as well as the larger number who have perused them on their publication in the medical journals, could scarcely fail to be struck by the seeming earnestness with which he sought to inculcate upon his audience the necessity of the medical practitioner's being distinguished by "an upright bearing, liberality, generosity of character. . . . Above all, you must be gentlemen," &c. If it be allowed to apply the *argumentum ad hominem* in this case, I think it would not require a very strict investigation to form an opinion as to how far Sir Benjamin's own actions have been in accordance with the ennobling sentiments to which he has given utterance on similar occasions. To cite an instance or two in which his acts were in direct opposition to the tenor of his discourses. Several years ago an appeal was circulated among the profession residing in London, on behalf of practitioners' widows and orphans who had been left destitute. The circular contained a long list of subscriptions and donations that had been already made. In that list the name of Brodie appears, with five or six other names, opposite to a donation of a pound or a guinea; this sum being the contribution of a man in the receipt of, perhaps, the largest professional income, owing, in no small degree, to the recommendations of general practitioners in various parts of the country. It appeared, by a subsequent list, that he had made an additional donation of five pounds, and had become an annual subscriber of *one pound*. A little further on in the alphabetical list are seen two other well-known names—viz., Dr. Burrows, who had made four donations amounting to 37*l.*, and Sir James Clark, who, besides an annual subscription, was a donor of 40*l.* In the first list of donors to the subsequently-established Benevolent College (for granting pensions to poor and disabled practitioners, and for educating the sons of those who died in poverty) the name of Brodie does not appear, but it is subsequently placed opposite a donation of 10*l.* (the lowest sum constituting a life-governor), being half that given by his next-door neighbour, Mr. Yearsley, the aurist, and a tenth of the amount contributed by Sir John Forbes.

In his professional relations with individuals, likewise, Sir Benjamin has acted, on several occasions that have become known, in a manner very different from what might have been expected from the tenor of his public discourses. The following instance came under my cognizance several years ago: A gentleman formerly practising in a town some miles from London, who had in the course of his practice recommended patients to consult Sir B. Brodie, called upon him at a subsequent period, to ask his advice upon his own case, and while

* On ultimately retiring from the contest, after three unsuccessful attempts to obtain the assistant-surgeoncy, Mr. Lane circulated among the hospital governors an "appeal," in which he stated that he found it "useless to contend against the influence unjustly exerted by Sir B. Brodie, to the prejudice of his just claims."

proceeding to show the part affected, was told to "make haste." On which he said he was aware his time was valuable, and that he did not wish to take it up without making compensation. Sir Benjamin then gave a more particular attention to the case, and after recommending what he thought advisable, took the proffered fee of 2*l.*

Some years ago a medical friend told me that a banker or merchant from Hamburg, residing, in reduced circumstances, in a suburb of London (Camden or Somer's-town), who had a small stone in his bladder, inquired beforehand what would be Sir Benjamin's fee for performing lithotrity. A sum was agreed upon, and the operation was successful. On subsequently visiting the patient, the operator proposed to make an exploration of the bladder, to ascertain whether anything remained, and afterwards sent a note (which my friend saw) requiring five additional guineas on that account.

"What a shabby fellow Brodie is," said to me a gentleman of my acquaintance with reference to a friend, who went to consult him about some complaint of the ear, when he referred him to a neighbouring aurist, taking, however, the proffered fee as if he had prescribed.

Subsequent events seem to have fully confirmed the justness of the observations made many years ago by the writer of a series of sketches of eminent medical men—under the name of "Probe"—which appeared in the "Medical Times" (vol. ix.):—

"There have been," says this writer, "many sketches of Mr. Brodie; flattery, interest, and friendship have essayed to represent him in the most favourable light; and, perhaps, the warmth of the personal estimate prevents its being a correct likeness. We prefer the daguerrotype style, which gives the man as he really is, without fiction, flattery, or fallacy.

"Sir B. Brodie is a very hard-working, clever, and intelligent man, an accomplished surgeon, a studious physiologist. He has no pretensions to genius. Some of his injudicious friends, when they place him on a very elevated pedestal, and genuflect before it, make themselves and the object of their idolatry ridiculous. His career has been marked more by consummate tact than by commanding ability, favoured by auspicious circumstances and sustained by untiring perseverance. In his lectures no pains are spared to make them perfect; in his essays and orations all is mechanical regularity; he adds line to line, sentence to sentence, page to page, like a carpenter making a chest of drawers. He is not particular from whom he takes his materials. In everything he is cautious, cool, calculating, deliberative. Every step is weighed; every word is balanced upon the lip before it is uttered. The simplest act is enveloped in mystery. He fancies himself the prince of medical diplomatists; he loves intrigue; language he thinks given to conceal his thoughts; he is the most natural Jesuit we ever knew; it is not the triumph of art in him, it is his disposition. They say that the same dissimulation, or rather indecision, marks his course in general politics; that he plays Pangloss well, and is all things to all men, and is only consistent in consulting the instincts of his own interest. He was considered as a medical reformer until his evidence before the committee of the House of Commons astonished us with its startling tissue of contradictions, in which he subtilised and sophisticated until he succeeded in rendering himself unintelligible. The narrow and illiberal views which he

sketched out there he has carried into effect in his late notable scheme of professional degradation.

"Sir B. Brodie is a spare, delicate man, with a sharp, intelligent, careworn face. His features are good; a prominent, well-shaped nose, placed obliquely, gives him two distinct profiles, so that, like a Roman divinity, he may be said to have duplicity stamped upon his countenance. His forehead his more broad than high, always in our mind the indication of the possession of talent; eye sunken, denoting absence of great command of language, perceptive organs very much defined, *secretiveness and acquisitiveness large, and self-esteem towering above all the rest*. The eye is sharp, penetrating, reminding us of the 'canny' expression so common in the Highlands of Scotland. He is admitted to be a man of quick and nice discrimination; his detection of disease rapid; his treatment bold and decided. His mind, though not sufficiently original to be classed with men of genius, possesses a great fertility of profound and practical reflection. His profession has been the food of his meditations. The ardour with which he has cultivated it proves that it has been entwined with his warmest predilections: as an author, plain, precise, almost to a fault—no ornament, no illustration. He never takes up a leading principle, placing it in a variety of views. He takes care to keep his name before the public eye at stated intervals. He loves notoriety, though he is too wily not to affect to avoid it."

With respect to some of the scientific and professional labours of Sir B. Brodie, this writer remarks: "He supported his experiments [on animal heat arising from nervous influence] by much specious reasoning. Magendie, Heuser, Huller, Carpenter, and Liebig, have demolished all the ingenious but erroneous statements upon this subject, and with it all claims to a great discovery in physiology. His work on diseases of the joints was written principally in the form of cases, plain and unpresuming, on a subject that had been much neglected; the composition simple, perspicuous, and full of judicious, if not original, opinion."*

Without any disparagement to Sir B. Brodie's professional claims to distinction, yet in a scientific point of view he must be considered by impartial persons competent to judge of his labours in this department as having been a "vastly exaggerated man," who, having had considerable extrinsic helps to his advancement, was enabled with his comparatively slender claims to scientific eminence to stand out in a prominent light, from meeting with but little competition in a country where the cultivation of science, if not positively discouraged, yet meets with no encouragement. Though Sir Benjamin's physiological

* M. Richet, in his prize memoir, "Sur les Tumeurs Blanches," published in the "Memoires de l'Academie de Medicine" (1853), expresses the following opinion upon this work: "Though conceived in a good spirit, it unfortunately is based upon data which are altogether inexact. It may suffice to refer to the ulceration of the cartilages. He bases his opinion upon several cases which are incomplete, and consequently valueless. He made his dissections with preconceived ideas, and he restricted himself to a much too superficial examination: he only saw the symptom, the principal phenomenon escaped him." M. Bonnet, in his elaborate work on "Diseases of the Joints," likewise exposes some of the doctrinal errors of Brodie's work, and a correspondent of the "Medical Times" remarked, "Many clever writers have registered their dissent from its doctrines."

investigations were zealously conducted, their conclusions were found to be inexact, and were disproved by subsequent investigators in the same field.*

"It cannot be said," remarked a writer in the "Medical Circular" (October, 1864), "that Sir B. Brodie had a suggestive or imaginative mind, or any of those qualities that constitute genius and enable a man to force his way against adverse circumstances, or to leave a perpetual mark on the science of his age. His name is unassociated with any bold operation or remarkable improvement in the surgical art." The "Medico-Chirurgical Review," in its notice of Sir B. Brodie's "Autobiography," adverting to his works, remarks: "After all, he gained more credit for acumen perhaps from his 'Lectures on Certain Nervous Affections' than from any others of his writings." These "Lectures" chiefly treated of a form of functional paralysis occurring for the most part in young or middle-aged females, of the nature of which when the lectures were delivered he offered no explanation, merely designating this kind of paralysis as "hysterical." In the first edition of my work on "Nervous Disorders" (a copy of which was sent to Sir Benjamin), I ascribed this affection to a state of debility or inactivity of the volitional faculty, which explanation was given by Sir Benjamin when these lectures were published in a separate volume, without there being any acknowledgment of the source whence he derived it—*this being the only passage marked in italics in his book*. The justness of this explanation, of which Sir Benjamin assumed the credit, has since been generally acknowledged, and has had great influence in improving the treatment of these affections.

As respects Sir Benjamin Brodie's non-professional and non-scientific publications, I consider that they rather detract than otherwise from the reputation of a man of science and letters—which opinion is corroborated by the reviews of them in some of the literary journals—and that they have served no useful purpose. Nevertheless, in this respect also their author has been in certain quarters made the subject of extravagant panegyric. His "Psychological Inquiries" was cried up to the skies in the "Lancet" as being a something transcendental, which would alone have ensured the author a high reputation; and yet the book is a mere hash-up, in the form of dialogue, of well-known physiological facts with comments thereon, of a popular nature. The expectation of there being something superior on the subject of

* Especially as regards the dependence of animal heat on the nervous system, and the dependence of the secretion of the gastric juice on the eighth pair of nerves. With respect also to a conclusion at which he arrived, as to the effect of tying the hepatic duct in arresting chylifaction, an eminent physiologist observes, referring to some other experiments: "These results disprove the opinion of Brodie, who believes the bile to be indispensable to the formation of chyle. Some writers," he adds, "have pretended, with Brodie, that the brain and spinal cord exercise a direct influence on the secretion of urine, which they conceive to be dependent on these organs. We have refuted this opinion in a convincing manner."—(Brachet's "Physiologie," 1855.) Another distinguished foreign physiologist, on passing in review the opinions of the most eminent investigators in this department, does not mention the name of Brodie; and in a subsequent part of his work only adverts to one of his conclusions to demonstrate its invalidity.—("Leçons de la Physiologie du Système Nerveux, par M. Berard, Membre de l'Institut.")

psychology in a publication to which the name of Brodie was appended carried the work to a third edition, but disappointment could not fail to ensue on its perusal, when there was found to be but little reference to psychology, in the proper sense of the term; it consequently soon fell into oblivion; and on a second series, more meagre in originality than the first, being published, it met with but little demand.*

The "Dublin Medical Press" remarked on this head (December, 1862): "Among those medical men who combine high professional reputation with distinction in the world of letters he was foremost. His 'Psychological Inquiries' were highly appreciated by the non-professional public. His paper on Homœopathy in 'Fraser's Magazine' is an admirable sample of clear philosophical reasoning, forcibly expressed, and full of conviction for those who desire to deal with the subject intelligently." Dr. Acland, speaking of this paper in his biographical sketch, says respecting it: "Full of years and vast experience, he felt himself called upon to leave, *as one of his last legacies to his countrymen, his manly answer* to some ill-grounded fallacies which fashion supports under the guise of medicine improved and reformed."†

* "As his second volume," says the reviewer in the "Lancet," "must necessarily pass through several editions, 'Psychological Inquiries' will be looked upon as a standard work—a work so creditable to its venerable author, that if he had written nothing else it might be justly regarded as sufficient to constitute a noble monument to his memory." On the other hand, the "Athenæum" says of it: "This work imperfectly fulfils the promise on its title-page." It is similarly estimated in the "Glasgow Medical Journal," and the "Boston Medical Journal" (June, 1858) likewise states the title to be a misnomer, and that the work is rather a popular than a scientific one.

"The intrinsic merits of this volume," says its reviewer in the "Critic," "would not obtain for it a wide and lasting reputation. As a thinker, Sir B. Brodie is neither very deep nor very bold. The title is not quite correct, for it is rather to physiology in a large, than to psychology in a limited sense, that the work relates. Sir B. Brodie belongs to a class of writers useful, probably, but neither stimulating nor suggestive. In an age of mediocrity and mammon, to give pungency to platitudes becomes a leading art. In this art our author excels; but it is an objection to platitudes that they are only half truths, or superficial truths. Sir B. Brodie has no descriptive, no dramatic power—*Eubulus, Crites,* and *Ergates* are the merest shadows. When, likewise, he attempts to paint a scene for us, we receive no distinct or vivid impression."

A correspondent of the "Lancet" who signs himself "Eubulus," referring to Sir B. Brodie's "Autobiography," admires the profound skill displayed by its author *in the acquisition of wealth and honours*, adding, "As an anatomist and surgeon Brodie is not to be compared to Sir A. Cooper, yet he acquired honours that were never conferred on Cooper."—(May, 1865.)

† This letter contains no arguments against the system beyond what had been brought forward by myself and others; while the homœopathists looked upon it as a godsend, by its having the effect of again drawing public attention to a subject that was greatly on the wane, and from its giving some of them an opportunity of writing pamphlets in reply to some statements of Sir B. Brodie's easy to be controverted; on which account I was induced to publish a rejoinder to these replies, with the object of setting the matter in its proper light (as a supplement to the fourth edition of my "Homœopathy and Hydropathy Impartially Appreciated"). The "Letter" was somewhat sharply criticised in some of the French medical journals. The "Gazette Medicale de Paris" (December 7, 1860) remarked on it: 'Each country is more or less acquainted with its own temperament, and possesses remedies which respond to its idiosyncrasies. Let us hope that this letter will produce upon the homœopaths the effect of certain insecticide powders. But if we may judge of English public spirit from that of France, the remedy would appear to us to be worse than the disease." The "Gazette Hebdomadaire" (November, 1860) also thus speaks of this publication: "We much fear that it will fail of producing its full effect. Who knows whether homœopathy will not find its account in this lecture? We may see what a career is thus opened to malignity; we may likewise foresee what a deluge of replies will be called forth by this provocation. Leave time to do its work; it will soon finish wearing out this threadbare cloak, of which they seek to conceal the holes with ill-assorted patches."

* "What powerful motive can have induced Sir B. Brodie to write to the 'Times' on the subject of tobacco?"—(*Medical Circular.*)

Sir Benjamin's long letter to the "Times" on the evils of smoking was severely criticised in some of the journals as being uncalled for, and as containing no new arguments, but some erroneous statements easily controverted.* This criticism doubtless deterred him from again seeking by this means to keep his name before the public, after retiring from active professional life.

From the directions given by Sir B. Brodie for the republication of his collected works at a high price (2*l.* 8*s.*), under the editorship of his former private assistant, it appears that he contemplated they would be in some demand; as if many persons would be likely to care for old, well-known opinions—some dating from the beginning of this century—or for works that have been superseded by more modern productions on the subjects. Several persons were curious to see what Sir Benjamin had to say for himself, and the prefixed "Autobiography," separately sold, reached a second edition. The publication of the works was, however, a failure; and it would surprise me to learn that more than fifty or sixty copies were sold. Indeed I think there are but few of the more advanced members of the profession who would accept these volumes as a gift, if the obligation of wading through them was made a condition of their acceptance. If Mr. Hawkins could have produced a moderate-sized volume, comprising a summary of his patron's observations, and comparing them with the opinions that have been subsequently expressed by other labourers in the same field of research, so as to have presented a sketch of the actual state of science in so far as regarded them, it would doubtless have met with acceptance from the profession. This, however, was scarcely to be expected; all that could be looked for from him was the bare reproduction of the *verba magistri*, which has appeared.

"Successive sovereigns," says Dr. Forbes Winslow, in the article referred to, "had conferred upon Sir Benjamin the highest dignity accorded to members of his profession, that of attendance upon royalty." The serjeant-surgeoncy, be it observed, is an appointment for life, but I believe Sir Benjamin was never called upon to attend either King William, Her present Majesty, or the Prince Consort. This appointment on the accession of the King was fully intended for Mr. Keate, in consideration of his long services rendered to his Majesty when Duke of Clarence, and to other members of the Royal Family. A statement of the manner in which Mr. Keate was supplanted appeared in the "Lancet" (November, 1833), under the heading of "Intercepted Letters," suppositiously addressed by Sir H. Halford to Dr. Seymour, the writer of which appears to have been

pretty cognisant of the circumstances of the case. "You are, I believe," he says, "in possession of most of the facts relative to the means by which Brodie obtained the appointment, and how cleverly we diddled poor Keate. It was his [Sir W. Knighton's] invisible influence that forced Brodie's attendance on the late King, and our beloved monarch, who was as sharp and clever a gentleman as ever I saw, burst forth one day and exclaimed, 'That d——d fellow Knighton *brought* me a Methodist parson yesterday, instead of *sending* my own surgeon.'* Knighton was bound to get this appointment by hook or by crook for Brodie, for reasons I may *tell*, but dare not *write* even to you, my kind friend, as you know how nicely he managed your own *little matters* in getting you appointed to St. George's Hospital. Sir William Knighton being dismissed from the household of his present Majesty, and having got into *mauvaise odeur*, got Sir Wathen Waller to state to his Majesty, that the appointment of sergeant-surgeon was *promised* by his beloved brother, some time previous to his death, to Mr. Brodie. The hoax answered, and the appointment was accordingly given to that surgeon. Many hours had not elapsed before the Royal eyes, which had been blinded by that old occulist, Sir W. Waller, were opened, and the King, as you well know, expressed in the most unequivocal terms his regret in having thus hastily 'fooled away the office,' and said that he had been 'taken by surprise,' or it certainly should not have been so disposed of to one who had no claims on his Royal favour; and you must be quite aware that King William never admitted Brodie, but has loaded 'honest Bobby Keate,' as he calls him, with marks of attention and kindness.†

"I find that Mr. Brodie's interview with Lord Melbourne (then Prime Minister) has done anything but good. Lord Melbourne observed to a friend of mine, that Mr. Brodie had an air of humility and simplicity in his manner; yet, being a half-believer in phrenology, he thought that Mr. Brodie appeared to have the organs of '*secretiveness and acquisitiveness of their full size.*'"

On the issuing of a manifesto by the Council of the College of Surgeons, under the presidentship of Sir B. Brodie, in reply to the animadversions which were called forth by the partial mode in which the selection of Fellows was made after the charter was obtained, the following indignant remarks appeared in the "Times":—

"The more that manifesto is considered, the more decided must

* The friendship between Sir W. Knighton and Sir B. Brodie is referred to in the "Autobiography;" the latter having done his best to exculpate Sir William from the charge of his having improperly treated the case of a noble duke who died under his hands. Dr. Seymour's father, who resided at Brighton—where George IV. passed most of his time—was a friend of Sir W. Knighton, and through his instrumentality obtained Sir B. Brodie's support to his son's canvass for the physicianship to St. George's Hospital—with which he had previously no connexion. We have nevertheless seen the reply which Sir Benjamin made to Mr. King, that no one who had not been educated at the hospital had any chance of succeeding in canvassing for a medical post in the institution. It appears from a late statement in the "Lancet" (1865) that Sir Benjamin succeeded in ingratiating himself with the King, as we are there informed that he "was a great favourite of George IV., and attended him closely in his last illness. *He visited the King at six in the morning, and stayed chatting with him a couple of hours.*"

† Mr. Keate received an apology from William IV., who expressed his regret that he could not acknowledge his services as he wished. He told me that some indirect influence had been employed to prevent his nomination to the office.

be the conviction that the Council have not only wilfully and systematically, but from mere mercenary motives, betrayed the trust reposed in them.

"According to Mr. Abernethy, medicine and surgery are one and indivisible. According to the oracle at whose shrine Sir James Graham bows, and by whom he has been involved in his present Benjamin's mess, medicine and surgery are to be treated by the Legislature, for the purpose of securing an income to the Council of the College of Surgeons, as totally distinct and irreconcilable.

"Ignorance, blundering, obstinacy, almost any defect of the head may be tolerated in those holding official positions, provided they be not suspected of dishonesty, but when once misrule is found to proceed from motives that cannot be justified, farewell to the prestige of office; reform then becomes inevitable."*

In the pamphlet which I published soon after the passing of the Medical Act, after referring to the strong animadversions that had been from time to time made on Sir B. Brodie in political and medical journals, I stated that "one who could supplant [in the serjeant-surgeoncy], in the manner recorded, a colleague of whom he was accustomed to speak as his friend—who could take a fee of two pounds from a practitioner known to him, under the circumstances I have mentioned (as told me by the gentleman himself)—who, while inculcating upon students the necessity of 'liberality, generosity of character,' &c., could allow his name to appear in a long list of contributors to the relief of destitute widows and orphans of medical men as a donor of a pound or guinea, and whose contribution to another benevolent medical institution was of insignificant amount—who could asperse the conduct of a body of students, and shirk making any reply to the indignant inquiry made by two of the lecturers of the school as to the grounds of his accusation—who could go about to disparage a candidate for the surgeoncy among the governors of an institution with which he was not connected [Charing-cross Hospital]†—who, moreover, could procure through the instrumentality of a packed board a grant of 200*l.* a-year for the support of his Kinnerton-street School, notwithstanding such an appropriation of the hospital funds was declared by counsel to be illegal, and who could continue to draw this amount for a series of years after the school became able to pay its own expenses, and the hospital being in want of funds—which were solicited by advertisement—such an one," I said, "most unprejudiced persons would, I doubt not, agree with me, is not a fit man to be President of the Medical Council." I added that "such an one, be his professional or scientific qualifications what they may, is not, I think, the person who should be allowed to have the chief voice as to the disposal of the large sum of money collected under the registration clause of the act. There was no occasion for the imposition of any such tax, but as it has been paid by the great majority

* In his article on "Medical Reform," published some years previously in the "Quarterly Review," Sir Benjamin remarks: "It is in the nature of corporations, as of individuals, to like the acquisition of wealth, and it is to their interest to have as many applicants for their diploma as possible."

† One of the governors who had supported Mr. Hancock in his canvass told him he could no longer do so, after what he had heard of him.

of practitioners, it is mainly upon the President of the Council, in the absence of auditors, that the responsibility will devolve of rendering an account of the way in which the money is disposed of." How far these remarks (published in 1859) were justified may be inferred from what has since been made public, both as regards the "absorption" of the 200,000*l.* which St. George's Hospital possessed till the management of the funds was assumed, notwithstanding strong opposition, by the Brodie clique constituting the weekly board, and also as respects the registration money, no satisfactory account having been given of the large amount comprised in the first year's collection. The balance-sheet was published without the usual appendage to similar documents of the names of a treasurer or of auditors.* The amount received was 35,836*l.*; the expenditure for the year, amounting to 8,165*l.*, was specified under the following items: 2,450*l.* *for members of the Council*, and 700*l.* *for their travelling expenses* (altogether 3,150*l.*), 500*l.* on account of the Pharmacopœia, and then, included under *one item*, *for printing, stationery, rent, and salaries*, £4,229, of which, *per contra*, there is an item of one shilling due to the registrar, this being the only minute item given.

This off-hand statement gave rise to a letter to the "Lancet," wherein the writer observes: "There are many points in the last abstract of income and expenditure which call for strict inquiry, and which ought to be explained to the profession, for whom the Council only act as trustees. According to the abstract for the year ending June, 1861, the Council expended the enormous sum of 8,165*l.*, with a real income of about 3,000*l.* The Council *have been at no expense for meeting*, or even for refreshments, the two Colleges of Physicians and Surgeons having liberally granted to them the use of their buildings free of expense."

The only salary paid is 500*l.* a-year to the Registrar. No reference is made to the compensation of the President, who, as no definite sum was allowed, perhaps considered himself entitled to perquisites, in accordance with the sentiments he expressed on the occasion of a discussion in the Board-room of St. George's Hospital respecting the election of his private assistant, Mr. Cutler, to the assistant-surgeoncy.

In one of its first meetings in 1861, a motion was carried in the Council for the formation of a finance committee. Two or three days afterwards, the President, who had already presided, and who had given no intimation of any such intention, sent in his resignation by a letter, which was read in silence, without eliciting any comment, and it was only at the second subsequent meeting that a vote was passed expressive of regret at the Council's losing his valuable services. That this resignation was as unexpected by the profession as it was by the Council, appears from the comments made upon it in some of the medical journals. The "British Medical Journal" was then disposed to ascribe it to the President's letter, exculpating the Examiners of the College of Surgeons from blame, for granting the

* On the occasion of the conviction of the Rev. Mr. Fletcher—who acted in the joint capacity of trustee, treasurer, and secretary to the Bilston Savings' Bank—of having appropriated to his own use 8,000*l.* of the funds of the institution, the "Times" observed, in a leading article, "respectable names and elaborate regulations are of no kind of avail as long as the accounts are without practical supervision and audit."

diploma to two unqualified persons;* but in the subsequent eulogistic biographical notice which appeared in that periodical, it is attributed to his failing eyesight, "which rendered him incapable of performing the duties." If so, why did he not resign prior to, or at the first meeting, on beginning the session, personally stating his inability to continue to fill the office, instead of resigning by a letter immediately after the decision was come to to establish a finance committee? Under this new management, we find the expenditure for the year ensuing estimated at less than one-half the amount of the preceding year—viz., 3,862*l.*, of which sum 1,057*l.* (much less than half placed opposite the corresponding one of the former year) is put down as fees paid for the attendance of Members of the Council, and *only* 437*l.* opposite the item comprising printing, postage, advertising, *rent*, &c., for which objects (with the sole addition of the Registrar's salary of 500*l.*) 4,229*l.* is set down as having been expended the preceding year.

Mr. Charles Hawkins has prefixed to the "Autobiography" the opinions of some of Sir B. Brodie's friends respecting his character. This was doubtless done from the knowledge that an attempt at vindication was required. Can any one imagine Sir Astley Cooper's biographer appending to his published "Life" testimonials as to *his* character? *Qui s'excuse s'accuse.* Among these panegyrists is M. Giraldès, an eminent Parisian surgeon, whose praise, however, is restricted to Sir Benjamin's professional labours. Another is Dr. Babington, who remarks, "I never knew a man of a more single and upright character, one more free from affectation or presumption, or who *more completely impressed me* with a belief that the main object of his efforts was, wholly irrespective of self, to benefit those by whom he was consulted." It was an essential part of Sir Benjamin's "little game" to endeavour to impress people with an opinion of his uprightness and disinterestedness, and many persons who had no opportunity of knowing the objectionable features of his career have been led to form a partial estimate of him, deduced, it may be, from *ad captandum* discourses to students, duly published in the medical journals, or from the adulation of interested partisans; which estimate would have been very materially modified by a knowledge of actions but little in accordance with the sentiments expressed.† His "Autobiography," evidently composed with much care, and written with an air of candour, has the sole object of presenting its author in the most favourable light;‡ but from an impartial survey of Sir Benjamin's public conduct,

* "Whether or not the retirement of Sir B. Brodie has anything to do with his celebrated letter—which has been read by the whole profession with sorrow and regret—we cannot say, but the coincidence is singular."

† *Fluellen:* I do assure you he spoke such prave 'ords at the pridge as you shall see in a fine summer's day.

Gower: 'Tis an arrant counterfeit; a gull.

Fluellen: I do believe he is not the man he would make the 'orld believe he is. ("Henry V.," Act iii.)

‡ The writer in the "Medical Times" already quoted ("Probe") remarked respecting self-biographies, though without reference to any one in particular: "They are amusing, as they prove how glowing, how minute in detail, men become when inspired by self-love; how ingenious they are in putting a good face upon a bad cause; the ease of execution with which they can convert a very little man into a very great man. Every useless theory, every obsolete lucubration, and literary

and from the record of several reprehensible acts, the only just conclusion that can be deduced is that, how much soever he may have endeavoured to conceal it, throughout his career he was actuated by motives of a purely egotistical character, among which the *amor nummi* and self-esteem were predominant;* and it must, I think, be clear that the animadversions that have at various times been made upon him were neither dictated by personal enmity nor made upon insufficient grounds. To refer merely to two or three passages that I have quoted: Why should one writer have remarked that he may "be said to have duplicity stamped upon his countenance?" Why should the "Times" have coupled the term "dishonesty" with an allusion to Sir B. Brodie? Why should a writer in another medical periodical, when it became known that the St. George's Hospital property had been all "absorbed," have alluded to the "Sir John Dean Pauls amongst us; good honest men till they shall be found out?" Why should a recent writer in the same periodical have mentioned "deceit, trickery, and knavery," in reference to him? Then, again, who but Sir B. Brodie, as President of the Medical Council, was accountable for the manner of disposal of the registration money collected the first year after the passing of the Act? We have seen in the account rendered that the large sum of 4,229*l.* formed a single item for matters of little import, which (with the exception of 500*l.*, the registrar's salary) the next year, when the money affairs of the Council were under the management of a finance committee, amounted only to about a seventh of the sum (437*l.*), though there could have been but little more required under this head during the first year than during the second—certainly nothing that could account for this enormous difference. Moreover, could it fail to strike many persons as

antiquity which they had compiled and manufactured, was dusted and forwarded. It seems to be a law of nature that where a man has a chance of praising himself he will generally give himself the full benefit of his own approbation, and carefully avoid giving prominence or reference to unfavourable particulars that may tend to lessen the extent of his reputation."

"Pride," says a recent medical writer, "not unfrequently seeks to hide itself in great gentleness, mock modesty, and high religious profession. When there is a softness of manners, extraordinary amiableness, a parade of kindness and sympathy, where things can be effected by secret stratagem, contrary to the professions of avowed kindness, pride, yea, consummate pride, may be detected. There is the solicitude for notoriety, while the mind is weak enough to endeavour to conceal it in the vestments of humility. The common eye does not always detect the falseness of the character, but renders it the desired homage, fanning the flame of self-love."—("A Commentary on Medical and Moral Life," by W. Cooke, M.D.)

* Sir B. Brodie has sometimes been compared with Sir A. Cooper; it is only, however, in a professional point of view that any grounds for comparison can exist, for otherwise, both in aspect and demeanour as well as in actions, there was a striking contrast between these two distinguished surgeons. Let any one consider how far the ennobling sentiments publicly expressed by Sir B. Brodie on several occasions, and the eulogiums of his friends, accord with his paltry contributions to professionally benevolent institutions, and to his instituting an annual prize of the value of 5*l.*, to be competed for by students of the hospital from which he was unlawfully drawing 200*l.* a-year. There is no contribution recorded of him being made for any benevolent, professional, or scientific purpose; nor is anything bequeathed for such a purpose; whereas, besides what Sir A. Cooper did in his lifetime, he instituted a prize of 300*l.* to be triennially awarded towards the promotion of surgical knowledge.

very suspicious that, soon after the commencement of the second session of the Council, and on the formation of a finance committee, Sir B. Brodie, instead of facing the members of the Council, should have by a letter resigned the presidentship—of which no previous intimation had been given, and which last took the profession, and doubtless the Council itself, by surprise? These matters ought to have been made the subject of a searching investigation. Nothing can more strongly evince the necessity for an efficient legislative supervision of medical affairs than the laxity which too often prevails in the financial management of charitable institutions.*

It is certainly discreditable to the Legislature that the only means likely to procure redress for abuses to which the medical profession has been so long subjected, should be by making an appeal to public opinion. Several years ago, regarding the pages of a medical journal as the most proper medium for endeavouring to attain this object, and believing in the sincerity of the late editor of one which has made great semblance of devoting itself to promoting the interests of the profession, I published in the "Lancet" a series of observations upon its condition, in the course of which I stated some circumstances showing the injury resulting from individuals being allowed to exercise undue control over its management, and the unfitness of Sir B. Brodie to take a prominent part in its affairs; the justness of this opinion being, I submit, fully confirmed by what has subsequently been brought to light. This part of my observations the professed advocate of the reform of abuses declined to insert in the journal, though he did not doubt the truth of the statements; and shortly afterwards there appeared in its pages the adulatory biographical notice to which I have referred; since which the "Lancet" has taken every opportunity of "fooling to the top of his bent" the object of its adulation, in positive contradiction to the opinions expressed of him at a former period.

The circumstances to which I have adverted are well known to many members of the profession, to many of the Governors of St. George's Hospital, and to others of the general public. They were repeatedly animadverted upon during the lifetime of Sir B. Brodie, but it did not suit him or his friends to notice those animadversions. When therefore Sir Benjamin's panegyrists seek in their *ante* or *post obit* comments to represent him as a man the nearest approaching to perfection, it becomes necessary on the part of an impartial observer to show how far such a representation is warranted by an exposition of the true state of the case.†

* Adverting to a case of embezzlement of funds of the Liverpool Hospital, for which a trustee named Anderson was committed for trial some years ago, the "Lancet" remarked: "The embezzlement of hospital funds is certainly one of the gravest offences of which a man can be guilty. It involves a treble breach of trust. It is a robbery upon the donors, the trustees, and the poor. Such an offence passes beyond the moral bounds of a misdemeanour. The judge properly remarked that 'this was one of the worst forms of embezzlement; for here was a man entrusted with funds for a charitable purpose, appropriating these funds to his own uses.'"

† The following remarks on "Medical Friendships and Undue 'Influences" appeared in a Parisian medical journal ("Gazette des Hopitaux," December, 1864) with reference to a bygone time, when a spirit of professional clique and *camaraderie* prevailed in Paris:—

"Every one knows what these pernicious and shameful influences can effect

In again bringing this subject forward I disclaim being actuated by personal feelings; but I have acted from a sense of duty to the profession, and in order to justify the opinion I formerly expressed. Should any reply to the observations I have deemed it necessary to make be forthcoming, all I request is—as I do not myself publish anything anonymously—that the parties will append to it their names (unless in an editorial capacity).

Had I merely consulted my own wishes and convenience, I should have abstained from further occupying myself with medical reform; but, inasmuch as a satisfactory settlement of the question seems likely, by the course of proceeding contemplated, to be put off to an indefinite period, I should consider it a dereliction of duty not to make another effort in the cause. Should no good result ensue, at all events ignorance can no longer be alleged of the actual state of matters, which I have endeavoured faithfully to represent.

in the medical body. We readily admit that there are really legitimate and useful influences. Men of acknowledged merit and incontestable honesty cannot abdicate the exercise of any action upon their brethren. Their so doing would be wrong, and detrimental to science. But such men do not seek to impose their will upon others in order to promote by any means the advancement of their friends. If they recommend a man for the occupancy of a post, it is from a full knowledge of him, and because they are sure beforehand that their *protegés* will do credit to their honest recommendation; and they use their influence with a certain reserve. They do not require that their *protegés* should at all events (*quand même*) attain to a position; they only require that they should be heard and impartially judged of according to their merits.

"This man of whom we were just speaking did not in the least concern himself as to whether those whom he supported and pushed on so energetically were calculated to fill the posts they sought to occupy; it sufficed him to know that they were of his friends and flatterers. Neither did he concern himself as to whether in the contest he destroyed the prospects of another, or kept back a man capable of rendering service to the community and of furthering the progress of science; he only knew that he was not of his friends, and would never have been harnessed to draw his chariot. Oh shame! there were always to be found men mean-spirited enough to enter into such miserable calculations, who were but too happy to be of use to this power and become his *friend*. These times have happily passed away from us; may they never return!

"Everything in this world comes to an end, and one day the *friend* slept in an eternal sleep. Do you not inhale the fumes of the offered-up incense? Do you not hear this concert of praise? Listen, all the *friends* will pay their tribute: 'He was a good man, his heart was pure as gold; his feelings for others were those of a father; his disinterestedness was sublime. All in him was perfect, and came up to the height of his incomparable genius.' But, in truth, this man was a bad man, of a mediocre and narrow mind, an egotistical calculator, who never gave anything but for an equivalent. His influence was perniciously exerted, and served only to demoralise. Happy are the times which know neither such friendships nor such influences."

ADDENDA.

The following extracts are from a review of "The Medical Profession in Great Britain and Ireland," and "The St. George's Hospital Medical Staff," which appeared in the *Gazette Medicale de Paris* (May, 1860):—

"The state of moral debasement in which the medical profession in England languishes has been for several years past the object of the thoughts and legitimate complaints of the most eminent practitioners of that country. Meetings, commissions, associations, have been formed with the view of studying and of proposing, either to the Ministers or to members of Parliament, measures to be introduced into legislation in order to put an end to the evil. From every side plans have been brought forward, each of which has been cried up by its author as the only remedy, and which on slight examination have been found to be either impracticable, unjust, or insufficient. Amidst this universal agitation, this confusion of ideas and of means, there remained but one course to take; this was to study seriously the mechanism of the medical institutions and the conditions of the profession in other countries; to compare these institutions and conditions with those of England; and to draw from the comparison conclusions which might serve to ameliorate the state of the profession in England. This is just the task which Mr. Lee imposed upon himself, and we may at once say that he has known perfectly how to accomplish it, after having made many prolonged visits to the Continent, and seen with his own eyes the working of the medical institutions in the most highly-civilized countries.

"The general remarks on the state of the profession in the first chapter exhibit, from a variety of medical and non-medical quotations—in accordance with the aim of the author—a tolerably complete view of the sad state of English medicine. Indifference on the part of Government and of Parliament with respect to medical affairs; uncontrolled power of the corporations (about twenty in number) which have the right of conferring diplomas; conflicts between these different corporations, each acting for its own interest, and not for the interest of the general body of practitioners; instead of union, consistency, and strength before the public, disunion, rivalries, and jealousies; instead of dignity, debasement of character, as well as of position, in the public eye, as compared with the other professions of the Bar and the Church; instead of protection in justice against charlatanism and the illegal exercise of medicine, there is scarcely tolerance and the recognition of the rights of the practitioner; lastly, instead of a position in society and in the State commensurate with the importance and the grandeur of the art, only money, if it can be acquired. Such are the complaints which English medicine utters while loudly calling for the cessation of so many evils, by means of a reform, which, by causing the mass of corporations to disappear, or by depriving them of the power of granting diplomas, would bring back the medical body to the union which can alone give it strength.

"In the three following chapters the author examines successively the medical organization of France, Italy, and Germany. It is from official documents that he has derived information, and in seeing the wheels act

that he has understood the mechanism of those various institutions which he has described with great clearness of exposition, and which he has appreciated with impartiality and a remarkable justness of view.

"In the second work Mr. Lee undertakes to expose the abuses to which the mode of conducting hospital elections gives rise; which abuses he regards, with reason, to be one of the principal causes which have tended to deteriorate the medical profession in England. Thus influences of all kinds, of family and fortune, intrigues of every sort—such are the means by which access to posts in hospitals is obtained, instead of high professional knowledge, the most brilliant scientific titles, the most elevated merit. Thus in a period of seventy years, of forty physicians and twenty-eight surgeons who have composed the medical staff of St. George's Hospital, the names of six only have survived oblivion.

"Mr. Lee adduces several instances of men remarkable for their talents who have failed in their candidature for posts at the hospital, while their competitors, less learned, but better supported, succeeded; and he ascribes a great part of this undeserved success to the unjustly-exercised influence of a celebrated surgeon, in whom a high professional and social position has not extinguished petty passions and paltry jealousies. We find it difficult to believe that all this degrading and detestable work can be absolutely necessary for the success of a candidate. What are the consequences of such proceedings? When it is considered what are, scientifically speaking, the men who have recourse to these means; when we reflect that these men, by the very fact of their position in hospitals, *become the masters and instructors of young men, and that they constitute the members of the corporations which confer diplomas*, we may well ask what are the generations of practitioners which they form?

"The memoir is preceded by some remarks on the Medical Act of 1858. This Act has added almost nothing to the advantages formerly possessed by practitioners; it has not, in fact, in anywise altered the previously-existing conditions of medical education, and has formed a pretext for imposing an additional tax upon practitioners. In every point of view this Act has been received with but little favour by the medical body. Some have seen in it only a preservation of the privileges of the corporations, and the retention, or nearly so, of the ancient state of things; others, the greater number, have been aggrieved by this new imposition upon them; some have seen with pain the choice which has been made of the President of the new Medical Council. This is, at least, what results from the numerous citations which Mr. Lee has made from the various journals, to which he has added his own remarks. The perusal of these two memoirs, while showing us how much remains to be done for English medicine with regard to institutions and professional conditions, in order for it to arrive at the degree of elevation and social dignity which medicine occupies with us, leaves us room to hope that it will yet see brighter days. We have, as a guarantee of this hope, the zeal and the talent of men who, like Mr. Lee, work for its regeneration."

COPY OF TESTIMONIALS FROM EMINENT FOREIGN SURGEONS SUBMITTED TO THE GOVERNORS OF ST. GEORGE'S HOSPITAL, ON THE OCCASION OF A VACANCY IN THE OFFICE OF ASSISTANT-SURGEON.

M. Roux, *Professor of the Faculty of Medicine, Member of the Institute, Surgeon to the Hôtel Dieu, &c.*

I certify having known very particularly Mr. Edwin Lee during the different periods of his residence in Paris, that he has attended with remarkable assiduity my visits and operations at the Hôtel Dieu, and that in the relations which he has had with me, I have repeatedly been enabled to perceive the good spirit by which he is animated, to convince myself of his extensive information, and that, if favoured by circumstances, and placed upon a fitting theatre of observation, he will not fail to become a distinguished man.

M. Velpeau, *Professor of the Faculty of Medicine, Member of the Institute, Surgeon to the Hospital la Charité, &c.*

I certify having known Mr. Edwin Lee for about ten years, and have been able to assure myself of his zeal in attending our visits and operations, of the solidity of his knowledge, and that at the different periods of his residence among us, I have always seen him pursue with ardour his medico-chirurgical studies.

M. Lisfranc, *Professor of the Faculty, Surgeon to the Hospital la Pitié, &c.*

I certify that Mr. Edwin Lee has followed with much zeal and exactness my clinical courses at various periods for several years, and that he has always exhibited proofs of a high intelligence, and of very distinguished talent.

M. Ricord, *Chief Surgeon of the Hospital du Midi.*

I certify that Mr. Edwin Lee has followed at different periods, during several years, my hospital visits and practice, and that in the scientific relations which we have had together he has always given me proofs of a profound and varied knowledge in medicine and surgery.

M. Civiale, *Inventor of the Operation of Lithotrity.*

Mr. Edwin Lee has followed during several months, and at various times, my practice at the Hospital Necker, and has assisted, with much zeal, at a great number of operations of Lithotrity, both at the hospital and in my private practice.

M. Sichel, *Surgeon to the Ophthalmic Dispensary, Paris.*

I beg to certify that I have known Mr. Edwin Lee for several years, during which he has repeatedly attended my courses and clinic on the diseases of the eye, and that he has fully availed himself of the opportunities which he has enjoyed in order to acquire very extensive knowledge in the diagnosis and treatment of eye diseases.

M. Robert, *Surgeon to the Hospital Beaujon.*

I certify that Mr. Edwin Lee has followed my courses of operative surgery,

and that, in the numerous relations which I have had with him, I have been able to appreciate his extensive information and surgical skill.

Professor DIEFFENBACH, *of Berlin, Chief Surgeon to the King of Prussia, &c.*

Mr. Lee, whom I have known for some years, is a gentleman of excellent disposition, high talent, and great knowledge as regards practical medicine and surgery. As an author, he has already attained a distinguished name, and the scientific world hails with satisfaction any production from his pen. It is, however, more particularly to be desiderated that Mr. Lee should be afforded the opportunity of distinguishing himself in an honourable position connected with a large hospital, which, with his superior talents, he will assuredly not fail to do.

Professor VON WALTHER, *of Munich, Surgeon to the King of Bavaria, &c.*

Mr. Lee attended with the greatest assiduity and attention, during his residence at Munich of several months, the surgical and ophthalmic clinic under my direction, and I was consequently able, with much satisfaction, to appreciate his superior knowledge in medicine and surgery, his sound judgment, and his zeal in the cultivation of medical science. Being already known as the author of several instructive works, I can only congratulate his country, and any hospital to which he may become attached, on possessing such an acquisition.

Professor VON AMMON, *Surgeon to the King of Saxony, &c.*

Mr. Lee, whom I have had the honour of knowing during several years, has afforded me frequent opportunities of convincing myself, from the experience I have had of his judgment in individual cases of disease, of his extensive knowledge of medicine, surgery, and eye diseases. I beg further to add that Mr. Lee has acquired a complete knowledge of the state of medicine and surgery in Germany, which distinguishes him from most of his compatriots.

Professor STROMEYER, *of the University of Munich.*

I had been acquainted several years with Mr. E. Lee, when the opportunity was afforded me of testifying in writing that he is the most highly-informed young man of his country and profession whom I have known. His profound acquirements in the various branches of medical science render it difficult to say whether he is more proficient in medicine or in surgery. It is to be wished that he may occupy in his own country a position commensurate with his zeal and talents.

Professor RADIUS, *of the University of Leipsic.*

I have known Mr. Lee for several years, by personal acquaintance during his sojourns at Leipsic, as also from his works, and therefrom entertain a very high opinion of his proficiency in practical medicine and surgery. On account of his acquirements he was elected a foreign member of the Medical Society of this city.

Professor ANDREINI, *of Florence, Surgeon to the Grand Duke of Tuscany.*

I have with much satisfaction known for several years Mr. Lee, who has attended my clinique in the Imperial and Royal Hospital; and in the medico-chirurgical argumentations which I have held with him, I have always admired his profound knowledge, and the rare ability with which he is endowed.

OBSERVATIONS

IN THE

MILITARY HOSPITALS

OF

DRESDEN.

BY

ALEXANDER BRUCE, M.B., F.R.C.S.,

ASSISTANT-CURATOR OF THE ANATOMICAL AND PATHOLOGICAL MUSEUM,

UNIVERSITY COLLEGE, LONDON.

1866.

OBSERVATIONS

IN THE

MILITARY HOSPITALS OF DRESDEN.

HAVING had the opportunity of spending a brief holiday in the Military Hospitals of Dresden, I think it may not be without interest to the profession if I record a few observations made in connexion with one of the most remarkable struggles ever witnessed in Europe.

I reached Dresden on July 16th—that is, thirteen days after the battle of Kœniggrætz or Sadowa, and remained there till August 1st. My time was therefore very limited, and my observation of many cases incomplete.

Immediately on my application I received an appointment in the wards of one of the largest temporary lazarettes in the new town—the Cadetten-Haus, under the direction of Staff-Surgeons Drs. Knorr and Kohnhorn; and I gladly take this opportunity of expressing my grateful acknowledgements to them, and to the assistant-surgeons both of this institution and of the Garrison Hospital, for the courteous manner in which they assisted me during my stay. At their request, I subsequently made the post-mortem examinations of the more interesting fatal cases which occurred in the two hospitals—an arrangement which afforded a much better oppor-

tunity of examining the effects of gunshot injury than could have been obtained in the wards.

War has lost some of its attendant horrors, although the actual contests of our day are fiercer and more bloody than in any previous age. The Prussian authorities deserve all praise for their humane treatment of the wounded prisoners; they treated them exactly as they treated their own men. No difference existed in the care bestowed on Prussians, Austrians, or Saxons; they were wounded, and that was sufficient to secure attention and kindness from all parties. Patients of various nationalities lay indiscriminately in adjacent beds; and in many instances a great friendship seemed to have arisen between men who a few days before had been doing their utmost to bring one another to the helpless condition in which they then were. On one occasion a Prussian soldier, complaining that an Austrian prisoner had received more attention than he had, was sharply reprimanded for grounding his complaint on the difference of nationality. The Prussian people, however, justly complain of the utter insufficiency of the Austrian arrangements for the care of the wounded, which has necessarily thrown the entire burthen on them, and proportionately lessened the resources available for their own men. When we hear of a Bohemian hospital containing 700 severe cases from the battle-field, with only sixteen surgeons to attend to them, we may form some idea of the horrors of the camp: but worse than this, men lay for days upon the field before they were found, without getting so much as a drink of water. One young Saxon soldier, who had received a gunshot

fracture of the femur, lay for nearly fifty hours on the field before he was found; he then received some wine and water, and had to be conveyed a distance of many miles before his wound could be attended to. As might be expected, he died from exhaustion in a few days. A patient in the Cadetten-Haus had lain for five days in a wood before receiving any further assisstance than a little water and a piece of bread, given him by a passing comrade.

There were some dark stories afloat respecting the desertion of the wounded by the Austrian surgeons. In many of these cases doubtless the military authorities were chiefly in fault; but in others it is to be feared that such conduct was the result of cowardice, or of a total disregard for the lives of the Italian, Croatian, and other non-German soldiers under their care.

The nursing was chiefly conducted by sisters of charity, some from Dresden, others from Westphalia and the Rhine provinces. They were assisted by volunteer nurses from various parts. Visitors also attended daily, bringing various little luxuries for the wounded—as flowers, newspapers, cigars, &c.; whilst others came to write letters for those patients who could not do so themselves, or to act as interpreters for the numerous Hungarians, Italians, and Bohemians, who otherwise would have been unable to communicate their wants to their attendants. Some of the most melancholy cases were those of the Croats, who spoke a language utterly unintelligible to all present. One poor fellow died in the hospital without being able to communicate with anyone.

I may mention here that on the death of any patient, his effects were carefully collected by an officer appointed for the purpose, and divided into two parts—"property of the Kaiser," and "property of the individual." The former was of course forfeited to the Prussian government; the latter was, however, packed up, labeled with the owner's name, regiment, and a few other particulars, and as soon as peace is concluded will be sent to the Austrian government, in order that it may be returned to the friends of the deceased.

At Dresden the supplies of everything requisite for the treatment, and even to some extent for the comfort, of the wounded, were amply sufficient; and the general arrangements were very good, considering the enormous strain thrown upon the executive. The chief evils resulted from the unavoidable overcrowding, as is usually the case in military hospitals; these evils, however, were of a very serious nature.

In the temporary hospital to which I happened to be attached there is a large and lofty hall with windows on both sides; it is ordinarily the gymnasium of the cadet school. In this room were arranged four rows of beds, two deep on, each side. The distance between the adjacent beds was only about two feet, and between the two rows of beds about three feet. Along the centre of the room was a broad gangway, measuring I think about ten feet in width. The room was so lofty, and the ventilation by means of open windows was so complete, that the air was, as a rule, very good; the cubic space allowed for each patient being, however, chiefly above him,

and not sufficiently around him, a very unhygienic condition was produced, which resulted in a serious outbreak of pyæmia and erysipelas. In the many small rooms adjacent to the large hall the beds were often placed at somewhat greater distances from one another, two and a half or even three feet being allowed; but as these rooms had but one row of windows, the air was generally not so good as in the large hall.

I may mention here, that the "Turn Halle," or gymnastic halls, to be met with in every German town, afforded excellent hospital accommodation, as they are generally spacious, and better ventilated than any other buildings in Germany. I visited a temporary hospital in the "Turn Halle" at Leipzig: the beds were very close together, and there were at least five rows of them on the ground-floor, and another row in the gallery all round the room; yet the air was as fresh as could have been wished, the windows being large and numerous on opposite sides of the room.

That this overcrowding in the case of gunshot injuries, where excessive suppuration necessarily ensues, is productive of fearful evils, cannot be doubted; and I think the authorities would have done well to have disregarded a few hours more railway travelling, and have distributed the slighter cases throughout the towns of North Germany, and have thus relieved the hospitals nearer the seat of war. An attempt was made to institute a tent hospital or "zeltstation" in connexion with the garrison hospital. I was informed by one of the medical officers connected with it that it did not answer as well as was expected;

for in consequence of the frequent and heavy rain, the tenting became so damp and impervious to the wind, that the air was actually worse in the tent than in the ordinary wards. These stations were subsequently built of wooden boards, loosely jointed, and roofed with tarpauling. These would, doubtless, act better than the others. A fatal mistake was, however, made in the use for which these tent stations were reserved. Only the severe cases of pyæmia and erysipelas were lodged there; so that removal to the tent station became almost synonymous with death. It is undoubtedly very desirable to separate those patients who have already got pyæmia from the neighbourhood of others who are still free from it; but as this was never effected with anything like completeness, it seems to me that it would have been far better to have conveyed all the cases newly operated npon directly to an uncrowded tent, apart from all chances of contamination, and thus have not only given them a better chance, but also have relieved the main hospital from a number of large suppurating wounds.

The town and hospitals were remarkably free from other epidemics. A few cases of cholera occurred, but these were chiefly imported from the North German towns by the soldiers; fortunately it took no hold in Dresden, thanks to its naturally healthy situation and to the rapid stream of the Elbe, which carries off the sewage in a most complete manner. No cases of typhus, and but few of typhoid fever occurred. As far as I am aware there was but one case of hospital gangrene during my stay in Dresden.

Pyæmia was, however, the scourge of the hospital. Of all the post-mortem examinations I had the opportunity of making, there were but few in which the patients were found to be non-pyæmic. The majority presented most typical and most terrible examples of metastatic abscesses in lungs or liver, more frequently in the former than in the latter; but when they did occur in the latter organ they generally attained a far greater magnitude. In one case the entire organ was completely riddled with abscesses. These sometimes appeared to follow the branches of the portal vein, presenting on section a remarkably arborescent appearance; the suppurating lobules had in such cases a dark spot in the centre. Abscesses appeared with almost equal frequency in the two lungs; most frequently in the posterior bases, and possibly more often in the right than the left lung. The position of these abscesses was marked on the surface by an indurated and elevated mass, surrounded by a ring of hæmorrhagic effusion. In some cases it would seem as if suppuration had subsequently taken place, outside this ring; thus there was an outer zone of greyish green pus, then a zone apparently of dark altered blood, enclosing the ordinary metastatic abscess or slough. An abscess was once found in one of the papillary muscles of the left ventricle of the heart. They were rarely found in the spleen, and not once in the kidneys. Some of the bodies of patients, who had died of pyæmia and diffuse cellulitis, presented horrible and ghastly pictures of extreme emaciation combined with sloughing so extensive, that in one instance the entire fleshy substance of the thigh

was converted into a huge abscess, containing a grey shreddy mass bathed in the most fœtid pus. Decomposition advanced so rapidly in these cases that even when the post-mortem was made whilst the body was still warm, the blood in the liver and other organs was found to be aerated and loaded with gas-bubbles.

With respect to the domestic arrangements a few words must suffice. The bedsteads were of the simplest construction of wood or iron. The mattresses consisted of a large sack slit up the middle and stuffed with straw. They were rough and hard; but it was surprising how very few bed-sores were produced thereby—a result due probably to the youth and naturally healthy constitution of the men. The ordinary diet consisted of coffee and bread in the morning; a bowl of soup, with meat and vegetables, for dinner; soup and bread, or eggs, for supper; beer or red wine in very moderate quantities. Few things surprised me more than the small quantities of stimulants given by the German surgeons. Even in cases of profuse suppuration, low forms of erysipelas, pyæmia, &c., they give no brandy, and only moderate quantities of red wine (claret). This seemed to me to be a fatal error; and several cases would, I feel assured, have done better under a more actively stimulating treatment. Even with the enlightened views of the German school of pathology, there is still much of the old prejudice with respect to the nature of inflammation.

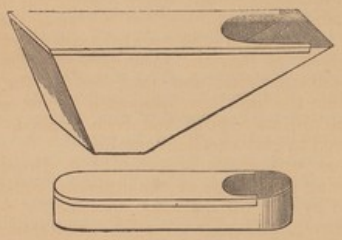
The irrigators employed in washing out the wounds, and especially the long sinuses left by the tracks of the bullets, are of great value.

They consist simply of a tin vessel with an aperture near the bottom, to which is attached an india-rubber tube with a bone nozzle. By means of this contrivance a continuous stream can be made to play over the wound, and thus effectually wash out the sinuses, &c., without the use of sponges. I regret to say that the latter were, however, in far too constant use; and as servants can never be got to attend to precautionary measures, these sponges were frequently carried from patient to patient, necessarily often loaded with the very poison of pyæmia. I cannot but attribute much of the very serious pyæmic epidemic from which we suffered to the want of sufficient caution in small matters of this nature.

The plaster-of-Paris bandage was the only form of stiff apparatus employed in the treatment of fractures and injuries of joints. It is, I think, inferior to the starch bandage, both in durability and comfort. The plaster is liable to crack, and to be weakest at the very points where most strength is needed; it is, moreover, difficult to remove, and cannot be easily tightened as the limb shrinks. It has, however, some great advantages in the eyes of military surgeons in the rapidity with which it becomes firm, and in the readiness with which it may be applied.

A mode of treatment lately adopted very generally in German hospitals had an extensive trial at Dresden. I refer to the practice of keeping limbs, the subject of acute inflammation, in water-baths for long periods. These baths are made of sheet-zinc, and are of various shapes suited to receive the fore-arm, leg, &c., (see fig.)

Fig. 1.



The limb rests upon slings stretched across the bath; the water is employed warm, and can easily be renewed from time to time. This mode of treatment appeared to be of some value in cases of phlegmonous erysipelas. I have occasionally seen all redness, hardness, and pain leave a part in less than twenty-four hours under the influence of the water-bath. It was also extensively employed in cases of wounds of the foot and hand, where several joints, tendons, &c., were implicated. The objections to the method are, that the soft parts become extremely sodden, and the granulations around the margin of the wound exceedingly flabby and prominent. The former objection might be obviated by frequently oiling the skin of the part immersed; this would in some measure prevent the absorption of water by the cuticle. The patients seemed to derive much comfort from the use of the bath in cases of injury of the foot, and it seemed to be effectual in preventing suppuration from extending along

the sheaths of the tendons. Another plan adopted in cases in which it was required to apply hot fomentations to a limb, where a joint was injured or a bone fractured, consisted in placing the limb in a wirework trough padded and lined with macintosh, so that the fomentation cloths were effectually covered and protected at the same time that the limb was supported almost as well as if an ordinary splint had been applied. This appeared to give excellent results.

There was ample opportunity in Dresden of observing the effects of the different bullets employed by the three armies, Prussian, Austrian, and Saxon; and after a careful examination of a very considerable number of cases, I cannot agree with the opinion which I find generally entertained in this country, that the bullet of the Prussian needle-gun produces a *less* serious wound than that of the Austrian Minie rifle. I have before me a preparation of the lower end of the left femur, in which the condyles have been completely separated from the shaft by a Prussian bullet, and which presents a good example of what it is capable of effecting.

Fig. 2.

In this case the ball entered in front and to the inner side, and passed out behind and to the outer side, carrying away with it a large quantity of small fragments. A more complete destruction of the bone could hardly have been produced by a single bullet. I have another preparation of gunshot fracture of the humerus, in which at least two inches of the bone had been carried away by a Prussian bullet, and lodged under the skin on the inner part of the arm. As the effects produced by different forms of firearms are now creating some interest, it may be worth while to dwell on this subject more fully. The three forms of bullet employed in the late war are represented in the annexed figures, of their natural size.

Fig. 3.

Prussian *Saxon* *Austrian*

The Austrian bullet is somewhat the largest and heaviest of the three; it is a simple conical bullet, with two deeply cut rings near the base, and with a moderately deep depression in the base of the cone. The Saxon bullet is the smallest, and somewhat the lightest of the three; but the difference between its weight and that of the Prussian bullet is inconsiderable; it weighs 452 grs. It forms a truncated cone, the apex being

cut off; it is also characterized by a shallow ring on its surface, and a deep but narrow pit at the base.

The Prussian bullet, the most interesting of the three, is not simply conical, but might rather be described as consisting of two cones, one of which is truncated, united together at their bases. It is perfectly smooth, being marked by no rings or pits. A small knob is often left where it has been cut off from the mould. It weighs 486 grs, and is a trifle lighter than our English Enfield bullet.

In estimating the effects produced by these various bullets, it must be remembered that the Prussian soldiers never fire at long ranges, seldom beyond 150 yards; whilst the Austrians and Saxons frequently fire at over 300 yards range. The Prussian bullets, therefore, struck the enemy whilst retaining a high velocity, and produced proportionately serious effects. Many wounds were, indeed, received at very close quarters, the needle-gun enabling the Prussians to fire at a distance of six feet from the enemy—an advantage which rendered the bayonet an almost useless weapon. An instance of this was mentioned by one of the Austrians; and the account was generally believed to be substantially true. A brigade of Austrians, numbering about 1000 men, charged a body of Prussians in an open plain. There was just sufficient distance to enable the men to employ a bayonet charge to the greatest advantage. The Prussians, however, fired with such rapidity without bringing their rifles to the shoulder that when the Austrians came within six feet of them there was only the

last company—about sixty-five men—remaining. These were so staggered by their fearful loss that they all threw down their arms, and gave themselves up as prisoners.

The difference in the effect produced is more observable in the change of form the bullet itself undergoes, than in the injury it causes. The peculiarity in the action of the Prussian bullet appears to result from the fact that, instead of its apex coming in contact with the bone &c., it usually strikes somewhat obliquely, and, if it have not sufficient impetus to enable it to pass out on the opposite side, it is found irregularly flattened from side to side, and retaining no trace of its original form; whilst the conical Minie bullets, impinging directly upon their apices, are generally flattened in a direction from before backwards, and almost invariably retain some of their characteristic marks. Fig. 4 represents a very fair specimen of a Prussian bullet after having struck against a bone. It was removed after death from the midst of a number of small fragments of the humerus, against which it had struck.

Fig. 4.

I have seen Austrian and Saxon bullets retaining their form almost unchanged, after doing great execution in the long bones; but I have never seen a Prussian bullet, which had struck a bone, remaining unaltered in shape.

A short account of a case noticed in the Wards may prove interesting as illustrating some of these points; it is as follows:—A Prussian soldier standing with his left leg advanced was shot by an Austrian; the bullet passed through the calf of this leg, and penetrated the Tibia of the right one producing a cleanly cut hole, which readily admitted the tip of the forefinger; there was absolutely no splintering of the bone around it. The bullet was found lying immediately beneath the skin, and was successfully removed by Dr. Von Kranz, the patient doing remarkably well, the man was very proud of his bullet, which was but slightly damaged in spite of what it had accomplished. He was a very plucky fellow, and related with great satisfaction how he had not only shot his enemy after receiving the wound, but had actually crawled up to him and taken his ramrod as a trophy: a little incident, which shews how close the combatants were to one another, and accounts for the unusual form of fracture. I have presented to the Museum of University College a preparation, exhibiting a gunshot fracture of the upper end of the Tibia, which in some respects resembles the above; here however the knee joint was implicated.

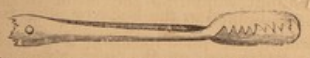
There were many large lacerated flesh wounds produced by splinters of shells, &c.; but these, as a rule, presented but little of interest. Dr. Knorr successfully removed a portion of grenade shell, measuring one inch and a half in two directions,

and a quarter of inch in thickness, from the superior maxilla of a Prussian soldier; but this was, I believe, the only case of the kind in the hospital during my visit.

The search after bullets and their extraction was a source of the greatest interest both to surgeons and patients. It often proved a matter of the greatest difficulty to determine whether a bullet was lodged in the body or not; frequently the men would assert positively that the ball had been extracted on the field, when it subsequently proved not to have been the case. The excitement produced in some men by the sight of the bullet was most astonishing. An Italian seized his bullet, bit it violently, and cursed it so furiously that it had to be taken from him to prevent him injuring himself. A Prussian soldier, apparently by no means an excitable fellow, on seeing the ball which had been removed from his thigh, burst into tears, and shaking hands with us all round, divided his attention between blessing us and cursing his bullet. The men always kept them as valuable relics, and would not have parted with them at any price. The "Garidaldi sonde," as it is called after the illustrious hero for whose case M. Nélaton invented it, proved of the greatest service. I have known a bullet, buried at a depth of four inches in the fleshy part of the thigh, recognised by the faint streak of lead left on the unglazed porcelain at the end of the probe. By its aid it was easy to determine between a piece of fractured bone and a bullet. Of the instruments used for extraction, the ordinary bullet-screw and long forceps were perhaps the two most commonly employed; but the new

American bullet-forceps was very highly spoken of. Its peculiarity consists in the sharply serrated blades crossing one another, and not simply meeting. Fragments of all shapes were easily removed by this instrument.

FIG. 5.



The above figure represents somewhat imperfectly the form of the original. The anterior part of the lower blade is intended to lie in a plane nearer the spectator than the similar part of the upper blade; whilst in the posterior half the upper blade is the more superficial of the two; so that the two blades cross one another.

With regard to the apertures of entry and exit, there was, as a rule, very little difference to be observed between them; they were often of the same size, and presented very much the same characters. I frequently observed that the supposed aperture of exit healed more rapidly than the other. The account of the patient could rarely be trusted; and I found the holes in the clothing to be the best guides, as here the aperture of exit was invariably the larger and more irregular of the two. In one case, in which a bullet had penetrated both thighs, it was only by examining the trousers that we could determine the direction it had taken, the patient's account proving incorrect.

As might be expected from the nature of the firearms employed and the shortness of the range, but few instances occurred of bullets having been turned by a rib or other bone; I had however, an opportunity of seeing three cases in which the bullets had tunnelled under the skin for a consi-

derable distance after striking against a rib, and another in which the ball had passed round the Humerus instead of penetrating it, severe periostitis ensuing. Instances of very narrow escapes were to be found in the Wards: in one case a bullet had passed for two inches through the abdominal wall between the skin and the peritoneum without wounding the latter in the least; there was no peritonitis, and the patient was doing well. On one occasion a Prussian was lying on the ground whilst skirmishing, when a bullet struck him immediately above the clavicle just external to the line of the subclavian artery; instead however of penetrating the chest, as might have been anticipated, it passed under the bone, and having struck against the tip of the coracoid process escaped through the skin, thus making a most curious passage. As an example of multiple wounds I have already instanced a case in which the bullet had passed through both thighs, producing necessarily four openings; in another patient the bullet had penetrated the upper part of both thighs and the intervening scrotum, and in another it had passed through both buttocks. One poor fellow had received four distinct wounds, viz. compound fractures of the lower jaw, and forearm, and flesh wounds in the thigh and leg. Another man was reported to have received as many as six distinct bullet wounds.

Judging from the number of cases of hopelessly bad fractures that were sent to Dresden from the field hospitals, there must either have been a great want of operative assistance on the spot, or the most unbounded faith in the reparative powers

of nature. I have had the opportunity of dissecting very many cases of extensive comminution of the bones of the elbow, knee, &c., in which one would have thought that no surgeon could have entertained the faintest hope of saving the limb. Primary operations are so universally recognised by military surgeons as superior to secondary operations, that their non-performance was probably solely due to the enormous strain thrown upon the exertions of the surgical staff on the field. The circular method was most generally adopted in preference to the flap, in consequence of a belief that the latter exposes the patient to a greater risk of pyæmic infection from the magnitude of the wound. In cases where, from the nature of the injury, the flap operation became necessary, the single long flap was generally preferred.

Resections were seldom performed; in fact, I only saw one of the elbow-joint. For although several cases must have afforded excellent opportunities for primary resection, yet at a later period the extensive suppuration, and disorganization of the soft parts, precluded all hope of a satisfactory result.

I obtained three specimens of gunshot fracture of the bones in the neighbourhood of the elbow-joint, which illustrate forcibly the need for primary resection in these cases; and I cannot call to mind any instance of fracture implicating this joint, which appeared likely to recover without operative assistance.

Of the other operations of conservative surgery we had but few examples. The only case of Pirogoff's amputation of the foot ended fatally

from profuse traumatic gangrene. In several cases, I think, Syme's amputation might have succeeded, but there was generally in these cases too much infiltration of the tissue of the heel to promise a favourable result, and amputation in the lower third of the leg was preferred.

Considering the number and variety of the wounds under treatment, secondary hœmorrhage was of unfrequent occurrence. Dr. Kœhnhorn ligatured the axillary and the femoral arteries for repeated hœmorrhage from wounds of the respective limbs; both cases were successful as far as the operation was concerned, but one of them (the femoral) became pyœmic when the wound was nearly closed. A case of ligature of the brachial resulted in amputation at the shoulder-joint, in consequence of severe secondary hœmorrhage at the seat of ligature; on examination, there was found to be a very small and incomplete clot in the artery.

In no case of hœmorrhage from the lung resulting from gunshot injury was it found necessary to employ venesection, digitalis generally proving efficient when combined with the ordinary astringents. One very interesting case occurred under the care of Dr. Mœnnel, in which the patient, after spitting blood for fourteen days, recovered with the bullet remaining in his body; when he left the hospital he had only a very slight cough, and no pain.

Any statistical conclusions founded on observations made solely in the Hospitals of Dresden must necessarily have little or no value, because for the most part, cases of a certain degree of severity only were sent there, the more severe

being retained in Bohemia, and the lighter ones being sent on to more distant towns. I shall therefore forbear drawing any such conclusions from the results of my experience.

I propose to conclude this brief account with a few reports of some of the most interesting cases that occurred at the hospital.

Case I.

(Under the care of Dr. Mœnnel).—A Prussian struck in the root of the neck on the left side by a round ball from the bursting of a Saxon shrapnel or canister-shot; the ball measured about half an inch in diameter. On admission, the patient had much stiffness and pain on moving his neck, and kept his head inclined to the right side. He subsequently had pain in his back, dulness over his left lung, and extreme difficulty of breathing. It was believed that the ball had entered the thorax. He died with evident signs of pyæmia on July 21st, having received his wound on the 3rd.

Post-mortem examination.—The track of the ball was carefully examined, and it was found to have entered into the posterior triangular space of the neck a little anterior to the margin of the trapezius, to have passed thence behind the sterno-mastoid, behind and very close to the jugular vein, vagus nerve, and carotid artery to the sixth cervical vertrebra, in the body of which it remained impacted. The posterior surface of the œsophagus had been almost grazed by the ball, and there was an abscess in the cellular tissue between it and the spine, running down to about

the second dorsal vertebra, and containing the remains of a blood-clot mixed with purulent fluid. Inflammation had extended through the intervertebral substauce to the bodies of the fifth and seventh cervical vertebræ. The left lung presented the first stage of hepatization throughout its lower lobe, and the right lung was intensely congested. Both lungs presented numerous metastatic abscesses scattered over their surfaces, varying in size from that of a pin's head to that of a filbert; evidence of a slight recent pleurisy on the left side. Other organs normal. No abscesses in liver, spleen, or kidneys. In this case it is highly probable that the system became affected through the veins of the vertebræ, as the external wound was insignificant in size, and the abscess had not implicated any important structures. The patient had not been exposed to any special risk of pyæmic infection, as no cases had occurred in his immediate neighbourhood. Unfortunately a few days after he had exhibited unmistakable signs of pyæmia, two other patients in the adjacent beds became affected. The preparation of the vertebra is in the museum of University College.

Case II.

(Under Dr. Brinkschulte).—A Prussian received, on July 3rd (Battle of Kœniggrætz), a wound in the left gluteal region in an oblique direction, from a Saxon bullet. He felt at the moment of being struck as if the whole of his leg below the knee had been carried off, suffering intense pain in this part. It was some time before he could

realise that he had not lost the greater part of his limb. He remained completely paralysed in the left lower extremity till his death on the 24th, which resulted from exhaustion and profuse suppuration. Injury to the sciatic nerve was diagnosed.

Post-mortem examination.—The aperture of entry was situated at a spot in the left gluteal region corresponding to the level of the third sacral vertebra, and at about two inches and a half from the middle line. From this point the track of the bullet was traced in a direction obliquely outwards and downwards, and was found to pass through the outer quarter of the sciatic nerve, the whole thickness of which was much bruised and blackened. It then entered the neck of the femur through the whole length of which it passed, emerging at the posterior and outer part of the root of the great trochanter, where the bullet was found lying immediately under the integuments. (See Fig. 6.) On further examination it was found that the neck of the femur was com-

Fig. 6.

pletely split into two parts, an anterior and a posterior part; the former carrying the head, and

the latter, which was incomplete in consequence of the loss of some loose fragments, remaining attached to the shaft. In the sketch the posterior fragment has been turned outwards to exhibit the fractured surfaces, and some small fragments from the posterior surface near the head have been turned downwards. Inflammation had extended into the hip-joint, the head of the femur being completely denuded of cartilage, and the ligamentum teres grey, soft, and shreddy. There was extensive suppuration around, and a blackish-grey fetid matter was burrowing deeply amongst the muscles of the thigh.

The ball was but slightly altered in shape, appearing bruised on one side only. It must have been fired at a very short range, as the tissues in its track presented the appearance of having been burnt with a hot iron.

The preparation is in the museum of University College.*

Case III.

An Austrian, shot in the back on the 3rd July, and died on the 25th. No clinical history was obtained.

Post-mortem examination. — The bullet entered the body of the fifth sacral vertebra, and wound-

* Since the above was written I have carefully examined the bone, and I have reason to believe that the above diagram and description of the course of the bullet are somewhat inaccurate. The ball, I believe, entered at the spot indicated, but escaped at the root of the small trochanter, and then passed round the shaft to the position in which it was found: this is, I think, proved by the appearance of the fractured bone; the result however was as represented in the figure.

ed the wall of the rectum in its passage towards the left side; here it struck and fractured the left innominate bone at a spot immediately external to the thyroid foramen, at the same time opening the hip-joint and bruising the head of the femur. From this point all trace of the bullet was lost; and as it certainly was not to be found even on careful search, it had probably fallen back into the pelvic cavity, and had escaped or been extracted through the aperture of entry. The cavity of the pelvis was filled with a dark grumous and very fetid fluid, mixed with broken-down blood-clots. An extensive effusion of blood had taken place under the peritoneum lining the pelvis, and under the serous coat of the sigmoid flexure of the large intestine. The left ischiatic and pubic bones were completely shattered, and numerous sharp fragments of bone were found lying loose in the cavity, whilst others projected into the muscles of the upper part of the thigh, where an abscess had formed. The hip-joint was completely disorganized, and the bones denuded of cartilage. The bladder was uninjured. The other viscera were not examined. This post-mortem was made on the floor under considerable difficulties.

Case IV.

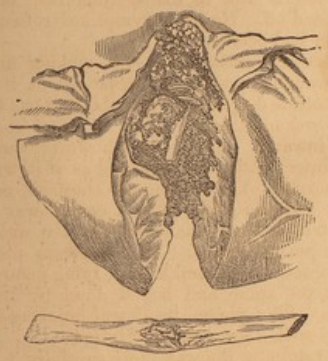
(Under Dr. Spitfner).—An Austrian, who received a bullet-wound on the 3rd July at a spot situate over the sixth rib, about two inches below and somewhat behind the right nipple. The patient died on the 25th, with symptoms of empyema and pneumothorax. He had had some

slight peritonitis, and for a few days had had a slight icteric tint in his conjunctiva, but this had passed off. No other symptoms referable to the liver had occured.

Post-mortem examination.—On making an incision through the wound, it appeared as if it did not penetrate deeper than the subcutaneous tissue; the rib was not fractured, and no canal could be traced inwards. At one spot, however, the tissue of the intercostal space appeared as if it was not quite normal. On opening the chest air escaped freely; and the right pleural cavity was found to contain a large quantity—about a quart—of reddish puriform fluid. The lung was found to be collapsed, dense, and airless, lying compressed against the spine, and bound down by firm adhesions. The pleura itself was thickened, and covered with a grey shreddy lymph.

On examining the wall more carefully, a rough fragment was found projecting from the inner surface of the seventh rib, from which a piece seemed to have been torn off. The diaphragm came in close contact with the parietes at this spot, and a hole was found in it, through which the finger could be introduced into the liver. A probe could be passed through the whole thickness of the organ, and be withdrawn at the under surface, where a sharply-cut hole, measuring about half an inch in diameter, existed. The diaphragm was firmly united to the surface of the liver. On larying open this canal, the condition represented in the annexed figure was found. (See Fig. 7, copied from a drawing made on the

Fig. 7.



spot.) The aperture of entry through the diaphragm measured three-quarters of an inch, and its edge presented the appearance of having been pushed inwards; that of the aperture of exit appearing, on the other hand, sharply-cut and somewhat everted. The canal itself had a fusiform outline, being much wider in the centre than at the extremities. It contained a considerable quantity of a thick grumous fluid, apparently consisting of altered blood, bile, and pus. The wall presented a very rugged appearance, being lined with loose portions of liver-substance, blood-clot, and with masses of biliary concretion exuding from the ends of the ducts. In the midst of these lay a fragment of bone, about an inch and a half long, exactly corresponding to the

piece missing from the rib. It had evidently been carried onwards by the bullet, and lodged in the liver-tissue. On tracing the canal further, it was found to pass behind the colon ascendens, through the fat surounding the kidney, and even grazing the capsule of the lower part of that organ. From this point the track was not so distinct, an abscess having formed and burrowed downwards along the sheath of the psoas, as far as the iliac crest. The ball must, however, have struck the body of the first lumber vertebra, as this was fractured and presented an indentation, with fissures radiating from it. Here probably its course was arrested, and after lying some time in this spot it must have fallen against the wall of the colon ascendens, and have ulcerated its way into the gut, and so have been discharged per anum, as, in spite of the most careful search throughout the whole abdominal cavity, no further trace of it could be found. The coats of the intestine around the orifice were thickened and united together; the edges of the orifice presented much more the appearance of ulceration than of direct penetration. There were some adhesions between several coils of intestine, and here and there between them and the wall. No purulent peritonitis existed, and no fæcal extravasation had taken place. The symptoms had been almost entirely referable to the chest. Nothing of note was found in the other organs.

The drawings and preparations are in the museum of University College.

Case V.

An Austrian shot in the abdomen on the 3rd of July. At first he had some severe peritonitis, which passed off; later he became intensely yellow, and died pyæmic on the 27th.

Autopsy.—The external wound was completely closed, and covered with a dry scab; it was situated at a spot two inches to the right of, and two inches and a half below the umbilicus. On opening the abdomen, there was found to be evidence of some slight general peritonitis, and of a considerable amount localized in the right ilac fossa; here the caecum and the neighbouring part of the colon ascendens were bound to some coils of the small intestine by bands of lymph. At one spot the adhesions were firm, and appeared to be partly organized. On gently separating them, it was found that they served to close a hole leading into the colon at a point about an inch and a half above the ileo-caecal valve. Directly opposite to this hole was another, effectually closed by the adhesions formed between the gut and the wall of the pelvis; on removing the intestine, an indented fracture of the brim of the pelvis was found, situated immediately above the sciatic notch, and from which two deep fissures extended upwards and downwards. Considerable extravasation of blood had taken place beneath the peritoneum, and some clots of blood, apparently freshly formed, were found in the pelvic cavity. The bullet was found lying embedded in these clots, but not in any

way encysted; it was of course a Prussian bullet, and presented a distinct mark on its side where it struck against the bone. No fæcal extravasation had taken place.

Case VI.

This case, although a suicidal one, and only indirectly connected with the war, presents so many points of interest that I venture to introduce it here. It illustrates well the results produced by the favourite mode of suicide in vogue at present amongst the Prussian soldiers.

A Prussian soldier of the 20th "Landwehr" regiment, a fine and very handsome man, shot himself through the eye in consequnce of having received the melancholy tidings of the sudden death of his wife and three children from cholera whilst he was absent on duty in Dresden.

The ordinary method of suicide, which he adopted, is as follows:—The man loads his "zündnadelgewehr" in the usual way at the breech. He then drives down the barrel a small wad of cotton, pours water in until the barrel is about one-third full, and then drives in as far as the water a small cork or wad. Having prepared this enormous charge, this man must have looked down the barrel with his left eye, and pulled the trigger with his toe. Death must have been instantaneous; and at the post-mortem the following conditions were observed:—The face was burnt and blackened for rather more than an inch around the left orbit, and a little on the right side. The eyelids were but slightly destroyed, the edges only being burnt off. There

was a wound in the scalp over the superior posterior angle of the left parietal bone, where the bullet had passed out. On removing the scalp the entire left side of the calvaria was found to be completely smashed into small irregular fragments, varying for the most part in size from one to four square inches. The sutures were so much loosened that they could be separated without difficulty. Deep fissures in the bone extended across the base, through the ethmoid and sphenoid, and between the right parietal and occipital bones. The left cerebral hemisphere was simply a pulp of mingled brain substance, blood, and water. A large clot of blood extended into the right hemisphere, and down to the medulla and cerebellum. Such a remarkable comminution of the bones could only have been produced by the rending force of the water employed, as the bullet had evidently passed directly through the skull at the posterior superior angle of the left Parietal Bone, and could not have caused such extensive mischief. This Aperture of exit presents a very good illustration of the truth of Mr. Erichsen's statement, that the difference observed in fractures of the two tables of the Skull depends as much upon the direction of the force, as upon the anatomical structure of the tables themselves, and is also in accordance with the results of Mr. Teevan's experiments. The inner table in this case has been cleanly perforated by the bullet, the edges of the whole being sharp and well defined, whilst those of the outer table are bevelled off in a direction corresponding to the course of the ball, the aperture being thus almost funnel shaped.

The preparation of the vault of the Cranium is in the Museum of University College.

Case VII.

An Austrian was wounded on the 3rd July over the left clavicle by a bullet, which had either been extracted, or had fallen out after striking the bone. The Clavicle was broken transversely about its middle; there was remarkably little comminution and no further wound of the Pleura. The patient died on 23rd July with symptoms of empyema, which led to the belief that the wound had penetrated the chest.

P.M. The Cavity of the left Pleura was completely filled with a thin, grumous and fœtid pus and a large quantity of flaky lymph: on the most careful examination no wound of the Pleura could be discovered.

The left lung was found contracted, lying closely against the spine except in those parts, where it was attached to the parietes by some old adhesions. It was completely airless, except near the apex and anterior margin: the general substance was hard and dense. The right lung was very emphysematous and free from adhesions. There was extensive and active Pericarditis; the Heart being adherent to the Pericardium by numerous bands of recent lymph, affording a most characteristic specimen of the "Cor Villosum." Other organs normal: no pyæmic abscesses present.

No clinical history could be obtained in reference to the cause of the Pleurisy and Pericarditis; the latter was probably secondary to the former.

Case VIII.

An Austrian received a gunshot wound of the arm on the 3rd July: he became intensely jaundiced and died pyæmic on the 23rd.

P.M. The bullet had entered in front and having passed directly through the Humerus escaped at the posterior surface.

The interest in this case consisted in the remarkably clean fracture of the Bone: it was a simple transverse fracture without any splintering upwards or downwards, and the fragments could be brought into direct apposition. The apertures of entry and exit were remarkably similar, from which we must suppose that the ball possessed a high velocity at the time it inflicted the wound. I saw no other instance of fracture produced by a Prussian bullet, in which there was so little laceration of the soft parts.

It was a case of all others, in which a successful result might have been anticipated from an attempt to save the limb, and it may advantageously be compared with the following.

I may mention that the examination was incomplete, in consequence of its being carried on in the presence of several soldiers on the floor of a large riding school.

Case IX.

An Austrian died on the 26th July in consequence of a gunshot fracture of the Humerus received on the 3rd: during the course of treatment

several considerable fragments of bone were removed through the wound. An abscess formed under the Pectoralis major, and after it had been opened serious hæmorrhage took place into the Cavity. Death resulted apparently from pyæmia.

P.M. The bullet entered the limb on the outer side, and having struck the shaft of the Humerus about its middle fractured the bone, and carried off about two inches of its length in the form of small fragments. It had not however sufficient force to overcome the elasticity of the Skin, and was therefore found imbedded amongst the bony fragments immediately beneath the integuments, presenting the form represented in fig. 4.

The origin of the Abscess under the Pectoral was doubtful: I considered at the time that it was a result of a blow, or some other injury unconnected with the Bullet wound; I was however assured by the Attendant that it had formed apparently spontaneously whilst the patient was in the hospital. It was probably of pyæmic origin, as small metastatic abscess existed in the fibres of the Deltoid.

In such a case as this it is evidently hopeless to expect union, and with so much laceration of the soft parts amputation should have been performed on the field. The differences between this and the former case, the fractures being produced by similar bullets at similar parts of the bones, can only be explained by supposing a difference to have existed in the velocities of the projectiles.

The Preparation of the Humerus and the Bullet is in the Museum of Univ. Coll.

Case X.

An Austrian, who had received a wound in the cheek and another in the Shoulder, died from pyæmia on the 30th July.

P.M. In the wound of the left Shoulder the bullet had entered just below the clavicle, and passing obliquely through the neck of the Scapula had carried off numerous fragments of bone into the neighbouring soft parts; it had also bruised the head of the Humerus, and had ultimately escaped through a wound situated behind and to the outer side of the shoulder. A vast clot of Blood was found in the Axilla and under the Deltoid, which appeared to have been of recent formation. The articulation was of course entirely destroyed as nothing remained to represent the glenoid cavity. Abscesses were found disseminated through both lungs, but were most marked in the right: some of them presented the unusual appearance described above, suppuration having taken place outside the ring of hæmorrhagic effusion, which was always present in these cases around the central slough, and which resulted I presume from the embolic obstruction of a vessel. The other organs tolerably healthy.

In the wound in the right cheek the bullet had entered at a spot corresponding to a portion of the jaws, where some teeth had been extracted, so that no fracture or injury of the jaws had been produced. The Bullet may have escaped through his mouth, and it is quite possible that the same bullet produced both injuries, as the man may have been inclining his head to the left side.

The Preparation of the Bones of the Shoulder Joint is in the Museum Univ. Coll.

Case XI.

(Under Dr. Mænnel).—A Prussian shot in the back at the Battle of Gitschin progressed favourably for a considerable time; paralysis however commenced in the left leg, and gradually increased, until both lower limbs, then his bladder on the 21st, and lastly his arms on the 24th, became affected. The Bullet was believed to have been extracted on the field, as stated by the patient himself. He died on the 27th of July, exactly one month after the receipt of his wound.

P.M. The wound in the integuments was situated over the upper part of the left sacro-iliac articulation; some loose fragments of bone could be felt with the probe, but no further injury could be discovered.

On carefully dissecting in the neighbourhood of the wound a sinus was found to exist, extending downwards for a distance of about $\frac{3}{4}$ inch, and then opening into an abscess, which penetrated deeply along the side of the spine amongst the mucles, producing complete disorganisation of their tissues as far as the lower dorsal vertebræ. By the side of the spine of the last lumbar vertebræ lay the bullet, somewhat misshapen, but retaining evidence of its having been originally a round, and not a conical bullet, (probably a Saxon one).

On opening the Spinal canal, (not without some difficulty, the instrument case being unprovided with a suitable saw,) a large quantity of

pus was found lying between the Dura Mater and the Bone, and extending at least as high as the 9th or 10th Dorsal vertebræ. Some of this might certainly have entered into the canal during the process of opening it, but there must have been pus present during life, as numerous flakes of lymph with pus entangled in their substance were found covering the surface of the membrane. The Dura Mater in the lower part of the canal having been laid open, there was found to be injection of the sheaths of the nerves forming the "Cauda equina"; and in parts of them some curious transverse striae of a whitish colour were noticed by Dr. Maennel. The Cord itself appeared of good consistence, and the grey matter distinct: at one spot a shred of doubtful false membrane was removed from the meninges.

Lungs; the left presented numerous pyaemic abscesses of moderate size scattered over the surface: there were also some in the right lung, but here the most noteworthy object was an enormous Infarct in the posterior part of the lower lobe, measuring about $2\frac{1}{2} \times 2$ inches at the surface, and extending inwards in the form of a wedge to a depth of $1\frac{1}{2}$ inch. Beneath the pleura this was of a greenish yellow colour; but on section the interior presented the dark moroon colour of pulmonary apoplexy, surrounded by a reddish yellow border separating it from an area of intensely congested lung tissue.

Several other smaller Infarcts also existed.

Heart; a large discolourized clot completely filled the cavities of the right side. On the left side there was evidence of acute endocarditis on the surface of the mitral valve; small hæmorrha-

gic spots and vascular thickening of its borders. In one of the papillary muscles a metastatic abscess, as large as a pea, was found. Pyaemic abscesses of moderate size were found in the liver; and an Infarct in the Spleen. The kidneys presented nothing worthy of note.

The Bladder was the subject of acute Inflammation: haemorrhage had taken place at various points beneath and into the substance of the mucous membrane; the intermediate parts being lined with a flaky, and imperfectly adherent false membrane of a pale greenish yellow colour.

The amount of injury done to the bone was unimportant.

In this interesting case there are several points worthy of attention: the gradual progress of the paralysis, due doubtless to the pressure produced by the collection of pus in the spinal canal; the absence of all spasm in the legs, in spite of the injection observed in the sheaths of the nerves in the Cauda equina; the extensive distribution of pyæmic abscesses; the enormous Infarct present in the lung; and lastly the metastatic abscess in the Heart, the only instance of the kind met with in this series of cases.

Case XII.

Under Dr. Spitfner. An Austrian shot in the little finger of the left hand at Königgrätz; amputation of the finger was subsequently performed, and in consequence of severe secondary hæmorrhage, the terminal part of the Ulner Artery was ligatured. The patient became somewhat icteric, but not markedly so, and had a

considerable amount of diarrhœa: hæmorrhagic spots appeared over the surface of his body. Death on the 26th July.

P.M. *Lungs:* the right lung was found to be slightly adherent to the chest wall over its entire surface, evidently the result of an old pleurisy. The base presented some hypostatic congestion, but not very marked: at the posterior part of the upper lobe there was a metastatic abscess having the usual characters, measuring about 1 square inch on surface and extending $\frac{3}{4}$ inch into the substance; hæmorrhage had taken place around. The left lung was free from adhesions, but presented several metastatic abscesses.

Heart: contained a decolourized clot; substance flabby.

Liver: upper surface adherent to diaphragm: on removal there was found to be an enormous abscess in the most prominent part of the right lobe, the superficial measurements being 4 inches from side to side and $2\frac{1}{2}$ from before backwards: when opened it was found to contain a large sloughly mass bathed in stinking pus; the wall of the cavity was lined with shreddy masses of broken down tissue. Scattered over the surfaces of both lobes were numerous irregular clusters of small abscesses, some united together, some separate: those on the under surface presented remarkable arborescent forms, in consequence of the lobules being affected along the lines of the branching portal canals; in the centre of each lobule was a dark spot caused by the congested branches of the Hepatic vein. Suppuration had evidently in this case taken place in the part supplied by branches of the portal vein or hepatic

artery, probably the latter, a point of some interest when considered in relation to the much vexed question of the origin of these deposits.

Spleen: a well defined Infarct existed at the surface of the ordinary form; and a circumscribed mass presenting many of the characters of an infarct was found occupying the centre of the organ.

Kidneys: presented evidence of old inflammatory changes, whilst some recent hyperæmia was present.

Intestines: congestion of the mucous membrane and scattered hæmorrhagic spots were found throughout the canal; the membrane presented an unusually soft appearance: Peyer's patches and the solitary glands were large, but presented no evidence of Typhoid condition.

The Parotid gland on the left side exhibited a remarkably fine example of recent acute inflammation: the lobules were distinctly mapped out by the enlarged and turgid vessels, the whole gland being much swollen, hard and tense. The patient had complained of pain and swelling in the region of the gland for 3 days previous to his death.

On examining the neighbourhood of the wound extensive extravasation of blood was found throughout the forearm, the wound was sloughy, and the entire palm of the hand was infiltrated with pus.

Amongst the many curious cases which occurred in the hospital, I may briefly notice two. First, a case of true senile gangrene, or mummification of the toes of both feet, occurring in a young Hungarian, probably under twenty-five

years of age (beardless, and only just cutting his wisdom teeth), who had received a flesh wound in the upper part of his left thigh. The wound did not implicate the vessels, and pulsation could be felt in the tibial arteries. There was no evidence of early degeneration, no arcus senilis, no calcification of the vessels, and no evidence of valvular disease of the heart; the heart's action was, however, feeble. No history of ergotism could be obtained. The gangrene commenced in the toes of the left foot, and extended to the sole, and then attacked the great, middle, and little toes of the right foot. A distinct line of separation had formed. The Patient's skin was hot and dry, his pulse feeble but frequent, and his general aspect dull and heavy. He appeared to suffer very considerable pain especially on movement.

The particulars of his case were obtained with difficulty through an interpreter, as the man did not speak German; he did not know what his age was exactly. Dr. Von Kranz, under whose care he was, will probably publish a full report of this interesting case.

Second, a case in which a bullet had entered by the side of the anus, and escaped at the extremity of the penis, passing through its whole length. The patient died three weeks after the receipt of the injury from infiltration of Urine. Unfortunately no post-mortem examination was made: it was believed however that the bullet had entered the Trigone of the Bladder.

Such is a brief outline of some of the more striking cases which occured during my short stay at Dresden, and it will serve to indicate what a rich field there was for surgical observa-

tion, and for the study of those causes which add so largely to the fearful mortality of the battle-field. It is to be hoped that the Prussian Government will follow the example set by that of the United States, and issue as full and valuable a Report on the Surgery of the War.

APPENDIX.

NOTES ON THE SURGERY OF THE AMERICAN WAR.

It may prove of some interest to those, who have not had an opportunity of seeing the very valuable report of the Surgeon General of the United States army, if I give a brief abstract of some of the more important results deduced from the enormous mass of material afforded by the late war in America, and compare some of them with the observations detailed above. I may state that I had not seen the work referred to till after my return.

Of Gunshot injuries to the Head I saw but little and can therefore draw no comparisons.

In the American War the following results were obtained. Out of 704 fully reported cases of injury to the Skull or its contents, 505 died, and 199 recovered.

Trephing was performed in 107 cases, of which 60 died and 47 recovered.

Portions of bone and foreign bodies were removed in 114 cases, of which 61 died and 53 recovered.

The per-centage mortality after operative proceedure was therefore 54·7.

In 483 cases treated by expectancy the mortality was 79·5 p. c.

The Report cautions us however against deciding in favour of operative proceedure on these grounds, the statistics being incomplete.

Some interesting cases follow illustrating many important points in regard to diagnosis and treatment of cranial injuries viz., the uselessness of trephining for the purpose of evacuating pus between the Dura Mater and the Bone (Pott): cases of fracture of the inner table of the skull only; of remarkably slow developement of cerebral symptoms; of balls being split by

striking against the skull obliquely; of recovery after perforating wounds of the brain.

Of 18 cases of Hernia Cerebri following gunshot wound 4 recovered without interference; when bandaging and compression were resorted to coma rapidly supervened; and when the tumour was sliced off it was found to be speedily reproduced, death from irritation ensuing. The conclusion is decidedly in favour of expectant treatment and simple dressing.

The summary is as follows:—

1st. In the after-treatment of scalp wounds a multitude of surgeons did not consider antiphlogistic measures of essential importance.

2nd. In the treatment of Cranial fractures, the general tendency was to the practice recommended by Guthrie in regard to operative proceedures, rather than the more expectant plan insisted upon by the majority of modern European- writers on military surgery.

In cases of injuries to the Face, the most common cause of death was secondary hæmorrhage; ligature of the Carotid postponed for a time the fatal result. The result of Plastic operations seems to have been satisfactory.

Injuries to the Spine were very fatal; out of 187 cases only 7 recovered, and of these 6 were fractures of the transverse and spinous processes; in the remaining case the canal was penetrated, and although it is stated that he is likely to recover, it is highly probable that some secondary mischief will develope itself in the spinal cord. A case is given in which the cord was divided at a level with the 8th dorsal vertebra, death ensuing on the 29th day.

I have recorded above two cases of gunshot injury to the spine, in both of which the causes of death was pyæmic infection, and in one of them suppuration had taken place in the canal producing progressive paralysis of the lower limbs. I think the special venous arrangement in the vertebræ tends to expose the patient in these cases to great risks of pyæmia.

Injuries of the chest; in 1272 fully reported cases of penetrating wound of the Thorax or of wound of the Viscera the percentage mortality was 73. The report states that Venesection was abandoned altogether in the treatment of Hæmorrhage from the Lung: cold applications, rest, and the administration of opium proving sufficient. This fact has received confirmation during the late war, (see above). Intercostal hæmorrhage was of very rare occurrence and proved to be quite a secondary

accident: in such cases complete closure of the wound for the purpose of causing compression, was followed by very fatal results.

The addition of fracture of the rib at the aperture of entry proved to be a very dangerous complication. Penetrating wounds with lodgment of the ball were more fatal than perforating wounds: of this there was ample proof. Very few recoveries are mentioned in the report, of cases in which the ball lodged in the body. (See above)

Injuries of Chest and Abdomen: under this head four cases of recovery are recorded.

In one of these the ball having penetrated the intestine was voided at stool, and in two of them the Liver was wounded, there being remarkably little peritonitis, and shock.

These points are well illustrated by case 4, the result however not being so fortunate.

Of the Abdomen 414 penetrating wounds are reported, the mortality being at the rate of 74 p. c. Some wonderful cases of recovery are given; amongst the chief points of interest may be noticed, the escape of three Ascarides lumbricoides through a wound in the small intestine from which a thin fluid without fæcal odour was discharged, no motion being passed for 29 days; a bullet was voided, at stool 14 hours after penetration of the gut, probably the transverse colon judging from the position of the wound.

It is stated that recoveries after wounds of the large intestine were much more numerous than after those of the Ileum or Jejunum. Sutures do not seem to have been required in any case.

Wounds of the Liver were generally rapidly fatal from extravasation and peritonitis; out of 32 cases, 4 however recovered.

Wounds of the Spleen were all fatal. Doubtful cases of recovery are reported after wounds of the Pancreas and Kidney.

Ventral Hernia seems to have resulted in two cases from laceration of the abdominal wall and protrusion of the Intestine—Portions of omentum were excised with apparent advantage.

Penetrating wounds of the Abdomen complicated with injury to the spine uniformly proved fatal: a case is reported to which Case 4 bears a striking resemblance.

Fractures of the Pelvis; of 359 cases, 97 recovered, 77 died,

and the result in the remaining 185 is unknown. In most cases there was very tedious suppuration, and but little could be done except to allow the escape of pus and remove portions of dead bone. Stromeyer's observation was verified, with regard to the liability to Pyæmia in these cases.

Of the Genito-Urinary organs 457 uncomplicated cases are reported, of which 37 proved fatal. In one case a ball remained encysted in the corpora cavernosa without causing pain. Wounds of those portions of the Bladder uncovered by peritoneum not unfrequently recovered; the others proved fatal. A fragment of a grenade shell measuring 2 inches in length, 7-8ths inch in width, and 3-8ths inch in thickness and encrusted with phosphatic deposits, was removed from the bladder of a man, where it had remained for upwards of 9 months.

Gunshot wounds of the Upper Extremity give a gross total of 21,248.

The statistics are however very incomplete: of 1689 terminated cases there were 1253 recoveries, and 436 deaths.

Amputation or Excision in 996 cases gave a mortality of 21 p. c.

Conservative treatment in 693 cases gave a mortality of 30 p. c.

Gunshot wounds of the Lower extremity give a gross total of 30,014 there being 4862 fractures, and 25,152 flesh wounds.

A valuable statistical table is given in the report of which the following are the most important items:—

The only recorded recoveries after gunshot fracture of the femur involving the Hip Joint were those in which Excision was practised, the mortality rate being 83·33 p. c.

In gunshot fracture of the Upper Third, the highest mortality rate occurred in cases, in which amputation was practised, viz. 75 p. c.: excision afforded slightly better results, viz. 72 p. c., (amongst the 7 cases of recovery, in two the head and upper part of the shaft of the Femur were removed, in four the ends of the bone were sawn off, and in one, fragments and sharp points of bone only were removed): under conservative treatment a large number (93) of cases were successfully treated, the per centage of deaths being 71·81.

In wounds of the knee joint the mortality was high after amputation, viz. 73·23, but excision proved less successful, the rate being 90 p. c.: whilst conservative treatment gave 83·76 p. c.; but in this latter class many cases of recovery are included, in which there was some doubt as to the fact of the joint having been wounded.

"Comparing in gross the 822 finished cases treated by amputation, with the 1117 treated by conservation the mortality rate of the former has the advantage by 8 p. c.; an advantage that is maintained in the different regions, except in the upper third. It must be remembered that the amputations include most of the bad cases, and those in which preservation of the limb was attempted and abandoned."

The Statistics relating to fractures of the Tibia and Fibula are incomplete, the mortality is reported as about 24 p. c.

When describing the effects produced by bullets on the long bones the Report contains the following remark: "In Stromeyer's classification of the action of bullets on bone, the fifth division is that in which the ball pierces the bone and forms a canal without causing further splintering. Examples are common in the upper portion of the Tibia, but very rare in the upper extremity of the femur." Cases then follow in which this occurred in the upper and lower ends of the femur; that of the former is however not very satisfactory as considerable injury appears to have been done. A very good example of this variety of fracture in the Tibia is detailed above.

As is generally admitted, conical bullets produce greater longitudinal splintering than round ones, and experience has shewn that it is possible to operate at a point nearer to the seat of injury in the latter than in the former case.

The report also draws attention to a very curious effect produced by a bullet striking the end of a bone and producing a simple transverse fracture at a point considerably above the primary injury; thus if the bullet produced a compound comminuted fracture of the Condyles of the Femur a simple transverse fracture might be found situated about the middle of the shaft, the two fractures being quite distinct. It appears that these injuries were produced by balls fired at short range.

When a bone was simply contused and the periosteum stripped off, a limited necrosis resulted which not unfrequently terminated in inflammation in the Medullary cavity and in Pyæmic infection.

Many interesting illustrations are given of the amount and kind of union which took place in bones during certain periods, varying from 10 weeks to 9 months.

Primary and uncomplicated wounds of large vessels rarely come into Hospitals, as they are very rapidly fatal. Only 27 such cases are reported out of a total of 36,508 gunshot wounds. The report however considers that primary hæmorrhage on the battle field is of much less importance than is usually believed.

The Reports on wounds of Nerves are not given, but many observations have been made and will be published subsequently.

Very few Sabre and Bayonet wounds were received, only 105 cases of the former, and 143 cases of the latter being reported during the first three years of the war. The public seem to entertain very erroneous notions with regard to the effects produced by the latter weapon; it adds but little to the mortality of the battle field; the results produced in former wars have depended probably more upon its moral than its physical influence, and can hardly be counted on in these days of breach loaders and superior education amongst soldiers.

Only 363 cases of traumatic Tetanus were reported during the war, a comparatively small number considering the enormous number of wounds received. Of these 336 ended fatally, the recoveries being chiefly chronic or subacute cases; four very severe cases recovered, of which two were treated with opium, and two by amputation of the injured part. All the various methods of treatment suggested for this terrible disease had a fair trial, and the result is summed up as follows,—in the acute form no treatment appears to be of any use and in the milder form almost any treatment is successful.

The Post-Mortem results were of a very negative character; congestion of the Brain and Spinal cord was frequently noticed.

The causes most potent in producing the disease were sudden changes of Temperature, unextracted bullets and other foreign bodies confined under fasciæ, and service in the southern states.

Secondary Hæmorrhage: the records relating to this important subject are incomplete, nevertheless 1037 cases are reported.

Of these, 387 were cases of Hæmorrhage from Stumps, 60 per cent proving fatal.

And 650 of Hæmorrhage from wounds, 51 per cent proving fatal.

The Femoral Artery was ligatured for hæmorrhage from Stumps 93 times, for hæmorrhage from Wounds 45 times.

The Subclavian, was ligatured after amputation at the Shoulder Joint 5 times, and for wound in the Axilla 6 times.

The Common Carotid, for wound of deep branches of internal Carotid 15 times.

Amputation was practised for hæmorrhage from wounds 78 times, and for hæmorrhage from Stumps 14 times.

The ligature was generally applied as near as was prudent to the end of the stump, and in a few cases on the face of the stump. Distal ligature (Anel's method) gave bad results.

The necessity of applying the ligature at the seat of injury in primary hæmorrhage was clearly shewn.

Pyæmia supervened in 377 cases of gunshot injury in which no operation was performed, and in 295 cases of amputations, of which 155 were cases of amputation in the continuity of the Femur; it occurred in 27 cases of excision in the shafts of long bones and in 28 excisions of joints.

"These figures by no means represent the frequency with which pyæmic poisoning has occurred. It has been one of the great sources of mortality after amputations and its victims are to be counted by thousands." Statistics proved the inutility of the Sulphites and Hyposulphites as therapeutic agents in this disease.

The remainder of the report is occupied with a discussion on Surgical Operations, which cannot be abbreviated with advantage, and with questions relating to the management and sanitary conditions of Military Hospitals into which space will not allow me to enter.

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ON

ABSCESS AND TUMOURS OF THE ORBIT.

PART I.

By SPENCER WATSON, F.R.C.S. Eng.,

ASSISTANT-SURGEON KING'S COLLEGE AND THE CENTRAL LONDON OPHTHALMIC HOSPITALS.

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PREFACE.

In venturing to lay before the profession the results of my reading and experience in regard to the Diseases of the Cavity of the Orbit, it is perhaps necessary to apologise for what may to some appear an attempt to increase the already overcrowded list of specialities in medicine and surgery.

The indignant outcry raised by the great body of the profession against specialists of every kind, is one in which I would heartily join; my sincere sympathies are with those who would crush out the crying abuse of special hospitals.

A love of speciality is a disease of the human mind, which the more the public are inclined to the more should the profession strive to root it out. I cannot agree with the American sage, that there is no power of expansion in man, and that the minds of most men are like a piece of Labrador spar, which has no lustre as it is turned round until you come to a specific angle, and then alone it reveals its depth and beauty of colouring. Surely our own Johnson was nearer the truth in believing that there was an adaptation and applicability in energetic men to the universal, not that each man has no special talent, and that the mastery of successful men consists in applying themselves solely where that talent can be specially practised. Certainly Hunter, Sydenham, Harvey, Brodie, and the eminent men of the present day, are not numbered among this separative order. As in the products of the garden the most beautiful flowers,

if not the oddest and rarest, are grown by those who have studied and practised according to the most general and widest principles of their art, so these principles correct and chastise the tendency to a grotesque and conventional form and colouring, and restore and revive the beauty and freedom of Nature.

Still, while the present state of things exist, the means of classifying and comparing cases, offer many advantages, and I have endeavoured to do my humble part in aiding and advancing such desirable and legitimate objects. In every extreme and excess of doctrine or practice, there is a source of goodness and utility, and I sincerely trust that I have neither overlooked it, nor utterly failed to extract some benefit from specialism.

It must indeed be granted, that in mere theories of disease, or even in treatment not ending in decisive operations, the weakness of an extended, but imperfect study, may be supplied by a frequent exercise and a renewed experience; but if we operate *imperfectly*, we can seldom recover the mistake. In many cases (and this applies to operations on the orbit more particularly), we can operate but once, and this necessity renders it imperative that our skill possesses a specific exactness, since it cannot be mended on trial, and thus our general surgery requires to be corrected by our particular experiences, and this to be concentrated on the one operation before us. Hospitals of this kind, whatever their fundamental deficiencies, assist the mind of the surgeon in a severer study and more contracted contemplation of separate diseases. From what I have advanced, it will be seen that I have thought it most important to search the vast fields of experience opened up to me in General Hospitals; and the subject of my Paper appears to me to be a fair debateable ground upon which specialists and general practitioners might meet, and compare notes with mutual advantage.

Such being my main object in taking in hand the present work, I have thought it right to scrutinise all the

existing and past authorities on the subject, and to select as many striking illustrations from all and each as I could conveniently introduce into a short Treatise.

In order that the tediousness of lengthened details in the reports of cases might, as much as possible, be avoided, I have taken the liberty of excluding in most instances, all but the essential particulars. "Brevis esse laboro," whether "obscurus fio," I must leave to the reader's verdict. On the subject of treatment I acknowledge that I have assumed a didactic and somewhat positive tone—not, for an instant, as esteeming myself a high authority, or as having had a larger experience than others, but rather with the view of challenging criticism, and in the hopes that wherever I may have set up principles of doubtful stability, they may be shaken from their usurped eminence; while those that remain undisputed may continue to guide me in future difficulties.

In some of the diseases treated of, I have avoided saying anything with regard to treatment, on my own authority, and have in such instances left it to be inferred that general principles were to be followed, or that the cases and indications given, sufficiently indicated the course to be followed in similar instances.

27 Montague Street, Russell Square.

ON ABSCESS AND TUMOURS OF THE ORBIT.

That diseases of the orbit are rarely met with in general surgical practice, may be judged of by the fact that, out of 12,692 out-patients at the Royal London Ophthalmic Hospital in the year 1864, only ten were affected with diseases of this cavity, six suffering from tumours, and four from abscesses. The rarity of these affections, then, is such that few individuals can have sufficient personal experience to speak authoritatively on the subject, excepting in the way of general principles applicable to diseases of this, as to those of any other region of the body. It is this consideration, which has induced the writer of the following observations to lay before his readers, as shortly as possible, some of the facts he has been able to collect, deduced from recorded cases of the kind referred to, and from a few that have come under his own observation.

And first let us inquire into the causes and diagnosis of abscess of the orbit. Most of the cases recorded are to be found in Demarquay's "Treatise on Diseases of the Orbit," in which alone seventeen cases are recorded in detail. Besides these, Mr. Hulke has published three cases in the *Ophthalmic Hospital Reports*, Mr. Poland one in the same journal; the *Pathological Transactions;* Mr. Lee, in his work 'On Phlebitis,' and other authors have supplied me with others.* Altogether thirty well-observed cases are at my disposal, and from a careful study of these, especially from Demarquay's 'Treatise,' I have ventured to make the practical deductions which follow.

I. The Causes of Abscess of the Orbit.

The following are adduced as the probable causes:—

Injuries of various kinds, either local or in the immediate neighbourhood, punctured wounds, with or without having a

* Viz., Mr. S. S. J. Salter, in his paper in the *Medical and Chirurgical Transactions*, vol. xlv.; Mackenzie on "Diseases of the Eye;" and Haynes Walton on the "Surgical Diseases of the Eye."

foreign body imbedded in the cavity (see cases in *Pathological Transactions*, vol. i.); or blows on the eye with the fist; or surgical operations (see Demarquay, p. 111); or scalp-wounds (see Henry Lee, 'On Phlebitis, p. 79); or even the extraction of upper molar teeth, two instances of which are related by Demarquay, in which low inflammatory action set in after this operation, terminating in one instance, fatally.

Of the whole number of cases I have met with seven were attributed (with or without good cause) to injuries, and allusions are made to several other cases by various authors. Mackenzie, for example, mentions an instance of inflammation of the cavity of the orbit following abscission of the anterior half of the eye-ball.

In all these instances, however, the injury seems nothing more than the accidental excitement of an action, of which the predisposition already existed, and they were generally associated with an enfeebled state of health, such as would be most favourable to pyæmic complications. Caries of the orbitar walls was discovered in four cases. In three of which, the frontal bone, and in one the petrous portion of the temporal were affected (see Hulke's cases in *Ophthalmic Hospital Reports*, vol. iv., p. 80, and *Pathological Transactions*, vol. iv., p. 25).

The influence of cold from draughts, has been adduced as a cause of orbitar inflammation, by Dr. O. Ferrall who cites two cases in illustration. On the other hand, Gendron relates a case in which exposure to the sun seemed to have the same effect. Erysipelas spreading from the neighbouring parts has been followed by abscess in the orbit in some of the cases mentioned as the result of injury, and in others of spontaneous origin. Gonorrhœal ophthalmia was the exciting cause in one case mentioned by Middlemore ("Diseases of the Eye," vol. ii., p. 582). Affections of the lacrymal gland are sometimes the starting-point, according to Carron du Villards, and the same author relates cases of abscesses of the orbit consecutive to acute meningitis, as a sequel to typhus fever.

It appears, therefore, that injuries of the orbit itself, or of adjacent structures, or of its visceral contents, are the most frequent causes of the inflammatory actions in this cavity, more especially if followed or accompanied by erysipelas.

Perhaps the next in order of frequency, caries of the orbitar walls may be mentioned, and then typhus and typhoid fevers. The other causes adduced are somewhat conjectural. In some cases no assignable cause can be found. Seven such are among the thirty detailed cases to which I have alluded, and one of them was under my own observation quite recently. I was inclined to give some importance to the fact that several decayed stumps in the upper jaws were present in this patient and had long caused her great suffering, and to the probability of their being a nidus for the collection of puriform fluid, and its communication through the venous system of the orbit. Such an explanation presents some difficulties, but seems corroborated to some extent by the two cases already alluded to, in which the removal of molar teeth was followed by the same result. In the latter instances, the irritation was an active and violent one; in the former, continuous and abiding, but at the same time affording a constant supply of putrid material to the circulation, and lowering the digestive functions and general vitality of the patient, directly or indirectly.

II. The Diagnosis of Abscesses of the Orbit.

This part of the subject may be conveniently considered under these two heads.

1st. The Diagnosis of Abscess from other Tumours, or diseases in the orbit.

2nd. The Diagnosis of the kind or form of Abscess.

Several different kinds of tumour may be very easily mistaken for chronic abscess, and *vice versa*. *Cysts*, for instance, may produce the same deformity, the same protrusion of the eye-ball, and the same fluctuation may be felt; and, in doubtful cases, an exploratory puncture is the only means of solving the difficulty. It has been observed, however, that the majority of tumours of this kind have thrust the eye-ball directly upwards, or directly downwards. And such a deformity is not a common one in cases of abscess.

Aneurism may, also, be mistaken for abscess, either acute or chronic, and more particularly those aneurisms which arise suddenly and spontaneously by giving way of an intra-orbitar vessel. In two such cases recorded by Demarquay, punctures were made into the tumours by the surgeons in attendance, before the certainty of the diagnosis could be ascertained. One of these was Dalrymple's celebrated case, also related at length in Mackenzie's work, p. 350. The tumour was punctured five times, and ultimately subsided after ligature of the common carotid.

A third (Mr. Nunneley's *Medical and Chirurgical Transactions*, vol. xlii., p. 168), was the result of a blow on the eye, and was successfully treated by ligature of the common carotid.

Such cases, however, must be exceedingly rare, and the absence of pulsation must be very infrequent in aneurismal tumours. The fact, however, of these cases occurring in the hands of the most skilful surgeons, is not to be overlooked.

The position of the eye-ball as an aid to diagnosis, is of little value. In a large majority of the diseases within the orbit, the eye-ball is pushed outwards as well as forwards; and this

remark holds especially with regard to abscesses, which most frequently point at the upper and inner corner. When, however, the abscess depends upon caries of adjacent bones, the position of the swelling will vary with the bone affected, and the displacement of the eye-ball will correspondingly vary.

Thus tumours and abscesses, coming from the temporal side of the orbit, will thrust the eye-ball towards the nose, and such a deformity would at once arouse the suspicion that the case was a very unusual one. Out of 240 cases of tumours of all kinds in this cavity, in only eight was the eye-ball displaced inwards. One of these was an abscess originating from disease in the ear, with caries of the petrous portion of the temporal bone, ending fatally. Two were tumours of the lacrymal gland; one an hydatid cyst; one an osteo-sarcoma in the temporal fossa, invading the orbit; one a fibro-cystic tumour; one a sebaceous cyst; and one a disease of doubtful nature, called by Demarquay a steatome.

The displacement of the globe upwards is also rare, and is mentioned as occurring in fourteen cases, none of which were abscesses, but included tumours of various kinds, chiefly medullary, fibrous, and fibroid in their nature, with one osseous tumour of the antrum, and one mucous polypus of the nose.

The fact, therefore, that in any given case the eye-ball was displaced inwards, or upwards, would be a strong presumption that it was *not* one of abscess, and the same might be said of any tumour presenting at the outer side of the orbit or below. On the other hand, a tumour presenting at the inner side of the orbit, and displacing the eye-ball outwards, as well as forwards is, *ceteribus paribus*, likely to be of the nature of abscess If the tumour thus presenting be distinctly fluctuating, associated with the usual febrile disturbances, have resulted from erysipelatous inflammation, an injury, or followed typhus fever, the probability is reduced to nearly a certainty that we have to deal with an abscess. It is seldom, however, that all these symptoms are appreciable or easily recognised. In most cases of abscess there is a period in which the presenting tumour is hard and unfluctuating, or may not be distinguishable at all. The protrusion of the eye-ball may not be discoverable in consequence of the great œdema of the eyelids and chemosis of the conjunctiva; and in some cases the protrusion is directly forwards, so that the axis of the eye-ball remains normal. When this is the case there is some similarity in the deformity to that produced by dropsy of Tenon's capsule, which, however, is a very rare affection; or to that caused by hypertrophy, or serous infiltration of the cellular tissue of the orbit, which is also extremely rare; both of these affections being unaccompanied by febrile disturbance

In one case of abscess of the cellular tissue of the orbit recorded by O'Ferrall, there was no protrusion of the eyeball, but the eye was simply thrust downwards.

It is scarcely necessary to point out the means of distinguishing some other diseases of the orbit such as the goitrous exophthalmus and emphysematous or sanguineous effusions from injuries. The points of difference are obvious, but must be borne in mind as possible sources of error, or as complications under peculiar circumstances.

Tumours of an encephaloid cancerous nature are little likely to be confounded with abscess. Apart from the history of the case, there will be local peculiarities quite distinctive. Solid nodulated masses most frequently presenting at the inner canthus, solid œdema of the eyelids, enlargement of the superficial veins of this part, and rapid growth of the tumour, will all point to a malignancy.

The other solid tumours, fibrous, fibroid, enchondromatous, and osseous will also be easily distinguished, not so much by their physical characters, however, as by their history and their very slow growth as compared with the development of suppuration. The hardness of inflammatory swellings in the early stage, is the only possible source of error in respect to these forms of disease.

The only kind of general enlargement of the eyeball which could possibly be confounded with an abscess of the orbit, would be one in which acute inflammation had supervened on a chronic hydrophthalmus, and, in such a case, the history would probably supply the clue to the diagnosis.

The possibility of making a diagnosis of the *kind* of abscess with which the surgeon has to deal is of practical value, as on the opinion formed will depend in great measure the prognosis and treatment of the case. Thus, the absence of protrusion of the eyeball, associated with distinct fluctuation at some point of the circumference of the orbit, and other indications of suppuration would show, that we were dealing with an abscess in front of the orbitar fascia, and such a one as required less severe measures of treatment than those of the deeper region, and would most likely be the sign of superficial caries of the margin of the orbit, a comparatively trivial affection, though troublesome in its after consequences.

On the other hand, protrusion of one or both eyeballs coming on in the course of erysipelas, or low fever, or after severe wounds of the scalp, or the neighbouring parts, and associated with low febrile symptoms, would indicate the most severe form of purulent infiltration of the deeper structures of the orbit, and possibly be the prelude to a fatal issue from pyæmia.

Abscesses coming from neighbouring tissues or cavities may

invade the orbit and produce all the physical signs of suppuration originating there. When the frontal sinuses, the antrum, or the nose, are the parts whence the abscess arises, certain symptoms in those parts such as swelling, pain, arrest of secretion, and superficial redness will indicate more or less distinctly the source of the original mischief.

When, however, the cranial cavity, or the temporal, or the zygomatic fossæ are the seats of the original or of a co-existent abscess, it is much more difficult to arrive at an accurate diagnosis, though it is precisely in these cases that the issue is so likely to be fatal, and the treatment requires so much care and circumspection. When abscess in the brain is present, associated with orbitar abscess, it is not necessarily associated with cerebral symptoms in the early stages, though death is generally preceded by palsy, convulsions, or delirium, but only when too late to avert the issue.

Purulent deposits within the cranium, associated with abscess in the orbit, were found in seven out of twelve fatal cases, and symptoms of acute meningitis were present in another case of recovery. Two of these were caused by caries of the frontal and other bones. Three followed injuries, and the rest probably resulted from erysipelas.

It is obvious how important it would be to be able to distinguish such cases in the early stages, in order to be able to warn the patient's friends of the danger of his state, and to give caution to surgical interference of any kind.

Severe and persistent pain in one side of the head was noted as present in three of these cases, at an early period; and in one was the earliest symptom observed; so that in such a case some guess might be formed as to its serious character. In two of them—viz., Mr. H. Lee's case and Mr. Poland's, both eyes became prominent simultaneously, or nearly so, and this circumstance would be a symptom pointing at once to a deeply-seated source of mischief, most probably within the cranium, and should incline the surgeon to a very unfavourable prognosis.

III. Prognosis in Cases of Abscess in the Orbit.

Two points have to be considered under this head:—

1st. Whether the patient will recover.

2nd. Whether the sight will be restored or saved in the event of recovery.

1st. *Will the patient recover?* This question may be answered in the affirmative in the great majority of cases; for though the number of fatal cases recorded is large in proportion to those of recovery, it cannot be supposed that all the trivial cases have been put on record, while it is a fair inference that the most

severe forms of disease have been published, as conveying more instruction. Out of thirty cases which I have collected, thirteen were fatal, and some of these probably originated within the cranium or other parts surrounding the orbit, the orbit itself being involved secondarily. In nine out of these thirteen cases mischief within the cranium was discovered after death; and this fact points at once to the source of danger. In most of them suppuration had occurred either in the veins, sinuses, between the dura mater and bone, or in the substance of the brain itself. Those most speedily fatal seemed to be due to pyæmia; the symptoms preceding death being delirium, incoherence in speaking, convulsions, paralysis and coma. The earlier symptoms being intense pain in one side of the head, a low state of health, erysipelatous swelling of the parts, and symptoms indicating the existence of caries or necrosis of the bony walls of the orbit, such as the escape of fetid pus, and sequestra, and the indisposition to a healthy action in the abscess.

The position of the disease in the bone seems to be an important element in the dangerous character of the case. Five of the fatal cases were found to be associated with disease of the roof of the orbit; one with that of both the malar and sphenoid bones; one with that of the sphenoid bone; and one with disease of the tympanum. In two of the recoveries, the roof of the orbit was involved; and both of these were among the most nearly fatal of those that ultimately recovered. Hence, we may infer that, should caries or necrosis of the roof of the orbit be discovered, or disease of the deeper or cranial bones be suspected, the case is one of considerable danger. On the other hand, disease in the superior maxilla, such as is associated with abscess of the antrum, is not so likely to lead to dangerous complications, though a fatal case is recorded under these circumstances; in which, however, disease of the roof of the orbit was also found after death. (*Vide* Demarquay, "Sur les Tumeurs de l'Orbite," p. 145.)

The above observations do not apply to cases of caries of the margins of this cavity, such as are frequently seen in scrofulous children,—the lesion here being in front of the orbital fascia, and very rarely leading to any result more serious than a very unsightly eversion of the eyelid when cicatrisation has been completed.

Abscess following erysipelas of the scalp or face, and cases resulting from a punctured wound in the orbit, seem to be the most frequently fatal.

Such being the conditions, many of which can only be discovered after death, what are the indications necessary for the formation of a prognosis? The exploring probe; the escape of fetid pus, or sequestrum; symptoms of disease of the internal ear;

are valuable means of information in the early stages. The occurrence of drowsiness, delirium, or other cerebral symptoms in the course of any orbital abscess, will be so unfavourable that little hope can be entertained of a recovery, and the sudden occurrence of protrusion of the eyeball or both eyeballs in the course of erysipelas after a severe wound involving bone, is equally ominous. On the other hand, should the patient be in tolerably sound health previously to the attack; should the pain and swelling be confined to the orbit itself or to its immediate vicinity; should the abscess have been opened early and exit given to pus of a healthy character; should there be no symptoms of cerebral mischief; and lastly, should rational treatment have been adopted, there is every probability of a favourable issue.

2nd. *In the event of recovery will the vision of the affected eye be retained or restored?* In some cases, vision is from the first little or not at all impaired, and in these no anxiety need be entertained with regard to it.

Two or three cases of this kind are recorded, and in five of the recoveries it is especially mentioned, that the vision was lost, either by suppuration of the eyeball and subsequent shrinking, or by atrophy of the optic nerve.

One case was supposed to have resulted in loss of vision in both eyes from wound of the globe by the surgeon's knife.

In the case of a patient, recently under observation at Moorfields Ophthalmic Hospital, vision was not restored at the expiration of three months from the commencement of the case, and the pupil remained dilated and insensible to the stimulus of light. The appearance of the optic disc viewed by the ophthalmoscope was that of atrophy.

This case was analogous in some respects to the case mentioned by Mr. S. J. A. Salter, in vol. xlv. of the *Medical and Chirurgical Transactions*, and in both cases the condition of the optic nerve was the same. The data do not seem to be sufficient to show what the loss of vision, or atrophy of the optic nerve really depended upon; whether upon the stretching of the nerve-fibres from the accumulation of pus behind the eyeball; or upon the inflammation of the nerve-sheath of the optic nerve; or upon irritation communicated to the brain through the fifth pair of nerves, which is the view taken by Dr. Mackenzie.

In forming an opinion, therefore, of the probable effect on the patient's sight, regard must be had to the presence or absence of inflammation of the eyeball, to the length of time during which the supposed stretching of the nerve has been in operation, and to the amount of this stretching; as well as to the state of the pupil and the ophthalmoscopic appearances after the evacuation of the pus in the orbit, and the return of the eyeball to its socket. In a case in which the eyeball is not protruded, vision will most probably not be affected, unless there is inflammatory mischief in the globe itself, and the prognosis will be in this respect highly favourable. When, on the other hand, iritis, ophthalmitis, or suppuration, or sloughing of the cornea have been set up, little or no vision will be retained.

IV. The Treatment of Abscess in the Orbit.

Probably in no two cases of this affection could precisely the same treatment be properly adopted. Each must be treated on principles applicable to its peculiar circumstances; as for instance, the age, constitution, temperament, &c. of the patient, and each must be treated on different principles during the acute and the chronic stages of the disease.

Can we, nevertheless, lay down any general rules of treatment?

There are some rules specially applicable to the early stages of acute inflammation of the orbital cellular tissue, which can readily be laid down, and will bear the test of experience.

1. Depletion is rarely indicated. The patients have generally feeble health to begin with, and will require all the sustaining nourishment which can be obtained. Possibly, leeches may relieve pain in some instances; but the wholesale way in which they are sometimes applied, is a method very far from worthy of imitation. In Demarquay's treatise, cases are described in which bleeding from the arm, leeches and scarifications were employed with great freedom; in others, besides leeches and bleeding, mercury and iodide of potassium were administered, though it is difficult to conceive on what principle of therapeutics. Thus, in one patient, a man of forty years of age, who had very severe febrile symptoms, following the extraction of an upper molar tooth, and accompanied by exophthalmos and constant and violent supra-orbital headache, blood-letting to twelve ounces was employed, and twelve leeches were at once applied. Subsequently, sixteen more leeches were put on, and calomel was given. The patient recovered after an illness of six months' duration, with the loss of the eye, which suppurated and shrunk.

2. An early incision or incisions are useful. Probably, the best way of abstracting blood, and at the same time of relieving the pain and tension, is to make early incisions into the orbit, even before fluctuation can be discovered. A surgeon of some authority recommends "free plunges and incisions into the orbit in as many places as possible, in the early stage of the disease;" and I cannot but think such a plan far preferable to blood-letting from the arm, and leeches to the orbit itself. At

the same time I should prefer a single incision, or two at most to such a multiplication of wounds as is recommended by that gentleman. Should pus escape through one or other of the incisions, it will be advisable to put a strip of lint in the wound to prevent it closing.

The same authority condemns the treatment by antiphlogistic measures, more particularly in cases associated with or following erysipelas, and upholds with great justice and powerful reasoning a stimulating and nourishing plan of diet in such cases. This rational plan of treatment of erysipelas and its sequelæ is, however, too well and too generally recognised to need being insisted on at the present day.

3. Next to early incisions, or as an auxiliary, the local application of ice will be of most service in allaying pain and reducing vascular excitement. If properly applied in caoutchouc bags, this is a most valuable method of treatment.

4. In chronic abscess, or in acute, if the cavity does not readily contract, exploration with a probe, or by enlarging the opening and passing in the finger, will be necessary, with a view of discovering any carious or necrosed bone, and of removing any offending bodies. Should, however, no disease of the bone be present, and yet the cavity of the abscess remain open, it will be advisable to inject water or some mild stimulating lotion once or twice a day, until a more healthy action is set up; at the same time attending to any indications of a faulty state of the general health which can be altered by remedial agents, of a medicinal or dietetic nature.

5. Several points of practice applicable to special cases will require a passing notice. Some surgeons are in the habit of using caoutchouc drainage tubes for chronic abscess in this situation, and I believe I have seen benefit result from their use in a case of abscess of the frontal sinus recently under Mr. Bowman's care at Moorfields. A very obstinate case of abscess in the orbit might be treated in the same way. It has also been proposed by M. Riberi, of Turin, that in cases of abscess in the orbit, particularly those associated with caries of the inner side of the orbit, the orbital plate of the ethmoid should be broken through, and a portion removed if necessary, in order to establish a fistulous opening into the nose, through which the pus may escape.

6. There seems some difference of opinion as to the point most suitable for opening the abscess or supposed abscess; and M. Richet thinks that the puncture should be made in the oculo-palpebral groove, and if possible below the eyeball, and to the outer side. But the best rule of practice is to thrust the knife into the most prominent part of the swelling, and if fluctuation is perceptible, which it rarely is, in the early stages

to puncture the part at which it is most distinct. In any case, however, the incision should be made, if possible, near the margin of the orbit and in the direction of the folds of the skin of the lids, and the fibres of the orbicularis. By taking these precautions the subsequent contraction will lead to less deformity, as to the inversion or eversion of the lids, and the scar will be lost in the natural folds of the skin. It is worth while observing, that a case is recorded (Demarquay, *Op. cit.* p. 116) in which both eyeballs were injured by the knife in opening abscesses of the orbit, and that destruction of both eyes resulted. Such a case should make the surgeon careful to keep the knife parallel with the wall of the orbit, and as near it as possible.

7. Should there be good reason for supposing that caries of the teeth have been the exciting cause of the collection of pus in the orbit, it would be advisable to remove them as soon as this can be done with safety, as the same disease would be likely to recur, the cause remaining. The possibility of abscess of the antrum being present in these cases should not be overlooked, as the removal of a decayed tooth might be the means of emptying the abscess and removing a cause of irritation at the same time, and the injection of tepid water or astringents into this cavity might have an important influence on the result. In a case related by Mackenzie, the extraction of an upper molar tooth allowed a free escape of pus from the antrum, and the symptoms all yielded very rapidly, vision being restored in a few days.

A similar case is related in Mr. Salter's paper as having occurred to Brück. And Mr. Salter's case in the same paper is a further argument for the same plan of treatment whenever abscess of the antrum is present. In two cases recorded by Demarquay there was abscess in the antrum following the extraction of upper molar teeth. One of these terminated fatally, and the antrum was found full of pus, with a softened state of the floor and the roof of the orbit, and a large abscess of the brain; the other was not fatal, but there could be no doubt of the presence of pus in the antrum, as there was a continuous discharge from the socket of the tooth and from the nostril of the same side. The escape of a sequestrum from the posterior nares further confirmed the true origin of the mischief in this case.

In a third case already alluded to, the cause to which the formation of pus in the orbit could be assigned, was the presence of a number of decayed teeth in the upper jaw; and it seems likely that had these causes of irritation and possible foci of purulent infection been removed earlier, the mischief to the eye, the sight of which was totally destroyed, might have been averted.

V.—Pathology.

Having now considered the subject of my paper in reference to the *Causes, Diagnosis, Prognosis and Treatment, the Pathology* will be best elucidated by an analysis of the recorded cases, and by giving such details of typical cases as will suffice to justify their being classified under the four heads following, viz.:—

Division I.—Fatal cases in which the deposit of pus in the orbit was an indication of general pyæmia.

Division II.—Fatal cases in which lesions of the brain or its membranes were found without pyæmia.

Division III.—Cases (not included in the first two divisions) in which the bones of the cranium or face were involved.

Division IV.—All cases, not included under the above heads, the causes and pathological conditions being various.

Division I.—Fatal cases in which the deposit of pus in the orbit was an indication of general pyæmia.

Under this head will come five cases out of thirty, all of which proved fatal within a few days of the commencement of the severe symptoms.

Case 1.—(Demarquay, *Op. Cit.*, p. 112.)—A woman of sixty years was attacked with erysipelas of the right cheek and eyelids, and this soon spread to the other parts of the face and the eye of the opposite side. On the third day stupor, coma, and delirium came on, and death occurred on the fifth day. At the autopsy deposits of pus were found in the cheek, eyelids, in the cellular tissue surrounding the optic nerve, and in that covering the floor of the orbit. The lungs were pneumonic. The rapid termination of the case, taken in connection with the post-mortem appearances, seem to justify my placing it under this division.

Case 2.—(Henry Lee "On Phlebitis," p. 79.)—J. B., æt. twenty, scalp wound denuding the bone; puffiness of the scalp upon the eighteenth day: rigors followed by profuse perspirations, restlessness, delirium, projection of the eyeballs.

Twenty-four days after the accident and five days before death, secondary inflammation set in.

Post-mortem Appearances.—Bone exposed to the extent of a shilling, of a yellow colour, and with a very dark diploe; effusion of lymph and pus between the dura mater and the bone, extending to the base of the skull, and through the sphenoidal fissures into the orbits; effusion of pus into the arachnoid cavity; incipient secondary abscesses in the lower lobe of the left lung; spleen large and very soft, mottled; degeneration of both kidneys.

Case 3.—(*Ophthalmic Hospital Reports*, vol. i., p. 27.)—A woman under the care of Mr. Poland, forty-five years of age, had erysipelas and abscess of the forehead. Intense pain in the orbit and temple; protrusion of the eyeballs; cerebral symptoms; rapid prostration; death on the sixth day.

Post-mortem Appearances.—Orbits infiltrated with sero-purulent fluid. Both ophthalmic veins filled with dirty pus; cavernous sinuses and right middle cerebral vein distended with purulent matter; brain soft and arachnoid opalescent.

Division II.—Fatal cases in which lesions of the brain or its membranes were present without pyæmia. Seven cases are recorded of this kind, one, perhaps two, of traumatic origin, and the others generally associated with disease of the bones of the cranium.

The three cases following have been selected as the most characteristic.

Case 4.—(*Pathological Transactions*, vol. i.)—Mr. Prescott Hewett relates the case of a child of two years of age who was wounded in the orbit by a piece of lead pencil. The child soon became drowsy, had convulsive twitchings of the limbs and coma. "For some time before death the right eyelids were separated, and the eye could be seen uninjured."

Death occurred on the seventh day, when an abscess in the brain was found with meningitis, and a fissure in the roof of the orbit through which pus flowed into the cranial cavity.

Case 5.—(Demarquay, *Op. Cit.*, p. 146.)—An unmarried woman, twenty-five years of age, was taken with acute pain in the right side of the head. At the end of fifteen days the cheek was swollen, the eye reddened; she had fever, nervous agitation, and anxiety. Suppuration occurred in a few days, and matter escaped spontaneously at the outer angle of the eye. The pus was fetid, and escaped not only from the orbit, but from the neighbouring parts of the eye and cheek. On the fourth day after the opening of the abscess, sudden paralysis of motion and sensation; respiration slow, irregular, and stertorous; pulse small and intermittent; death.

Post-mortem Appearances.—The whole of the fatty and cellular tissue in the eyelids and cheeks down to the level of the lower jaw, filled with pus. Fetid pus in the space between the eyeball and orbit, and burrowing among the muscles. The anterior lobe of the brain in great part destroyed by suppuration; pus surrounding the optic nerve and communicating with the orbit.

Observations.—The exciting cause of the mischief is not hinted at in this account; but it seems very probable that caries of the teeth may have given rise to the pain in the head and abscess in the cheek, and the orbit may have become in-

volved secondarily. Considerations to which I shall allude subsequently will make this appear a probable explanation of the phenomena here observed.

Case 6.—(Demarquay, *Op. Cit.*, p. 145.)—A shoemaker, twenty-seven years of age, of an irritable temperament, and addicted to drinking, had one of the left upper molar teeth extracted. This operation was followed by swelling and redness of the side of the face; epiphora; rigors; photophobia, and intolerable pain in the side of the head, increased and rapid swelling of the face and eyelids.

Some days after, distinct fluctuation at the internal angle of the eye. Abscess opened; yellowish, green, and fetid pus escaped.

The symptoms now became aggravated, and he died in convulsions within less than a month from the commencement of the case.

Post-mortem Appearances.—Dura mater and pia mater congested and altered in colour. Anterior lobe of the brain contained a large collection of pus communicating with the lateral ventricle. Optic thalamus soft and pulpy. Substance of the brain unusually soft. Pus covering the Pons Varolii, and filling up the fourth ventricle.

The roof of the orbit softened and perforated, the opening communicating with the abscess in the brain. The floor of the orbit perforated—the opening communicating with the antrum of Highmore, which was full of pus.

Observations.—In this case the disease in the orbit is clearly traceable to the decayed tooth; but whether the caries of the tooth, or the injury to the gum in its extraction were the actual starting point of the disease, it is very difficult to say.

Division III.—Cases (not included in the two preceding divisions) in which the bones of the cranium or face were involved. Six of the thirty came under this head, one of which was fatal.

Case 7.—(*Medical and Chirurgical Transactions*, vol. xlv., p. 256), related by Mr. S. J. A. Salter.—Eliza F., æt. twenty-four, a domestic servant, was attacked with violent toothache, the evident source of which was caries in a first right upper molar. Rapid swelling of the face, and infiltration of the lower lid came on, with protrusion of the malar bone, and a thrusting over of the nose to the opposite side of the face; fearful pain in the right side of face and eyeball, which latter became protruded; total blindness of right eye. After twenty-four hours matter pointed just below the inner canthus, and this was let out by puncture with a lancet. This orifice closed at once, and another puncture was made at the outer canthus. Pus came through these openings and through the nose almost constantly

for two or three weeks, when Mr. Salter removed the decayed stumps and carious wisdom tooth in the right upper jaw. Pus then escaped through the alveoli of the molar teeth, the fangs of which were denuded of periosteum at their extremities, and had evidently been lying in the antrum surrounded by pus.

Subsequently a large sequestrum of dead bone was removed from the floor of the orbit and the cheek surface of the maxilla, with great amelioration of all the symptoms. Several flakes of bone escaped at intervals afterwards, and the patient made a good recovery, though with total loss of vision in the eye affected, the optic nerve of which was found by ophthalmoscopic investigation to have undergone complete atrophy.

Case 8.—(Mackenzie, *Op. Cit.*, p. 965.)—A man, of thirty years of age, was attacked with sudden and violent pain, shooting from the temple to the side of the face and eye. His sight was quite lost, and his cheek swollen. Soon a discharge came from the furrow between the lower lid and the conjunctiva; and on the extraction of a decayed molar tooth a splinter of wood was found attached to its fang, and projecting into the antrum. Pus escaped from the socket; sight was recovered in a few days, and all symptoms subsided.

Case 9.—(H. Walton on "Surgical Diseases of the Eye.")—A man, of forty-two years of age, had had exophthalmus of the left side, with impaired vision and occasional paroxysms of pain, and swelling for three or four years. For these complaints he had been treated by the repeated application of leeches to the neighbourhood of the orbit; and it was estimated that 800 leeches had been applied at various times. At length he went into King's College Hospital, under the care of Mr. Fergusson, and as there was evident pointing of matter at the lower and outer edge of the orbit, a puncture was made there, giving exit to the contained pus. Very soon nervous excitement, delirium, and epileptic fits were succeeded by coma and death.

Post-mortem appearances.—No mischief within the cranium. Abscess occupying the outer and lower parts of the orbit, and the orbitar and external aspects of the malar bone, which were carious.

Observations.—It is very remarkable that no lesion should have been discovered in the brain. Probably the other internal organs were not examined, as no mention is made of the state in which they were found. The symptoms at once pointed to cerebral lesion, and in the absence of any indication of such being the case, the only rational explanation is that some form of blood-poisoning had occurred. This case, therefore, might be included under the category of pyæmic cases; but in the absence of any evidence of blood poisoning deducible from the appear-

ances after death, it will be better to class it under this division.

DIVISION IV.—All cases not included under the above heads, the causes assignable being various.

Twelve cases are included under this head, agreeing in the following particulars (which, being negative peculiarities, scarcely redeem them from being a miscellaneous collection), viz.: They were not fatal; there was no reason for attributing the deposit of pus to pyæmia; no bones were involved; the brain was not involved, or if so, not seriously.

Case 10.—(*Medical and Chirurgical Transactions*, vol. xlv., p. 260.)—The case is related by Mr. J. S. A. Salter, as having occurred under the care of Mr. G. Pollock.

A man, thirty-five years of age, had great swelling of the cheek and the external parts of the eye, with protrusion of the eyeball, and loss of vision in the eye affected, the pupil of which was dilated and insensible to light.

After the extraction of a bicuspid and molar tooth, both of which were carious, the whole of the symptoms gave way, with the exception of the loss of vision.

Observations.—This case, taken in connection with another related by Mr. Salter (Case 7 in this paper), and also with Case 8, and four or five others, of which I have notes, make it extremely probable that many of the cases of abscess of the orbit, the origin of which have not been hinted at by the authors by whom they are recorded, may have been due to the irritation of decayed teeth, and that many of them might have been satisfactorily explained by a reference to the state of the patient's teeth.

The following case, occurring under my own observation quite recently at Moorfields Ophthalmic Hospital, will serve to confirm this view.

Case 11.—A healthy-looking married woman, of thirty-eight years of age, had suffered for years from toothache, due to the presence of several decayed teeth in both jaws, chiefly situated, however, in the left side of the upper jaw. Suddenly she was attacked by pain in the left orbit, with considerable swelling of the eyelids, protrusion of the eyeball, and with a fluctuating tumour at the upper and inner angle of the orbit; the vision at the same time being absolutely lost.

After the opening of the abscess, by a deep incision at the point at which it was felt most distinctly, the swelling and protrusion of the eye subsided, and the patient made a good recovery; the loss of vision remaining, the ophthalmoscope revealed the characteristic appearances of atrophy of the optic nerve.

The next case is in many respects similar to these two, but no mention is made of any possible cause, and it is therefore open to conjecture whether it might not have been one of the same kind.

Case 12.—(Demarquay, *Op. Cit.*, p. 134.)—A woman, of twenty years of age, suffered from severe pain in both orbits, with headache and fever. Both eyes were protruded—vision was completely extinguished—there was fluctuation at the upper and inner angles of each orbit.

Incisions were made and the matter let out with relief to the patient; but vision was not restored at the end of the period, during which she was under observation (thirty days).

VI.—CONCLUSIONS DEDUCIBLE FROM THE FOREGOING CONSIDERATIONS.

1. Abscesses in the orbit are dangerous to life chiefly from the proximity of the disease to the brain and the large veins and sinuses in the neighbourhood, a large proportion of the deaths being traceable to pyæmia or phlebitis, and a still larger proportion to inflammation of the brain and its coverings.

2. Symptoms of cerebral disturbance are frequently premonitory of a fatal issue, and are always of serious import.

3. Disease of the bones of the orbit or cranium, associated with abscess, give an element of danger, and the recognition of this complication is an important aid in forming a prognosis.

4. Caries of the teeth has been clearly demonstrated as the source of mischief in a considerable proportion of the cases, and it is probable that the same cause may have been in operation in others, the origin of which was uncertain.

5. The sight of the eye affected is not necessarily destroyed, but may even recover when there has been decided amaurosis.

6. The conditions, upon which the amaurosis in such cases depends, seem variable; but ophthalmoscopic signs will enable the surgeon to calculate the probability of a recovery. Should there be atrophy of the optic nerve, no hope of the sight being restored can be held out to the patient.

7. Among the less common causes of abscess in the orbit, may be mentioned, gonorrhœal ophthalmia, syphilitic caries; blows on the eye, wounds of the eyeball, debility after typhus and typhoid, and other fevers.

8. The treatment in most cases is simple, and is not likely to be aided by the use of drugs or leeches, still less by bloodletting from the arm.

9. Local treatment consists, in the first instance, in the application of cold to the neighbourhood of the orbit, and when the abscess is pointing, or when a distinct protrusion of the

fascia can be felt by the finger, it should be opened by an incision at that part.

10. The general treatment will be chiefly of a dietetic kind, but medicines may be required in certain cases.

11. In the later stages, or when the disease has become chronic, disease of the bones is the most probable cause of the continuance of the symptoms, and the removal of this source of irritation will be necessary for the completion of the recovery.

Having considered those affections of the orbit, which are the result of inflammation, under the head of abscess, I shall next consider the subject of tumours, not dependent upon inflammatory mischief; and it will be convenient first to take the tumours of a fluid or semi-solid character. This group will include cysts, vascular and aneurismal growths, sanguineous effusions, and gaseous, or emphysematous swellings.

ON CYSTS IN THE ORBIT, WITH FLUID OR SEMI-SOLID CONTENTS.

The contents of cysts in this region have been very various, the most frequent being those with serous fluid, and next the hydatid cysts. But besides these there are cases recorded of others with oily and semi-gelatinous contents—sebaceous, atheromatous, and meliceric fluid; and others of great rarity which it would be out of place to mention in a paper of this kind. Cysts, with blood effused into them, and those that have suppurated after injuries, must be looked upon as merely accidental modifications of one or other of the groups mentioned. Dropsy of Tenon's capsule may be conveniently considered with the other fluid growths of this region.

I.—The Diagnosis of Cysts.

The marks that distinguish cysts from chronic abscesses are by no means unmistakable either with respect to the physical signs, or the history of the symptoms, and the only method of arriving at a conclusion, in most cases, is to employ an exploratory puncture. This simple proceeding should be adopted in all cases of doubt. I have myself known an operation to be commenced in this region as if for the removal of a solid tumour, when the knife of the surgeon has after a few strokes opened into a cyst, and the tumour has subsided after the escape of the fluid, and a similar instance is related by Démarquay (*Op. Cit.* p. 405.)

The diagnosis from an acute abscess need not be dwelt upon but in case of any doubt the same method may be employed as in the case of chronic abscess. Aneurisms will be distinguished in many cases by their own peculiar features; solid tumours by the absence of fluctuation.

In all cases of cysts there will probably be combined an inactivity and sluggishness in the growth itself, the progress being very slow; there will be no superficial discoloration, and no heat of the part; but the disturbance of function, and perhaps the disorganisation of the neighbouring organs, will be traceable simply to displacement and pressure from the bulk of the tumour.

From an analysis of the recorded cases of cysts, it does not appear that any important indication is derivable from the direction in which the eyeball is protruded. In all the cases, however, protrusion of the eyeball is mentioned as a marked feature in the case, but this cannot be taken as any means of distinguishing such a case from disease equally bulky in the same cavity. It may sometimes be of importance to determine whether a cyst originates within, and is confined to the orbit, or whether it extends into the cranium or frontal sinuses or elsewhere. The symptoms of disturbance in the parts affected will be the only guide in each case, unless a puncture, and exploration by means of a probe be resorted to. Should, however, there be a reasonable probability of the cyst extending into the cranial cavity, it would be necessary to be extremely cautious in exploring. M. Démarquay has related such a case. The surgeon in that instance explored with the finger, after making an incision into the cyst. In a very few days symptoms of acute meningitis came on, and death quickly followed.

Dropsies or cysts of the frontal sinuses, extending into the orbit (of which a large number of instances are recorded by various authors) are characterised by a swelling in front of the forehead, and at the inner side of the orbit. This swelling may be very hard, but sometimes soft and fluctuating. Tumours invading the orbit from the lacrymal sac would be distinguished by the accompanying regurgitation through the puncta lacrymalia.

Lastly, it will be advisable, if possible, to determine whether the cyst be of the simple serous kind, or an hydatid; whether with oily or other contents; and this will rarely be possible till either the cyst has been opened, or has been removed. Several cases are related (see one by Mr. Hulke in the *Ophthalmic Hospital Reports*, vol. iv., p. 88), the diagnosis of which was cleared up by the escape of an hydatid cyst in a poultice which had been applied after the opening had been made.

In some instances it may be possible to appreciate exactly

the position of the cyst relatively to the superficial structures, and the following extract, from the writings of M. Bérard, as quoted by M. Demarquay, shows so much ingenuity, and seems so useful and practical, that I shall venture to give a translation of the passage in this place.

"Should the tumour lie between the palpebral muscle (Levator palpebræ superioris) and the eyeball, it will by its growth have thrust upwards the elevator muscle of the upper lid, and from the time of the appearance of the disease, the eye left almost completely uncovered will have run the risk of becoming inflamed. Further, if we place a finger on the tumour, at the same time that we tell the patient to raise the lid, we feel distinctly the fibres of the muscle as they make an effort to contract. Should the cyst, on the other hand, be between the levator palpebræ and the orbit, the lid can still be lowered, and when raised, the finger placed on the tumour, feels no contraction analogous to that perceived in the preceding case. The muscle then does not pass in front. The importance of this point of diagnosis is easy to apprehend: as what we have to regard chiefly here is the elevator muscle of the upper lid, if the tumour pass below it the incision should be made through the conjunctiva, whilst in the contrary case it must be made through the cutaneous part of the eyelid.

Certain rare cases of cystic disease of the lacrymal gland are on record, which might give considerable trouble in diagnosis; the position of the tumour and its history would, however, be some guide to a conclusion.

The only other disease liable to cause a difficulty is the dropsy of Tenon's capsule, first described by Carron du Villards, the symptoms of which are sufficiently distinctive to be worth a short description.

The patient in whom the symptoms first attracted attention was a girl of seventeen years of age. She had a considerable exophthalmus, accompanied by excessively sharp pains when she bent her head downward; and the eye was found to be surrounded and incased by a hard uniform tumour, without alteration of the conjunctiva or cornea, but with complete loss of sight. The tumour being supposed to be solid was removed by the knife with the eyeball and it was then found to be a mere distension of the capsule with fluid.

Symptoms such as those described coming on after scarlatina or measles may be considered conclusive of this peculiar dropsy being the occasion of them.

II. Course and Prognosis of Cases of Cysts.

In their course and development, cysts are very slow, and produce a gradual distension of the parts surrounding them. Though generally harmless in their nature, merely producing deformity and impairment or loss of vision from distension, they are liable to sudden inflammatory action from the effects of injury, and to suppuration, when the walls become thinned, and the abscess points at the most easily dilatable part, and ultimately bursts, the contents being discharged at the point of rupture.

There is a general belief among surgeons that the exposure to the air of the lining membrane of a cyst favours suppuration, and recorded cases seem to confirm this conclusion; hence when a cyst has been opened, there is every probability of an abscess forming, and the danger of this will be proportioned to the extent of the cyst wall, and the importance of the parts immediately surrounding it. It is only on these grounds that danger may be apprehended to the life of the patient. Should the cyst be ascertained to have passed through the optic foramen or the sphenoidal fissure into the cranium, there is imminent danger; should it be confined to the orbit, little or no danger need be apprehended. If the whole cyst has been removed, the wound will probably heal readily; if, on the other hand, only part of the cyst has been removed, the remainder will almost certainly suppurate, and a corresponding amount of mischief will be threatened to the surrounding parts.

III. Treatment of Cysts.

In all cases in which such treatment is possible, there seems to be no doubt that the removal of the whole of the cyst is the safest and most effectual plan of treatment. In the case of hydatid cysts this will be easily accomplished, the cyst-wall being generally very easily detached from the surrounding parts. On the other hand, sebaceous and dermoid cysts require a very cautious dissection in order to remove them entire, the cyst wall being very thin and very adherent to the tissues around them. Such cysts rarely, however, invade the orbit, and when they do, originate from the periosteum at the margin of the cavity, or from the conjunctiva or eyelids, and most usually from the neighbourhood of the outer angular process of the frontal bone. Injection with iodine and solution of sulphate of zinc has been tried with success in those cases in which the cyst could not be removed entire, and this plan

would be particularly applicable in that particular form of cyst which consists of a dropsy of Tenon's capsule.* Great care will be required in the dissection of cysts from this cavity, and where they are large great difficulty must necessarily be experienced in doing so.

It is manifestly impossible to calculate beforehand the difficulties that may be met with; but if it can be ascertained by any means that the cyst extends deeply and perhaps into the cranium, it would be better not to interfere in any way for its removal.

IV. Cases Illustrating the Pathology and Treatment of Cysts.

1. *Serous Cyst.*†—A man, twenty years of age, had a tumour occupying the upper and inner part of the left orbit, with protrusion of the eyeball outward and downward, which had existed since his eighth year. The cornea had become obliterated by inflammatory attacks; the tumour protruded from between the eyelids, was fluctuating, tense and shining, and evidently a cyst. As there were no cerebral symptoms of any kind, though great deformity of the surrounding cranial and facial bones, an incision was made into the tumour. The contained fluid spirted out with considerable force and was of a serous nature. The cavity was then explored by the finger of the operator, and the cyst found to extend within the cranial cavity through a widely dilated optic foramen. Some charpie was gently placed in the cavity, and the edges of the wound kept apart by a strip of lint smeared with cerate.

On the fifth day profound stupor came on, and death occurred the same evening.

Post-mortem Appearances.—The vessels of the brain injected; the sub-arachnoid tissue infiltrated; the lateral ventricles filled with milky serum; the whole of the lower surface of the brain softened and of grey colour, and on the left side in a diffluent state from suppuration; the orbital cyst had extended about three inches into the left anterior lobe, pushing before it the arachnoid and pia mater, to which it had become firmly adherent; the left optic foramen measured more than six lines in diameter, and the left optic nerve had entirely disappeared. On the lower surface, and in the substance of

* M. Carron du Villards, who has described this form of disease, recommends a cautious incision into the capsule with scissors, while the patient's head is bent forwards, and a few strips of charpie stuffed into the cavity for twenty-four hours. *Vide* Démarquay, p. 419, et seq.

† Démarquay, *op. cit.*, p. 376 (Extract from Delpech.)

the right anterior lobe, was a sero-mucous cyst of about half the size of a pigeon's egg.

2. *Serous Cyst.**—A man, æt. twenty-four, was admitted into La Pitié, under Lisfranc, with exophthalmus of the right side, and a tumour occupying the space between the inner wall of the orbit and the eyeball. This tumour was fluctuating, hard and tense, and covered by inflamed conjunctiva, at the same time pushing before it the upper lid, and almost surrounding the eyeball. Vision was not entirely lost.

An exploratory puncture was made by Lisfranc, which gave exit to a serous, colourless fluid, after which the eyeball was returned to the socket, and retained there by a compress and bandage.

The next day erysipelas of the face came on, but soon subsided; the protrusion of the eye, however, was again produced. A month after the puncture, Lisfranc dissected away part of the cyst and removed it, and lint was put into the wound to produce suppuration in the remaining part of the cyst.

For five days after the operation no bad symptoms were observed, but on the sixth erysipelas of the face and ophthalmia, both of which subsided, and a free escape of pus from the cavity was established. On the twenty-fifth day, the wound having partially closed, was enlarged, and a large quantity of fetid pus let out. The patient now appeared to be approaching recovery, when symptoms of purulent infection appeared, and the patient died fifteen days after the first rigors.

Post-mortem Appearances.—Abscesses in the lung, liver, and brain; the shoulder and hip-joints were full of pus; the cavity of the cyst in the orbit nearly obliterated, and enclosed a muco-serous pus. All the veins in the neighbourhood were examined, but no trace of inflammation could be found in them. It is remarked, however, by M. Legendre that the *diploe* in the neighbourhood of the cyst was *not* examined.

Observations.—This and the preceding case must be looked upon as unusual in their rapidly fatal termination, and are related here chiefly from the light they are calculated to throw on the pathology of non-fatal cases.

3. *Hydatid Cyst.*†—A sailor, twenty years of age, was admitted into the Royal London Ophthalmic Hospital, Aug. 10, 1852, for a tumour situated in the left orbit, which had already caused the disorganisation of the eyeball.

An obscurely fluctuating tumour was felt at the upper and under part of the orbit; the upper lid was turned inside out,

* Démarquay, *op. cit.*, p. 408.

† Bowman's 'Med. Chir. Trans.' 1861.

and the eyeball thrust outward and downward. The cornea was flaccid and half opaque, and the globe of the eye partly collapsed. The first symptom had been an abnormal protrusion of the eye three years before. On the 27th August Mr. Bowman made a puncture with a bistoury and let out a perfectly limpid fluid. He then enlarged the incision, and explored with the finger, but without discovering any hydatids; he therefore introduced a strip of lint. In the course of a week suppuration had been established, and three hydatid cysts of the size of marbles escaped into the poultice. The cavity rapidly closed up, and the patient made a good recovery.

Observations.—In the *Ophthalmic Hospital Reports*, vol. iv., p. 88, Mr. Hulke has related a case similar to the one of Mr. Bowman's. The hydatid cyst came away in the poultice in this case, the cavity quickly closing up, and vision being in part retained.

4. *Sebaceous Cyst.**—A young woman, æt. twenty years, had protrusion of the eyeball in a direction inwards and upwards, which was caused by a tumour at the lower and inner part of the orbit. This tumour was appreciable to the eye; covered by unaltered skin; having an indistinct fluctuation, and communicating to the finger the sensation of softness, but scarcely of fluidity. Vision was lost, and the pupil dilated, but still moveable.

An exploratory puncture was made without any fluid escaping. A few days after, the tumour was cut down upon and found to be filled with stinking sebaceous matter, similar to the ordinary sebaceous tumours of the skin. The contents of the cyst were of the bulk of an orange. The cyst itself was left to suppurate, and the wound kept open by a strip of lint. The eye returned to the socket and vision improved. Injections of the cavity were had recourse to in order to remove the remains of the sebaceous matter, and various measures tried to promote suppuration, but none succeeded. At the end of three months the probe could still be passed to the bottom of the orbit, and at the end of eight months a small fistulous opening still remained, through which a sero-purulent fluid escaped and occasionally with it fragments of the stinking sebaceous material already alluded to.

Observations.—Mr. Haynes Walton has related a case of a similar kind to the above in the *Medical Times*, 1854, p. 195. In all probability the cysts in these instances originated in the eyelid, and thence invaded the orbit.

For an instance of *Colloid Cyst*, containing a gelatinous liquid, I must refer again to Démarquay's work, p. 395; for an

* This case was observed by M. Testelin, and is quoted by M Démarquay, at p. 392 of his work.

encysted *Oily Tumour*, to Mr. Haynes Walton's work, p. 280. Several other cases of rare forms of cyst are related by Démarquay, such as a Melanic Cyst (p. 369), and Meliceric Cysts (p. 391); but it would be out of place to give details of such cases in this paper. The instances of dropsy of Tenon's capsule, however, deserve notice, as offering a similarity and a contrast to those cases already related.

5. *Dropsy of Tenon's Capsule.**—M. Carron du Villards relates the following case in the "Annales d'Oculistique," 1858, t. XL., p. 106:—

A young man had a distinct projection of the fluid whenever he bent his head forward. If he remained long in that position the eye became so hard and so painful that he was obliged to lie down on his back to push back the fluid by making pressure on the eyelids.

Observations.—In all the persons affected by this malady the protrusion of the eye has followed scarlatina or measles, and M. Carron du Villards has observed that the same affection is seen in sheep suffering from the *rot*. This latter being also a cutaneous eruption. The same authority has always succeeded in removing the fluid by a puncture, which should be performed only after a previous cautious dissection down to the capsule before opening it.

ON VASCULAR AND ANEURISMAL GROWTHS.

Notwithstanding the large number of cases illustrating this interesting subject, which have been put on record by different observers; very few can be arranged satisfactorily according to their pathology; partly because a large proportion of these cases have been so successful as regards the results of treatment, that no opportunity of verifying the diagnosis has been afforded; and partly because others, which have terminated fatally, have yielded evidence of such varying nature that it is almost impossible to find materials for comparison, or to carry out anything like a statistical inquiry in the subject. No two cases out of about forty cases which I have collected, present exactly the same features, either in the symptoms or the pathological conditions; at the same time there are some general points of resemblance among a considerable number to which it may be interesting to allude, and from which, probably, practical conclusions may be obtained.

* One case has been already noticed under the section devoted to Diagnosis, *vide* supra, p. 065.

In the first place there are about thirty-six cases of tumour recorded which agree as to the following broad characters: they are associated with protrusion of the eyeballs; they have a pulsatile movement perceptible to the eye or finger, or both; there is a bruit or whirring sound heard by the patient and by the stethoscopist; the pulsation and bruit cease when pressure is made on the carotid artery of the same side, and return when the pressure is removed.

It is obvious that a number of entirely different pathological conditions are compatible with the existence of such morbid phenomena as are here mentioned, and on analysing these cases, they will be found to include cases of true aneurism of the ophthalmic artery; diffuse aneurism of the same artery; aneurism, true or diffuse, of the internal carotid in the cavernous sinus; aneurismal varix of the internal carotid; tumours of various kinds obstructing the return of venous blood through the sphenoidal fissure; malignant pulsating tumours in or behind the orbit; and general dilatation of the intra-orbitar arteries from atheromatous degeneration of the middle coats.

True aneurism of the ophthalmic artery within the orbit is in all probability the least common form of aneurismal lesion. In Mr. Guthrie's case it is mentioned that an aneurism was found in each ophthalmic artery of the size of a nut. At the same time he states that the ophthalmic vein was very much enlarged and was obstructed near the sphenoidal fissure by an hypertrophied condition of the four recti muscles, which had acquired an almost cartilaginous hardness. (Lectures on "Operative Surgery of the Eye," p. 158). In this case, though the eye was protruded and a bruit could be heard during life, no tumour could be felt.

The only other case in which true aneurism of the ophthalmic artery in the orbit was seen after death, was one mentioned by M. Carron du Villards, as having been met with by him accidentally while dissecting at the École de Medicine.

Diffuse aneurism of the ophthalmic artery, either spontaneous or traumatic, seems a much more common condition, but in many cases the mischief seems to be situated as much behind the orbit as within it; and in some it would appear that the symptoms during life are more due to pressure in the cavernous sinus and sphenoidal fissure, than to actual disease in the orbitar cavity.

As an instance of a traumatic diffuse aneurism, the case related by Mr. Busk in the *Med. Chir. Review*, for April, 1836, is perhaps the most complete, and illustrates best the symptoms, treatment and pathology of the disease.

Mr. Busk's case at the London Hospital (*Med. Chir. Review*, *April* 1836).—A man had cerebral disturbance after a violent blow on the left temple. Copious bleeding from the ear followed, and deafness. The eyelids were swollen, the pupil dilated and the eye fixed and immovable. More than six months after the accident a pulsating tumour was found at the upper and inner part of the orbit. The common carotid was tied with immediate relief and ultimate cessation of all the symptoms. Some years after a *post-mortem* examination was made, and an old rupture of the ophthalmic artery was found.

This case seems conclusive as to the nature of some, at any rate, of the cases of pulsating tumours in this region, and several similar cases following injuries, seem to confirm the same view of their pathology. A case read by Sezokalsky, at the Heidelberg Ophthalmological Congress, was probably of exactly the same nature. (*Ophthalmic Review*, vol. ii., p. 188.)

Case by Sezokalsky.—A man, fifty years of age, while chopping wood, received a violent blow on the left temple from a splinter. The left eye was protruded at the end of a few weeks, and a softish indistinctly pulsating tumour appeared on the left temple.

Between the eyeball, and the upper and outer margin of the orbit, a flat tumour was felt reaching deep into the orbit. The two tumours being superficially separated by the edge of the orbit; both pulsated and pressure on the carotid stopped the pulsation.

The treatment at first tried was compression by the finger on the carotid, with the addition of ice-cold applications, and digitalis internally. This plan not succeeding, the common carotid was tried, digital compression having been employed for eight hours previous to the operation. Three months after the aneurismal tumours had become softer and smaller, and the protrusion of the eye less.

Instances are not wanting of cases of aneurism involving the internal carotid and ophthalmic artery, and it is probable that they form the larger number of the cases of pulsating tumours in the orbit.

The following particulars are related by M. Giraudet, of Tours, of an aneurism involving the internal carotid and ophthalmic artery (*Gazette des Hôpitaux*, 7th March, 1857), and will throw light on the pathological conditions of many of the cases in which the state of the structures involved could only be guessed at. "On raising the right anterior lobe of the brain, we discover an irregular, oblong, nodulated tumour, situated above the cavernous sinus. The colour is of a red brown, mingled with yellowish spots, its volume measures four centimetres by two-and-a-half. The right ophthalmic artery enlarged into the form of a funnel, is continuous with the anterior aspect of the tumour. The latter having been divided, and the clots turned out, the two funnel-shaped openings of the carotid and ophthalmic arteries are seen, establishing a communication with the aneurismal sac. The sac has only one cavity, the thickness of its walls

varies from two to three millimetres. The cellular coat of the artery adheres closely to the surrounding vessels. The middle coat is thickened; a slight magnifying power discloses numerous laminæ of tranverse fibres. Between this coat and the inner coat we find a large number of little osseous lamellæ of a blue-yellowish colour, the inner coat is marked with red and yellow marks in two different places. It is completely worn away and destroyed, and the osseous plates are in direct contact with the interior of the cyst.

Among the clots which the tumour contains, some escape at the time of the incision; others are closely united and arranged in concentric layers. The right optic nerve is flattened like a ribbon, displaced and bound to the under surface of the tumour; the motor oculi nerve, and the ophthalmic branch of the 5th, are also thinned and compressed at the base. The cavernous sinus is obliterated; the clinoid processes have entirely disappeared; the commencement of the roof of the orbit is stripped of periosteum and *rugineè* for the extent to two centimetres."

An account of the dissection of the orbit in a similar case is given in the *Pathological Transactions*, vol. xi., p. 8, by Mr. Nunneley, and the conditions in the two cases offer a very remarkable resemblance. Those pulsating tumours which come on suddenly in the orbit, especially when occurring in the course of pregnancy, or during any rather violent exertion, may be looked upon as of the nature of diffused aneurism, differing only from those of traumatic origin in having been preceded by a diseased artery or true aneurism. These are what Demarquay describes as diffuse consecutive aneurisms as distinguished from diffuse primitive aneurism, or those not preceded necessarily by disease of the coats of the artery involved. Dalrymple's case of a pregnant woman forty-four years of age, who had sudden pain and noise in the head, followed by a pulsating tumour which receded after ligature of the carotid is a good instance.

A case related by Mr. Nunneley in vol. xvii. p. 168 of the *Med. and Chir. Transactions*, is especially interesting, as the diagnosis was confirmed in a remarkable manner by an autopsy five years after the disease had yielded to the ligature of the common carotid.

In this instance there had been during life, besides the other common symptoms of aneurism, paralysis of all the extrinsic muscles of the eyeball, and the seat of the tumour was thought to be in the cavernous sinus from this circumstance. This proved to be the case; for a circumscribed aneurism was found on the side of the sella turcica, filled with solid coagulum and pressing upon the ophthalmic vein.

Mr. Nunneley, from this and other cases, draws the conclusion that pulsation in orbital tumours may be a merely communicated pulsation from an intra-cranial aneurism to an enormously

dilated ophthalmic vein; and from cases that have been reported elsewhere, such an explanation seems very probable, and to be justified by facts that have been brought to light.*

This consideration explains some cases which have been very puzzling to the surgeon, of *simulated aneurism* in this region.

Thus, Gendrin relates the case of a woman thirty-two years of age, who was attacked by sudden pains in the head, and protrusion of the eyeball. Pulsation and bruit both distinct. After death the intra-orbitar veins were found distended with blood, but there was no extravasation. In the interior of the cavernous sinus the internal carotid and ophthalmic arteries were surrounded by an adherent blood-clot. Their inner wall presented various alterations—the greater part of the arteries of the orbit were obliterated. Here, as in Mr. Nunneley's case, the pulsation felt in the orbit must have been communicated.

The following case also, anterior in point of time to those already related, illustrates the same point.—*Ophthalmic Hospital Reports*, vol. ii., p. 6 :—

The woman, æt. forty years, under the care of Mr. Bowman, at King's College Hospital, complained of a sudden loud noise in her head after a blow with the fist.

She had double vision, redness and protrusion of the eyeball, dilated and immovable pupil, and enlarged veins at the outer and inner canthi. Pulsation was felt over the eyelids.

The common carotid was tied, and the pulsation and bruit immediately ceased, and for a week there seemed every chance of the case proving a successful one. Phagedænic ulceration, however, followed by hæmorrhage, led to a fatal termination eighteen days after the operation.

When the parts came to be examined, no trace or appearance of an aneurism could be discovered, but there were evident signs of "phlebitis of the cavernous, transverse, circular, and petrosal sinuses. The internal carotid artery may have been partially compressed by the swollen walls of the cavernous sinus against the side of the body of the sphenoid bone, giving rise to the bruit, which would have a good conducting medium in the cranial bones. The plugging of the trunk of the ophthalmic vein, where it joins the cavernous sinus, by obstructing the return of blood from the orbit, accounts for the protrusion of the eyeball, and perhaps also for the pulsation which was felt when the fingers were laid on it."

These remarks were made by Mr. Hulke, who reports the

* It is, however, remarkable that in the case, to explain which Mr. Nunneley makes these observations, there was aneurismal dilatation of the arteries in the orbit, sufficient, if the drawing be correct, to account for the symptoms. *Vide Pathological Transactions*, vol. xi., p. 8.

case, and to him, therefore, is due the credit of making out this important point in the pathology of intra-orbitar tumours, the cases adduced by Mr. Nunneley having in a striking manner confirmed his views.

The difficulty of exactly appreciating the nature of the intra-orbital growth is well illustrated by another case related by Mr. Nunneley in *Med. Chir. Transactions*, vol. xlviii., p. 21, in which a highly vascular malignant growth was treated by ligature of the carotid, with temporary relief of the symptoms, the eye-ball receding and the pulsation being less marked. Death occurred eighteen months after, and a tumour of the nature of medullary cancer was found occupying the post-orbital region of the cranium, passing into the orbit and zygomatic fossa, and pressing upon the cavernous sinus and ophthalmic vein.

A parallel case is recorded by Demarquay as having occurred to Mr. Lenoir (*Bulletins de la Société de Chirurgie*, t. ii., p. 61 and 84).

The tumour was treated as an aneurism by ligature of the carotid, after which pulsation ceased and the tumour diminished in size. Two months after, a pulsating tumour appeared in the calf. Death occurred nine months after the ligature of the carotid; when encephaloid tumours in the brain, in the calf of the leg, and in the lungs were found.

Having, however, brought forward so many cases of difficulty, the practical aim which I have before me would be entirely overlooked were I not to endeavour to lay before my readers a succinct statement of what symptoms may be expected in an uncomplicated case, and that some have occurred and are likely to occur again there can be no doubt, though in very few will there be such simplicity and clearness as would satisfy those who look for the precision of the printing press in the pages of nature, rather than the faint outlines left in the sand by the finger of the unseen Master.

An uncomplicated diffuse aneurism is very frequently the result of an injury to the orbitar or temporal region, or to the base of the cranium. Where there is no history of external injury, the attack of pain and noise in the head with which the symptoms are ushered in, has been sudden and has been observed to occur in pregnant women or during child-birth in a large proportion of cases.*

* Thus, of thirty-four cases of aneurismal tumours in or about the orbit, tabulated by Dr. T. G. Morton, of Pennsylvania, thirteen are directly attributed to injuries received, and six occurred either during pregnancy or during childbirth.—(*American Journal of Medical Sciences*, April, 1865.)

And in two other cases not tabulated, by Dr. Morton, the origin of the disease in each case was injury.—(Holmes, *American Journal of Medical Sciences*, July, 1864.)

The immediate effect is to produce swelling and ecchymosis of the lids and surrounding parts, and this is followed sooner or later (it may not occur for months after), by protrusion of the eyeball, a pulsating tumour near the eyeball, and a whirring bruit heard over the temporal region or brow by the aid of the stethoscope. Pressure made on the carotid of the same side stops the pulsation, which recurs when the pressure is removed. The patient complains of a beating or humming noise in the head, and in some cases this noise can be heard by others at some little distance from the patient.

The protrusion of the eyeball increases gradually, and in all probability the expanding tumour would at length burst, leading to a fatal hæmorrhage, unless art stepped in and arrested the morbid process. The only case in which fatal hæmorrhage occurred was one of aneurismal varix of the cavernous sinus, the rupture occurring during a period of the intermission of treatment by compression of the carotid. (See a case of M. Nélaton's, related by Dr. Holmes in the *American Journal of Medical Sciences*, for July, 1864, at page 46).

Whether an ordinary diffused aneurism of the orbit has ever been known to terminate in this way, is of very little consequence; the mode of termination of the same disease in other parts being well known; and there being no reason for expecting any difference in its progress in this locality.

It is remarkable, however, that treatment by ligature of the common carotid and by compression with the finger of this artery should have been so often successful in checking the progress of a disease which, in other parts of the body, is not usually controlled by the same method; and this consideration throws considerable doubt on the diagnosis in those cases in which the operation has been successful, and makes it probable that true aneurism has been present, and not a diffused aneurism, or that, at any rate, the diffused aneurism has become encysted and so assumes some of the characters of a true aneurism, and among those its amenability to treatment by ligature of the main vessel. It is easy to conceive that the firm fascia of Tenon's capsule in front, and the attachments of the recti muscles behind, would form such barriers to the extension of effused blood, that after a clot had once formed, it would offer considerable resistance to the impulse of an artery of so small a calibre as the ophthalmic, and that an aneurism in this cavity would be under conditions somewhat different from those of one in the popliteal space or in Scarpa's triangle. In those spaces, and in others along the chief arteries of the limbs, the fascia of the limbs would only limit the extension of effused blood forward, while neither their own sheath nor the fasciæ would, in any way hinder an extension in the direction of the

long axis of the limb. On the other hand it may be said that in tying the common carotid the treatment is equivalent to tying the arteries supplying both ends of the divided or ruptured vessel, and that it cannot be compared to simply tying the superficial femoral for an aneurism in the brain. Such an argument, however, is open to the objection that the anastomosis with the arteries, on the other side of the head are very free and perhaps as much likely to interfere with success as the anastomosis of the profunda femoris with the recurrent and other branches of the popliteal.

The *sudden* attack of pain and noise in the head will suffice to distinguish a case of this kind from the pulsating malignant growths, and these seem the only ones likely to be confounded with them. I have, however, already mentioned an instance in which the diagnosis from abscess was only cleared up after making a puncture into the tumour, and it is well to bear in mind cases that have been recorded of aneurism by anastomosis in the orbit (see Haynes Walton "On Surgical Diseases of the Eye," second edition, p. 230), and the dissection of a case by Mr. Nunneley (*Pathological Transactions*, vol. xi., p. 8), in which, from the drawing given by him, there seems to be a general dilatation of the ophthalmic artery and its branches.

The symptoms of aneurism of the internal carotid in the carvenous sinus may resemble, in some respects those of aneurism within the orbit, but will most likely be accompanied by others, such as disturbances of the cerebral functions; paralysis of the motor apparatus of the eye from pressure on the nerves at the sphenoidal fissure; and if the tumour does not invade the orbit no pulsation would be perceptible, so that the difficulty of diagnosis would be lessened. A case related by Mr. Hussey, of Oxford, in the *Ophthalmic Hospital Reports*, vol. ii., p. 127. well illustrates the difficulty of diagnosis of such cases; the disturbance of functions of the brain—*e.g.*, paralysis of the arm and convulsive attacks, and the co-existence during the latter part of the life of the patient, of hæmorrhages from the nose, seemed to indicate a tumour of a malignant kind in the cranial cavity invading the cerebral tissues, though the sudden occurrence of the symptoms, during a somewhat violent exertion, favoured the hypothesis of an aneurism of the internal carotid in the cavernous sinus. In the absence of a post-mortem examination this very interesting case remains of doubtful nature.

The treatment of aneurism of the orbit has been, it would appear, very successful, whether ligature of the common carotid has been adopted or digital pressure, or injection by astringents or internal remedies.

Dr. T. G. Morton, of Pennsylvania (*loc. cit.*) has collected thirty cases in which the common carotid artery was tied for aneurism, or supposed aneurism, within or near the orbit, and of these twenty-two are reported as cured, and three as partially successful; two were unsuccessful and three fatal.

Dr. Morton has tabulated four other cases, two successfully treated by injection of styptics and two, equally successful, created by digital compression.

And Dr. Holmes (*American Journal of Medical Science*), has related a case successfully (*loc. cit.*) treated by the administration of extract of ergot and tinct. of the veratum viride, or in which, at any rate, the patient recovered perfectly during the administration of those remedies.

A case, treated by compression is also related by this gentleman, but with a fatal result during a period of intermission of the treatment. So that, out of thirty-seven patients treated by different methods (*vide* table), twenty-nine perfectly recovered, three more were relieved, two remained as they were before, and three died.

For Table of Cases see following page.

TABLE OF CASES.

	Operator	Date.	Ligation.	Result.	Origin.
1	Travers	1809	Common Carotid	Cured	Sudden, during pregnancy
2	Dalrymple	1813	ditto	Ditto	Ditto
3	Roux	1829	ditto	Success incomplete	Sudden and spontaneous
4	Warren	1829	ditto	Cured	Ditto
5	Warren	1829	ditto	Unsuccessful	Injury
6	Scott	1834	ditto	Cured	Ditto
7	Busk	1836	ditto	Ditto	Ditto
8	Dudley	1839	ditto	Ditto	No observable cause
9	Jobert	1839	ditto	Ditto	Injury
10	Velpeau	1839	ditto	Ditto	Sudden and spontaneous
11	Wood	1842	ditto	Ditto	Congenital
12	Mott	—	ditto	Success incomplete	Ditto
13	Van Buren	—	di to	Cured	Injury
14	Herpin	1844	ditto	D tto	Sudden and spontaneous
15	Petrequin	1845	ditto	Ditto	Injury
16	Nunneley	1852	ditto	Cured	Slow, during pregnancy
17	Nunneley	1856	ditto	Ditto	Sudden and spontaneous
18	Nunneley	1858	ditto	Died	Injury
19	Nunneley	1859	ditto	Cured	Congenital
20	Walton	1851	ditto	Ditto	Injury
21	Brainard	1852	ditto	Unsuccessful	Ditto
22	Curling	1854	ditto	Cured	Ditto
23	Coe	1855	ditto	Ditto	Ditto
24	Bowman	1859	ditto	Died	Injury
25	Bowman	1860	ditto	Cured	Injury
26	Syme	1861	ditto	Ditto	Sudden, during pregnancy
27	Hart	1861	ditto	Ditto	Injury
28	Morton	1864	ditto	Ditto	Spontaneous
29	Nunneley	1864	ditto	Ditto	
30	Nunneley	1864	ditto	Successful in arresting protrusion. Patient lived 18 months	
31	Bourget		Treated by injection	Cured	
32	Walton		d tto	Ditto	Sudden, during childbirth
33	Gioppi	1856	Treated by compression	Ditto	Sudden, after childbirth
34	Scaramuzza	1858	ditto	Ditto	Injury
35	Holmes	1864	Treatment by Ext. Sec. Comut. and Tr. Veratr.	Cured	Injury
36	Nelaton & Desmarrs	1855	Compression with tourniquet	Death from bursting of aneurismal varix of the cavernous sinus	Injury
37	Szokalsky (*Ophthalmic Review*), vol. ii. p. 188.	1864 or 5	(1) Digital compression and ice. (2) Three months later ligature of the carotid	Success lasting for three months at least	Injury

ON EFFUSIONS OF BLOOD, AIR, AND SERUM, IN THE ORBIT.

I. EFFUSIONS OF BLOOD IN THE ORBIT.

THE causes of extravasations in this region are direct injuries, penetrating wounds, and fractures of the skull involving the orbitar walls; but there are a few instances in which the extravasation has taken place independently of actual violence applied to the part; and such cases have occurred during violent exertion on the part of the patient and generally in a highly heated atmosphere. The effusions of blood of an external kind, and leading to diffuse aneurism, have been already considered, and our present subject will, therefore, exclude the consideration of any aneurismal growths. The symptoms will, however, be similar to those of intra-orbitar aneurism in some respects. There is a sudden protrusion of the eyeball immediately or at a slight interval after an injury—with discoloration of the conjunctiva and eyelids, and perhaps, ecchymotic redness and swelling of the surrounding parts. The vision may be simply defective from the alteration of the axis of the two eyes, and the consequent diplopia, or there may be temporary amaurosis consequent on pressure behind the globe, or around the optic nerve. The swelling may or may not be felt by the finger, but the history and symptoms will clearly point to the nature of the case, and, unless there be serious lesions within the cranium, the treatment will be of the simplest nature.

When the extravasation is associated with fracture, it is evident that the case may be of a very serious kind; the prognosis being unfavourable in proportion to the extent of the injury. It may therefore be well to consider, in such a case, what evidence there is of the fracture having extended into the base of the cranium or the roof of the orbit. M. Carron du Villards says, that he has seen many cases in which fracture of the cranium has been associated with symptoms of intra-orbitar effusions of blood, and he relates a case in which his diagnosis was verified by post-mortem inspection. (Demarquay, *Op. cit.*, p. 272). With regard to extravasation in the eyelids as an indication of the seat of fracture, there seems to be no certainty, though, if not associated with sub-conjunctival effusion it would point to the *margin* of the orbit as the probable seat of injury; while sub-conjunctival effusion associated with other symptoms of fracture and unassociated with effusions into the eyelids, or followed by it, would point to the deeper or post-ocular part as

the seat of injury.* The latter condition would be, of course, more likely to be serious than the former, in proportion as the base of the cranium is more important than the facial region.

The following extract from Mr. P. Hewett's paper in "Holmes's Surgery," vol. ii. p. 127, will serve to show what value can be placed on this symptom as an indication of fracture in the orbit.

> "Out of twenty-three cases of fractured base, involving more or less extensively the orbitar plates of the frontal, all of which occured at St. George's Hospital within the space of ten years, it was found in eight cases, that there were no traces of extravasated blood to be seen, either in the eyelids or under the ocular conjunctiva; and in five cases that the effusion of blood occupied the eyelids only; so that in these *thirteen cases* there could have been no suspicion whatever as to the existence of a fracture. But, on the other hand, the nature of the injury was made manifest in the *ten remaining cases* by the blood effused under the ocular conjunctiva and in the lids.
>
> "Blood may, however, be effused into the lids and under the ocular conjunctiva, in fractures of the malar, or superior maxillary bones; and this may give rise to an error of diagnosis."

The following case abridged from a report in Demarquay's works, taken from the "Annales d'Oculistique" 1847, t. xviii. p. 201, is a good illustration of the subject in hand.

M. L., æt. sixteen, fell from the rigging of a ship, a height of fifty-two feet, and struck the left side of his head. He was taken up insensible and blood flowed copiously from his mouth, nose and ears for several days. The left eye was thrust out of the orbit and hung down on a level with the tip of the nose. The captain of the ship replaced the eye and put on a linseed poultice. Fever supervened, with delirium, and lasted fifteen or twenty days.

Three months after the accident he was placed under the care of M. Duval, who found his left eye protruded and absolutely blind; though the iris acted regularly. Iodide of mercury ointment was rubbed into the temple and brow, and iodide of mercury given internally, and leeches applied.

A year after, violent inflammation of the eyeball and surrounding parts came on, which subsided under treatment, which still left the protrusion of the globe. Iodide of mercury internally and externally were again used, and at the expiration of two months the eye had returned to the socket. Two years after, the patient's appearance was quite normal, but vision was never restored in the affected eye.

In a case related by M. A. Ricord and quoted by Mr. P. Hewett ("Holmes' Surgery," v. ii. p. 173), there was distinct evidence of extravasation of blood in both orbits, but no protrusion of either eye. The sight of one eye was temporarily lost, and

* Demarquay, *Op. cit.*, p. 274.

Mr. Hewett remarks that the temporary loss of vision must have been due to effusion into the sheath of the optic nerve, rather than to pressure, and the restoration of blood in the orbit and around the nerve of vision, to a re-absorption of this blood.

Among the symptoms of extravasation with fracture, may be mentioned paralysis of the fifth and third pair, and instances of such lesions are given by Mr. Hewett in the same place; but it would be imprudent to look upon these lesions as merely the result of compression by effused blood; when we consider that the same injury which has caused the latter may have damaged the brain substance permanently; and the prognosis must be cautious in proportion.

Extravasations from penetrating wounds, and from contusion, give rise to symptoms similar to those already mentioned and instances can be found in many authors.*

A remarkable case by Dr. Redemans is well worth notice.† The obstetric forceps were applied by this gentleman, for the delivery of a woman in her sixth confinement. The child was extracted alive, but, two hours after, the right eye was found to be thrust out of the orbit, the eyelids being buried in that cavity and the conjunctiva everted and infiltrated with blood. There was also infiltration of the eye and eyelid of the other side, but to a less extent.

Pressure with the fingers failed to replace the protruded eye, and a puncture made into the swelling was also unsuccessful. Graduated compresses were applied, but suppurative action set in and ulceration of the cornea which ended in perforation. After this the protrusion became less, and the eyelids resumed their normal position.

This case is unique, but seems to point out the possible dangers of delivery in this way when it is necessary to apply the forceps for a long period, and, as Mr. Redemans observes, suggests the expediency of applying a compress immediately after birth in any case where there is reason to anticipate such a result. Possibly, in a suitable case it would be better, when the protrusion has actually taken place to leave the process of absorption to go on without any local interference and to protect the surface of the cornea by the application of olive-oil and a gauze-shield or goggle of such a size as to cover the whole circumference of the orbit, and the everted conjunctival surface. Punctures into the orbit itself would scarcely be likely to be of use in any case of extravasation, though, in such a case as the

* (Vide Demarquay, *Op. cit.*, p. 280—1. *Ophthalmic Hospital Reports*, Oct. 6, 1857).

† Demarquay, *Op. cit.*, p. 283.

above, the temptation to effect a rapid replacement of the eye was very great and would justify any rational attempt with such an object.

Spontaneous effusions of blood in the orbit are very uncommon, but M. Demarquay's work contains allusions to several instances occurring in typhus patients and in one scorbutic. He also relates in detail the case of a workman, nineteen years of age who had sudden diplopia and impairment of vision and of the movements of the eyeball, which could only be attributed to this cause. M. von Graefe, under whose care the patient was, considered the *absence* of cerebral symptoms, taken in connection with the symptoms observed, plainly indicated the seat of the effusion, and the gradual disappearance of all these symptoms justified his diagnosis.

The treatment adopted in this case was that of general and local bleeding, and M. Demarquay recommends in similar cases to make an opening for the escape of the effused blood. How far such a plan may be justified by experience I am unable to say, but I should be inclined to leave the effused blood alone till absorption had taken place.

II.—Emphysema.

The escape of air from the lacrymal passages into the cellular tissue sometimes gives rise to protrusion of the eyeball; and this is generally the result of some injury by which the os ungius has been fractured. The following two cases of M. Desmarres (Demarquay, p. 224-5) are very good illustrations of this very rare and curious affection.

M. Desmarres' first case:—

"As soon as the patient pressed his nose between his fingers to use his pocket-handkerchief, and the air was forced into the nasal canal, the left eye was visibly projected for the extent of at least a centimetre and a half, being thrust forward by the air which found its way behind the globe at each attempt made by the patient to blow his nose. As soon as the compression of the nostrils was taken off, the globe resumed its place, and occupied the same level as its fellow. At the same time that it was thrust forwards, the eye was directed from above downwards, and from without inwards, and there was double vision. When the other eye was closed, at that moment double vision ceased, and the image perceived was single and distinct; it was only displaced, and followed the direction of the fellow organ."

M. Demarres' second case:—

"A blow from the fist on the left eye ruptured the lacrymal sac; an enormous emphysema of the whole anterior wall of the orbit was soon produced. With the view of showing me how he made the air pass at will into the tumour, the patient blew his nose violently while compressing his nostrils; immediately the eyelids and the circumference of the orbit swelled, and became of a blueish ecchymotic black, just as if a coloured injection had been forced into the tissues."

General emphysema may affect the orbit with other parts and protrusion of the eyes in such a case would not be at all a serious symptom. It is necessary to bear in mind the possibility of meeting with such a singular condition as that of the cases described, but it would be improbable that any mistake of diagnosis should occur.

The treatment consists in making punctures for the escape of the air from time to time, and the patient should be cautioned against blowing his nose until the opening in the membrane and lacrymal bone has closed up.

III.—Effusion of Serum into the Cellular Tissue.

M. Demarquay has pointed out this condition as the probable cause, in some cases at any rate, of the exophthalmus, associated with disease of the heart in goitre; and adduces a case of albuminuria and general anasarca in which infiltration of the cellular tissue was found after death, the eyes having been much protruded during life.

He allows, however, that the pathology of this disease is not at all conclusively settled, and as researches seem still to be wanting on this subject, it is premature to give any description which must necessarily be wanting in accuracy and completeness. Nevertheless, the most recent observations seem to confirm the views of Demarquay, and, in addition to point to some lesion of the cervical sympathetic nerve as generally associated with it. (See Dr. Reith's remarks on a "Case of Exophthalmus" in the *Med. Times and Gazette*, Nov. 11, 1865.)

These few remarks on the subject of effusion into the cellular tissue are only offered as indirectly bearing on the subject of tumours, properly so called, in this locality and as a means of assisting in forming a diagnosis. Thus the aspect of the patient, generally anæmic and languid; the *slow* progress of the protrusion by which *both* eyes are simultaneously affected; and the coexistence either of cardiac symptoms or of bronchocele, and perhaps of both, will, together, serve to distinguish a case of intra-orbitar effusion of serum from any other affection in the same region.

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ERRATA.

Page 29, line 26, for "tried," read "tied."
Page 34, line 5, for "brain," read "ham." Line 24, for "carvenous," read "cavernous."

(*THIRD EDITION.*)

EPILEPSY:

IN

WHAT CLASS OF CASES, AND UNDER WHAT CIRCUMSTANCES,

MAY WE REASONABLY HOPE FOR

CURE IN EPILEPSY?

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"I firmly believe that if physicians would apply their minds attentively to it (Epilepsy), they might *cure* a great many Epileptic persons, and be of service (*relieve*) almost to all."—VAN SWIETEN'S *Commentaries*.

PUBL

EPILEPSY:

IN WHAT CLASS OF CASES, AND UNDER WHAT CIRCUMSTANCES, MAY WE REASONABLY HOPE FOR CURE IN EPILEPSY?

THERE can, I think, be no reasonable doubt in the mind of observant and intelligent practitioners of the medical art, that diseases, disorders, and derangements of the nervous system have of late years greatly multiplied in number, if not much increased in severity of degree. More than this, not only have they greatly multiplied or increased, but perhaps it is not saying too much to assert that, even at this present time, they are still greatly upon the increase. From whatever cause or causes the increase in this class of diseases may arise, and it would not be a difficult task to point out some amongst others as tending to produce them, the fact, as it appears to me, remains indisputable. Some physicians affirm that formerly human beings—men, women, and children—were generally stronger and more robust, and less frequently attacked with disease than they are at the present time; in fact, according to the opinion of such, there was a less amount of disease altogether amongst mankind at large.

However this may have been, whether true or not, the causes

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which tend to produce diseases of one or more parts of the nervous system have greatly increased, and it is much to be feared that this increase does but keep pace, *pari passu*, with the every-day increase of population and of progressive civilization. Especially is this the case as regards residents in large towns and cities, in which the daily toils and burdensome anxieties of life make increasing demands upon the nervous energy and brain-power of all engaged in the struggle for life and position.

The older physicians do not, in their records of diseases, treat at length of diseases of the nerves; in fact, paralysis and convulsions of more or fewer parts of the body would seem to be all, or nearly all, the diseases of this class that they recognised as such, although a careful and attentive perusal of their writings will show, that they had observed and recorded many diseases to which they affixed no names, and to which they did not, or could not, assign appropriate causes; diseases which, at the present day, by the aid of a more enlightened physiology and pathology, we know to belong to the class of nervous diseases; the phenomena they present to our observation indicating most clearly to the intelligent practitioner some lesion in the functions, if not in the organism, of the nervous structure of the human frame.

The ruder anatomy of the parts concerned in the class of disorders under consideration may be stated at once as simple, and far from complex, consisting, on the one hand, of the entire nervous mass of the human framework; and, on the other hand, of the blood-vessels that supply, and, in many cases, that accompany, the nervous mass in its grosser parts, or in its numerous ramifications throughout the body. In cases, however, of *impaired* or *perverted* motion, as in paralysis, and in convulsions for example, there is another anatomical element that must be taken into account, and this element is one that hitherto, in nervous diseases, has not received the attention that it obviously deserves. I mean by this, the muscular tissue, a tissue, the proper and healthy function of which is contraction or contractility.

By the nervous mass of the human framework will, of course, be understood the brain, including the cerebrum and cerebellum, the medulla oblongata, the spinal cord, the nervous ganglia, situated in various parts of the body, as well as the ramifications of the various and numerous trunks connected with the cerebro-spinal axis, and the great sympathetic or nerve of organic life.

The universally acknowledged importance of nervous affections, and the deep interest now felt in this extensive department of medical observation, as well as the active and refined inquiry devoted thereto, sufficiently warrant any amount of renewed attention to the subject, even supposing that little more than a renewed attention be asked and given to facts already known. The very intricacy itself affords one of those instances wherein new conclusions and a nearer approximation to truth may be rendered possible, we might even say probable, merely by re-casting the order of these facts, regarding them from new points of view, and by using them in new or in different combinations.

In hospitals, and other kindred establishments for the reception and treatment of the sick, the student and practitioner commonly enough meet with affections of various parts or organs of the nervous system, yet, for the most part, those particular cases of this class of disorders which are there to be found are, by no means, such as come under observation and treatment in the course of daily professional life; in this latter condition, that is in the great hospital of the world at large, many of these cases of affections of the nervous system present themselves to our notice under most troublesome, and frequently under very unsatisfactory conditions; in fact, they occasionally, and especially in very civilized life, are amongst the most intractable disorders that the practitioner can have to do with.

In my judgment, it is mainly by observing and recording such and similar facts and observations, that we can at all hope to unravel with success the almost inextricable perplexity in which

at present many nervous diseases still remain. Nothing, I am convinced, will tend more to draw aside the curtain which as yet conceals from our clear, distinct perception of the true causation of nervous diseases, than a careful, patient, laborious observation and record of these symptoms and phenomena, as they present themselves to our notice, as medical observers and practitioners.

Be it observed, that very few, even of the worst cases, although attended with distressing and painful concomitants, are but seldom attended with immediate fatal results; and even if it were so, in my opinion, the ordinary after-death examinations of the body would do but little towards revealing to us the true causation of the diseases themselves, except in comparatively few instances: and, even in the living subject, whilst under medical care and treatment, the application of organic chemistry, and the use of the microscope from time to time will, I fear, likewise but in few instances, be productive of very fruitful and satisfactory results. Still, however, these valuable aids to diagnosis and treatment must not be neglected, and a proper value should be assigned to any pathological facts with which their application may happily furnish us. We must gladly avail ourselves of any and of every adjunct that may be reasonably expected to throw additional light upon our present obscurity, and so to rescue us from error and from ignorance, the two worst enemies to human health and happiness.

A better acquaintance with diseases of the nervous system, or, in other words, the removal of error and ignorance in regard to them, will do more than almost anything else to rescue many of our suffering and afflicted fellow human beings from the relentless hands of the pretenders to medical science and practice scattered up and down throughout the metropolis and the country at large

What is epilepsy? As commonly understood, epilepsy is a convulsive disease, in which, during each attack or paroxysm, there is a loss of sensation and of consciousness which is attended

with convulsive movements of the body of more or less violence, and affecting, at the same time, fewer or more parts of the frame.

The seizure is very generally sudden and without warning; that is, the seizure or attack *per se*, although in very many cases the unfortunate sufferers are not without premonition of a seizure, and then expect the attack or paroxysm. Most generally the paroxysm is ushered in by a loud cry or scream of a very peculiar, remarkable tone or character; the patients instantly fall, losing all sense and consciousness, and are almost as instantly attacked with convulsions varied in a degree and kind, and affecting different parts of the muscular apparatus of the body.

It is needless, on the present occasion, to attempt a description of the epileptic paroxysm; this, of course, is to be found in all works that profess to treat of systematic Medicine, from Hippocrates, Galen, and Aretæus, through Sydenham, Boerhave, and Van Swieten, down to Marshall Hall, Copland, Watson, and Aitkin of our own day.

The more modern, recent writers on this disease, whose names are familiar to us in this country, are Brown-Séquard, Radcliffe, Russell, Reynolds, Sieveking; besides these authors of published works, there are to be found, scattered throughout the pages of medical, general, and periodical literature, many admirable contributions on this subject of nervous and cerebro-spinal pathology.

The essential diagnostic symptoms of an attack or paroxysm of epilepsy are complete loss of sensation and consciousness, attended with spasms, with convulsions more or less severe and extensive, affecting fewer or more parts of the muscular apparatus of the body.

This, as is well known, is a nervous disorder, which occurs in fits, as they are vulgarly called, or in paroxysms; and these fits or paroxysms seize the patient, sometimes after very short warnings, and sometimes without any warnings whatever, so that the patient falls down suddenly, as though struck down instantaneously. Hence, in vulgar, common language, these attacks have been denominated "falling fits."

Very commonly, but not always, the head is drawn on one side, with strong convulsive motion. Biting the tongue, foaming or frothing at the mouth, the foam or froth being often coloured with blood, are very frequent attendants upon the attacks or paroxysms when severe. The duration, the continuance of the epileptic attack or paroxysm. may vary from a few minutes to in very bad, severe cases, a few hours; still, this protracted duration of the attack does not, however, often occur, except in that variety of the disease called apoplectic epilepsy.

I have said that the cry or scream that ushers in, or precedes the attack is very peculiar and remarkable, and must be heard to be recognised as forming a part in the epileptic paroxysm. A very short time ago I was at Ealing, visiting a patient there, affected with another variety of nervous disorder, when, whilst walking in the village, waiting for the return train to town, my attention was suddenly arrested by a loud, peculiar cry, or scream, which informed me at once of something wrong in the nervous condition of some one or other, although I saw nobody near me. On looking along the road, however, as far as my eye could reach, I perceived two men, apparently engaged in a scuffle or struggle with each other in the middle of the high road. On approaching these two men, I discovered them to be an epileptic gentleman with his attendant; the former having been seized with an attack or paroxysm of epilepsy, made known to me by the peculiar cry or scream which ushers in the seizure. This was as severe a paroxysm of the disease as any I had witnessed for a very long time.

When the spasms cease and the consciousness is restored, the patient does not at once recover the full use of his faculties, but commonly falls into a heavy sleep, from which he awakes with headache. Then in a few hours, or, at most, after a day, you will find him quite restored to his ordinary state. In bad cases, the intellectual powers are gradually lost, and more especially the faculty of memory. Besides paroxysms such as those just now thus briefly described, many persons subject to this

disease have very slight affections, which are called *faint turns*, *le petit mal*, or by other names. In some of these, the attack of the affection is so slight, that very little, if any, change of the countenance is perceptible. In others, the face turns pale and then becomes very red, and the whole is over in a minute or two, or even in a less space of time than that. The shortness of the duration of these *faint turns*, these seizures of *petit mal*, is very remarkable. I have heard of the patient of one physician who experienced them very frequently when walking, or when engaged in conversation, while those around him discovered no change, no alteration whatever, in his appearance. The patient described them as consisting in a stoppage, an arrest of all action of the mind, analogous to stoppage of light to the eye by interposing a dense body suddenly before it. Many physicians, and amongst these must be mentioned Dr. Marshall Hall, appear to me, to have attached far too much importance, as regards prognosis, to these attacks of *faint turns*, or *le petit mal*.

A human being may be said to be liable to attacks of this disease in proportion to the sensibility of the nerves of such individual: hence we see, that women and children, and weak persons, are more frequently attacked with this and with other convulsive diseases than are old people and strong, hearty, robust men and women. When the tendency of this disease is very great in the ganglionic portion of the brain and spinal cord, the attacks or paroxysms may be reproduced by exciting causes, so slight, as, under ordinary circumstances, would not suffice to produce them.

Occasionally, I fear we must say, and, perhaps, not unfrequently, epilepsy is, in the present state of our knowledge, absolutely *incurable*; but I am inclined to hope and believe that it is much less so than it is commonly supposed: and if we have hitherto been but little successful in its treatment, valid reasons may be advanced why, in many instances, our efforts to effect a cure have been comparatively unavailing. Have we sufficiently informed ourselves of the remote causes which

produce the paroxysms, or of the precise nature of the exciting causes which renew, or re-excite the paroxysms? Have we given sufficient attention to the physical condition or to the temperament of our patients, when liable to this disease? The *proximate* cause of epilepsy most certainly exists in the nervous system, in the brain, and spinal cord. Perhaps, even now, we must admit that the *exact* nature of this distressing affection of the nervous system is not known with absolute certainty; nor is it such as, necessarily, to leave behind it any organic changes discoverable after death. It is quite true that organic changes have been found in the brain and spinal cord after death, but these have been various in their seat, if not in their nature; and ought, therefore, to be considered as coincident occurrences, and not as proximate causes of the disease. They may have had some connection with the disease under consideration, but not that precise connection that ought to be considered as a proximate cause of the disease under consideration.

The passions, or moral emotions, and especially fright, fear or dread, sadness or grief, vexation, useless regret, and anxiety are said more frequently to produce the disease than mere physical disorder or derangement of some part or parts of the body; but I have commonly noticed, that wherever these former long exist, they become more or less connected with troublesome disturbances of a purely physical character. The emotional forms of epilepsy must all be ranged under this class; and under some fortunate circumstances many of these may be very amenable to successful treatment.

The paroxysm is very frequently preceded by different symptoms which denote, it may be, the beginning of some confusion, embarrassment, or derangement in the head itself; or it may be the beginning of some kind or degree of irritation in various remote parts of the body; and, in this latter case, we may often be successful in checking or altogether preventing the attack, by the application of a sufficiently strong ligature

above the place whence the irritation may proceed. I have known this method adopted with great success in many cases; and at the National Hospital for Paralysis and Epilepsy, in Queen Square, I have frequently heard Dr. Brown-Séquard recommend its habitual use, in many cases of sympathetic or symptomatic epilepsy. The patient is ordered to wear a strap manufactured expressly, which, on the apprehended approach of the attack or paroxysm, may be almost instantly tightened, so as to exert suitable compression upon the part or limb which is the seat or primary source of the irritation.

Since the brain, the nerves, and the muscles suffer great fatigue consequent upon the paroxysms, if these should be frequently repeated, it is to be expected that the functions of these several organs, brain, nerves, and muscles should become more or less disturbed or disordered, hence we observe in such patients impairment of the intellectual faculties, especially of the memory, amounting in some cases to imbecility; we also observe various forms of diseases of the nerves, disturbed digestive functions, general weakness, and other disturbances of the system.

Epilepsy is produced by whatever may irritate the sensory nerves to such degree as to induce irregular, spasmodic, or other morbid action in the central nervous ganglia of the brain and spinal cord, and through these central ganglia the motor nerves and the muscular apparatus. The extent to which this susceptibility to irritation exists in some persons is almost inconceivable, except to those of us who may have witnessed it in some of our patients. I remember to have read of one unfortunate epileptic female, who was so distressingly susceptible of irritation, that it is said she could not be touched in any part of her body with a needle or any other pointed instrument without being thrown into an attack of epilepsy. Although I have myself never witnessed so extreme a case as this in epilepsy, yet in the hysterical, which, pathologically, is near of kin to the epileptic, I have witnessed irritation almost as excessive.

These exciting causes may have their seat either in the brain or spinal cord themselves, and thus act *directly* upon these organs, in which case, so giving rise to *idiopathic* epilepsy; or these exciting causes may have their seat in various remote parts or organs of the body, either internal or external, so producing what is termed *sympathetic* or *symptomatic* epilepsy; consequently this latter class of causes must of necessity be very numerous and may be situated either in the fluids or in the solids of the body. It is to this latter class of cases to which I wish to direct especial attention, as offering such reasonable grounds for hope of successful result in our treatment of this disease. This latter class of cases—cases of *sympathetic* or *symptomatic* epilepsy—is very extensive, and comprehends, I believe, a very large portion of all the cases of this disease that are commonly met with in practice; thus holding out to us, as well as to our patients, reasonable prospects of relief, if not of recovery.

The exciting causes of epilepsy are better known to us than the proximate cause; still, we cannot, in every instance, satisfy ourselves even as to these. It would really seem that almost any cause seriously disturbing the body or the mind, in an epileptic subject, may give rise to a paroxysm. Errors in regard to diet are amongst the exciting causes most commonly observed; great fatigue, too, is to be ranked as amongst the number of exciting causes.

In order to proceed satisfactorily in the treatment of this disease, we must, in the first instance, at the onset, ascertain by careful study and observation of patients under our care, whether it be of the *symptomatic* or *idiopathic* class, whether it be due to some exciting cause or causes, existing at a distance from the ganglionic centres of the brain and spinal cord, and through the agency of sensory nerves so affecting these great central nervous organs, as to cause undue action of the motor nerves that are connected with them, thus constituting *sympathetic* or *symptomatic* epilepsy; or, on the other hand, whether the disease be due to some *exciting* cause operating *at once* and *directly* upon the central nervous ganglia of the brain and spinal cord, ex-

citing therein undue irritation, thereby constituting *idiopathic epilepsy*. It is, moreover, needful to observe with attention what may be the accidents in various parts of the body which operate so as to reproduce from time to time the paroxysms of the disease, as well as the errors or defects of constitution or temperament which affect the patient so as to render him or her more than commonly liable to attacks of the disease in question. In order to effect a cure, if the case be one of the *sympathetic* or *symptomatic* character, we must, by the various means in our power, remove or destroy the exciting cause which produces the attack. If the case be one of the *idiopathic* variety, it is of all things necessary to enjoin the strictest attention to diet and regimen.

In regard to diet and regimen, little can be added to the judicious advice given hundreds of years back by Celsus, in his work *De Medicina*. He recommends to the epileptic to eat moderately, and very little meat; to avoid the direct rays of the sun, very hot baths, very hot fires, heated apartments, wine—in fact, everything that produces undue elevation of temperature—venereal excesses, cold, standing upon precipices and lofty places, everything that may operate so as to produce fear, dread, fright, fatigue, uneasiness of mind, anxiety, and undue application to business. Could much, if anything, be added to such judicious comprehensive advice of the old Roman physician?

A chief, leading, primary object to be attained in the successful treatment of epilepsy is to effect, if possible, the removal of those causes which determine, not only the formation of too much blood in the frame, but also, and what is even of far more importance, its too easy and rapid movement through the brain and upper portion of the spinal cord; in other words, it is of the greatest importance, as far as possible, to regulate the circulation of the blood in the head. Those causes which are generally admitted to favour the determination of blood to the brain and upper part of the spinal cord are its too rapid movement through these organs, and its obstructed circulation in some other part of the body—an obstruction produced, it may be, by some derange-

ment of the natural secretions, it may be, by some imperfect action of the blood-vessels, retarding free circulation of the blood in the extremities; or, it may be, by spasm or irregular contraction of the blood-vessels in one or more parts of the body other than in the extremities, for instance, in one or more of the muscular or visceral organs of the frame. Too much attention can scarcely be directed to secure the attainment of this most important object, in all cases of epilepsy, whether *symptomatic* or *idiopathic* as to class.

The limits of my present communication do not admit of much being said in detail on the important subject of treatment; yet, of all kinds of remedies, none, in my judgment, will be found so persistently efficacious as a very particular attention to diet, which should be of the mildest, simplest, most unirritating description, taken with great moderation at ordinary meals. This attention to diet I enjoin, *cum omni imperio*. In persons liable to attacks of epilepsy, it is striking how often these recur after well-ascertained irregularities in regard to articles of diet; and in such persons it is as striking what heavy penalties they have to pay in the shape of paroxysms of the disease for partaking of comparatively common articles of food, which do no harm to healthy persons.

The two main objects of treatment must be—first, to allay or remove all sources of irritation; and secondly, to impart tone to the system. For the successful accomplishment of these two chief necessary results, all the appliances of our art, medicinal and regimenal, must be brought under tribute, and in many cases must be exerted with much patience and perseverance.

Of medicines, of drugs, we must most assuredly give the palm to the Bromide of Potassium, and after that, in my opinion, to Belladonna, with its alkaloid—Atropia—and its salts, such as the sulphate and valerianate of Atropia; these act, as is now well known, as sedatives in cases of undue nervous excitement or irritation. The sulphate and the oxide of Zinc have been much vaunted as remedies in cases of epilepsy, and on occasions have been thought to do good service; but their real value is still very doubtful.

In many cases of the disease, attended with evident indications of general weakness of the frame, I recommend the almost daily administration of the sulphate of Quinine, or of some preparation of Salicine instead of Quinine.

In other cases, and more rarely, I recommend the administration of very small, and properly regulated, doses of Ignatia Amara. This, I need not say, is a very powerful medicine, and requires to be administered with a due degree of care and caution.

Treatment of the Disease during a Convulsive Attack, or Paroxysm.—The treatment at this time is very simple, and resolves itself in general terms, into a careful avoidance of all such accidents by which the sufferers may by possibility do themselves any harm or injury. Immediately on the approach of the epileptic paroxysm, if severe, the friends, or attendants of the patients should, if possible, introduce between the teeth of the sufferer a towel, or napkin, twisted, folded, or rolled up sufficiently hard or tight, so as effectually to prevent the patient from biting, tearing, or otherwise wounding or lacerating the tongue—an accident which, in violent paroxysms of the disease, happens but too frequently. I have myself seen patients affected with this disease, whose tongues have been severely lacerated during the paroxysms, and instances are upon record in which the tongue has been so severely wounded, that portions of this member have been actually bitten off, as though amputated.

A silk, or linen handkerchief, or a table napkin, are very suitable for this purpose, and one or other of these is very commonly at hand, and easily made ready for immediate use. A roll made of India-rubber, or of gutta percha, wrapped in the corner of a handkerchief or napkin, I recommend strongly, as expedient and serviceable when required, and is far preferable, for use, to a roll made of soft wood, as has been employed in some cases, the roll of India-rubber or gutta percha being softer than one of wood, and therefore less likely to injure the lips, the gums, or the teeth of the patient.

In addition to the adoption of these measures to prevent injury to the mouth and tongue, care must be taken so as to secure the patient from harm or damage, as the consequence of violent blows or strokes made upon any hard, resisting objects that may be around them. In order to effectuate this, the patient should at once, where possible, be placed upon a bed, or sofa, and all necessary care taken, that the convulsions, however forcible they may be, do not throw him or her from the bed or sofa, upon the floor of the room.

After the convulsive attack or paroxysm shall have completely terminated, leaving as it most commonly does, the unfortunate sufferer much weakened, prostrated, both mentally and physically, dull, heavy, and even sleepy, the proper remedy is complete repose and tranquillity, both of body and of mind. When the patient shall have partially or thoroughly recovered his or her consciousness, a few draughts of cold water, or, according to circumstances, a few draughts of cold or warm water, fortified with a little sherry or Madeira wine, may be given from time to time, and further, when he or she shall have wakened up out of the sleep that so commonly follows upon the epileptic paroxysm, some gentle, pleasing, agreeable diversion, or occupation of the mind, should be provided, so as to draw off attention from the malady with which he or she may have been attacked, for, not unfrequently it happens that epileptic patients are much affected with their own unhappy condition for some little time—it may be after each succeeding attack, or paroxysm.

Sympathetic or *symptomatic* epilepsy is in general much more susceptible of successful treatment than the *idiopathic* variety of the disease; and I think it may be affirmed that this variety of the disease may be almost always successfully treated when the cause which produces it is not in itself incurable; when the part in which the cause is seated can be safely removed, unless, indeed, the disease shall have existed a very long time, since, in such case, it is to be feared that the brain and spinal cord may have

acquired, by frequent, habitual repetition of the paroxysms, a strong epileptic tendency or disposition. Should this be so, that is, should this epileptic tendency or disposition have been contracted to such an extent as to be confirmed, then, indeed, the removal or destruction of the primary original cause may not suffice for cure, since other causes, originally much less considerable or efficient, may then suffice to reproduce the disorder. Those cases in which the paroxysms are produced and reproduced by any well-ascertained solitary cause, capable of destruction or removal, even although such cause be in itself a strong or violent one, are much more amenable to successful treatment than that class of cases in which the paroxysms are produced and reproduced by causes so slight or trifling, as it is all but impossible to assign to them their real value or importance as factors in the production of the disease. Such great readiness or tendency, such extreme susceptibility to reproduction of the paroxysms, denote an unusually irritable condition of the brain and spinal cord, and may well bid the sternest defiance to our therapeutic resources, however skilfully devised and perseveringly applied.

The causes giving rise to the *sympathetic* variety of the disease may be seated in the stomach, in the intestines, in the liver and gall-bladder, in the spleen, in the kidneys, in the urinary bladder, in the organs of generation, and elsewhere in the interior of the body. If situated in the exterior parts of the body, they may be seated at the top of the head, in the upper lip, in the breast, the shoulder, the arms, forearms, or fingers, in the groin the thigh, and the leg, or in different parts of the foot. The causes giving rise to the *idiopathic* variety are situated within the cranium, so as *directly* to affect the brain or upper part of the spinal cord, the medulla oblongata, or the sensorium communa and these may be very numerous, including injuries of various kinds, ossifications, syphilitic or scrofulous or cancerous deposits, morbid growths or productions in almost endless variety, affecting either the cerebral mass or masses, or their investing membranes.

The operation of the passions, as productive of epilepsy, must be ranged in this category, as acting *directly* upon the brain, or by means of alteration in the quantity or rate of movement of blood through the central mass or masses.

In my own opinion, there is no class of cases of epilepsy more amenable to appropriate treatment than that which owes the production of the disease to the syphilitic virus or poison in some part or organ, either solid or fluid, of the body.

Some of the most completely successful cases of this disease that I have witnessed have been in persons who have had epilepsy in the adult period of life, after having been the victims of syphilis in some form or another, affecting some part or parts of the body. The appropriate and successful remedy in such cases, I need scarcely say on the present occasion, has been the well-established anti-syphilitic remedy, the iodide of potassium, given in gradually augmented doses.

From what has been already thus briefly advanced, it will be, I think, most readily inferred that the circumstances under which, and the class or classes of cases in which, we may hope for cure in epilepsy are :

Firstly. Those in which the primary source of the disease is such as to give rise to the form known as *sympathetic* epilepsy. In any of this class we may, as it seems to me, if the true primary source of the disease be accurately determined upon, very reasonably hope for complete cure of the disease.

In this class of cases, I should place all those sources of irritation seated either in internal organs or external parts of the body to which I have previously adverted, whilst speaking of the causes of this form of epilepsy.

Secondly. That class of cases in which the disease derives its origin from the presence of syphilitic virus in some part or parts of the system.

Thirdly. Those cases of *idiopathic* epilepsy in which, though the disease be seated in the brain and spinal cord themselves, yet where, at the same time, the paroxysms are milder and un-

frequent, and wherein the epileptic tendency or disposition may not be confirmed, either by acquired habit or by hereditary predisposition.

The facility to acquire the aptitude or tendency to epilepsy depends greatly upon age and upon sex. There are, however, some individuals of both sexes so fortunately constituted as to their physical framework, so strong, so robust, in whom the nervous system is so well developed, as not to be affected with undue mobility, and not to be unduly affected either by external or internal impressions ; and in whom the muscles are so firm and tense, as not easily to be susceptible of undue contraction, so as to be thrown into states of convulsion, and who, consequently, do not appear to be susceptible of attacks of nervous diseases, unless from the application of unusual and, it may be, really accidental and uncommon exciting causes. In these rare and fortunate individuals, we are almost compelled to admit the persistent existence of that natural and beautiful harmony of part with part which characterises good sound health ; a healthy harmony existing between the blood on the one hand, and the nervous masses on the other ; such a harmony as enables each part to perform its appropriate function in the human economy, and thus enabling the individual to possess and enjoy a large amount of physical well-being. We may easily suppose some such healthy harmony of part with part to exist in the bodies of many animals, wild and domesticated, whose life, as long as it lasts, is one continued period of physical enjoyment and well-being.

I have repeatedly, when on various occasions reading papers on different nervous diseases before the medical societies of the metropolis, maintained that further investigations into the functions of the various nerves throughout the body, would lay open to us a very wide and extended domain of pathology, and consequently of medical treatment of disease ; and that further research into this subject would not fail to pour upon us a flood of light, over some of the dark, obscure paths of medicine, along

which we had hitherto groped our way, guided only by the dimness of empiricism itself. A further and more extended acquaintance with the normal healthy operations in the organic, as well as in the animal nervous system, cannot fail to enable us to understand, and consequently to appreciate at a better and truer pathological value, the abnormal and unhealthy operations observed in the same nervous systems respectively. Already the scientific labours of Claude-Bernard, Brown-Séquard, and many others in the same field, have enabled us to comprehend much that, until now, was always painfully, and often pathologically obscure, and consequently unsatisfactory.

The importance of a due estimation of temperament or constitution in discussing the disease now under consideration, will be made even more evident than it now is, when I come to treat of another severe intractable disease of the nervous system—hysteria—in doing which it is my intention to enter at some length upon the consideration of what I term the hysterical temperament or constitution. For, as in the production of the paroxysms of epilepsy, so in the productions of paroxysms of hysteria, two states or conditions of the body, or certain parts of the body, are absolutely essential; in the former disease—epilepsy, these are—first a tendency or disposition of the brain or spinal cord, or both together, to assume a state of irregular action more readily than in health; and, secondly, the presence of some irritating cause or causes, which in their operation upon this, or upon these organs, compel or excite this tendency or disposition to assume an abnormal or unhealthy state of action. So, too, in the latter disease, hysteria, two states or conditions of the body, or of certain parts of the body, are absolutely essential, these are—first, a tendency or disposition of certain parts of the nervous system to assume a state of irregular action more readily than in health; and, secondly, the presence of some irritating cause or causes, which, in their operation upon these parts of the nervous system, compel or excite this tendency or disposition to assume an abnormal or unhealthy

state of action. It will, I think, be in my power to adduce good evidence, derived from cases met with in practice, denoting a manifest connection between these two severe intractable diseases; in fact, in very severe forms of hysterical paroxysms, it is by no means easy to discriminate between the two diseases. One of the very worst cases of hysteria I ever witnessed, was one under my own care in this neighbourhood, in which the attack or paroxysm so closely resembled an attack or paroxysm of epilepsy, that it was not until after consulting with a physician of acknowledged reputation that I was able to satisfy myself which of two diseases I had to treat. Severe, however, as was that attack, the patient had a good, complete recovery, and has continued well from that time until this, a period now of some years' duration.

The ancient practitioners of the healing art, in their discourses on medicine, direct the attention of their readers to what they called *temperaments*, or different conditions of *constitutions*; but for the want of accurate physiological knowledge of most parts or organs, as well solid as fluid, of the human framework, they greatly failed in demonstrations in regard to these subjects, or to express the fact; in other words, their descriptions of these subjects were very imperfect, owing to want of a more exact information. Advancing, progressive scientific information, here as in many other departments of general pathology, has by slow, yet, it is hoped, by no uncertain steps, removed extensively the dark veil of obscurity which long hung suspended between the human mind and the operations of nature. By many of the moderns, too, by which term I would be understood to mean those practitioners of the healing art who flourished and wrote endless treatises on the theory and practice of medicine, the study and observation of the temperaments or constitutions, and consequently of the doctrines deducible therefrom, have been almost altogether neglected. It is much to be desired, that the diverse temperaments and constitutions which undoubtedly exist in nature, differing in different individuals, and in different

members of the same families, should be more accurately scrutinized, and more carefully observed, by means of light to be derived from a more enlarged acquaintance with the principles of modern science, as applied to various functions of the body, as the circulation of the blood, respiration, absorption, and innervation, &c., &c.; the application, for instance, of organic chemistry to the known differences in constitution between arterial and venous blood, the recent discoveries made in the anatomy and physiology of the lymphatic system, the exact constitution of the fluids therein contained; the chemical analysis, in fact, of all the solids and fluids of the body, with that of the various secretions and excretions, as they exist in different individuals; the discoveries in regard to, and experiments upon, the nerves themselves; discoveries in regard to, and experiments upon, electricity, galvanism, &c., and their modifications; also upon heat, light, and the atmosphere, &c., &c., must unitedly tend to remove from the medical mind much that still remains of obscurity, ignorance, and prejudice.

To our own English physician—Sydenham—more is perhaps due, as an observer of nervous disorders, than to any other physician living before his time; he has, moreover, in his works, left behind him one of the best and most graphic descriptions of the vapours in females; to him, too, is due the clear perception of diseases of the nerves—doubtless hysteria in one or more of its forms—assuming the characters of almost every other form of disorder. I am not sure that he speaks of hysteria, and of nervous diseases, as proteiform in character; although, however, he remarks that at one or more times nervous disorders are capable of assuming the characters of almost every disease; and that all these symptoms observed, however varied and multiplied, depend solely, or for the most part, upon too much or too little, upon excess or upon deficiency, of nervous action, agency, or energy. Much attention, however, as Sydenham had given to, and much observation as he had made upon, diseases of the nervous class, neither he, nor his

contemporary Willis, nor even later, Cheyne, nor his contemporary Hoffmann, most probably from insufficient physiological knowledge, appear to have recognised the true pathological import of many of the symptoms which they severally observed and recorded.

In discussing the subject of the epileptic constitution or temperament, it is incumbent upon us to ask ourselves this question: Is this disease—epilepsy—hereditary? I have no doubt whatever, from actual experience, derived from observation, as well as from reading descriptions thereof in the works of medical authors who have written upon this distressing malady, that this question must be answered in the affirmative, and that, in some instances, epilepsy is directly transmitted from mother to child; but, in regard to diseases of the nervous system in general, as affected by parental transmission, this all but universal law, may be expressed thus: that if one, or still more so, if both parents be affected with almost any disease whatever of the nervous system, the offspring, whether one or more is, with rare exceptions, extremely liable to suffer from some one or other nervous disease, although the particular disease affecting the offspring may not be exactly the same disease as that affecting the parent or parents. The state of things in relation to parent or parents and offspring, may be briefly expressed in this manner: given a parent or parents, affected with almost any nervous disease, and the chances are, that the offspring of such parent or parents will, most probably, suffer from nervous diseases in one form or another.

Thus, by way of illustration, one or both parents may suffer, or may have suffered, from epilepsy; yet it by no means follows that the offspring of such parents will suffer from that same disease—epilepsy; although it is highly probable that they may suffer from convulsions, or from hysteria, or paralysis, or some other form of nervous disease; or conversely, the parent or parents may suffer, or may have suffered, from paralysis, or hysteria, or convulsive disease of some kind or other, whilst the

offspring of such parents shall suffer from epilepsy. In my own practice and observation, I have known instances of this description. I remember, too, distinctly, on one occasion, in conversation with Dr. Brown-Séquard, one of the Physicians to the National Hospital for the Paralysed and Epileptic, in Queen's square, to have mentioned this circumstance in connection with diseases of the nervous system, when that physician completely concurred in that opinion, as a fact he had frequently observed in nervous patients. One remarkable instance, amongst others of a similar kind, is now before me, in the person of a grandfather, who I have known for a long time, as affected with partial paralysis, several of whose children suffered from one form or other of nervous diseases, and his grandchildren, also, are to my knowledge sufferers from nervous affections of one kind or another. The very remarkable case of tetanic catalepsy, which was under my notice some few years ago, occurred in a female grandchild of this identical grandfather, who was affected with partial paralysis.

In support of the foregoing statements, bearing upon the peculiar yet varying character of the hereditariness of nervous ailments, as transmitted from parent or parents to their offspring, or from direct or remote ancestors to their direct or remote progeny, I now take leave to adduce the following instance of this kind, in connection with nervous affections, although not of the epileptic variety: I have, at this time, under my own observation, an interesting, intelligent young lady, of about sixteen or seventeen years of age, who is affected, although but slightly, with sleep-walking, somnambulism, whose father has been frequently under my care, in consequence of severe and protracted nervous affections, assuming a great variety of symptoms, both physical and psychical, and whose paternal grandfather and grandmother suffered long and severely during their lives from one or more nervous affections. The grandfather, when in middle life, had an attack of apoplexy, followed by complete hemiplegia,

from which he completely recovered, yet leaving him throughout the remainder of a good long life affected with brain-disease, at times almost amounting to insanity. The paternal grandmother, from the middle period of her life, suffered at times from local or partial epilepsy, attended with persistent partial hemiplegia, until her death, which took place at a somewhat advanced age. Just as we sometimes observe a constitutional or hereditary weakness in most other parts or organs of the human framework in both sexes, so, in like manner, we not unfrequently observe a similar weakness in the various portions of the nervous tissues pervading the human body, whether male or female; and, moreover, we may affirm, that just in proportion as this constitutional or hereditary weakness of the nervous system is more or less strongly developed in the individual, in like proportion is the same weakness easy or difficult of eradication; and, in some exceptional cases, although it may not be absolutely ineradicable, and, consequently, incurable, still such rare cases will of necessity demand the utmost care and attention that medical skill can afford, throughout all periods of life. In regard to females, perhaps there is no habitual practice that has done more to favour the unhealthy development of any latent constitutional or hereditary weakness of the nervous system than the pernicious custom of tight lacing, a custom that so long prevailed in their physical training; and of all the unnatural errors connected with the physical education of young ladies, this has always been one of the most mistaken, and one of the most mischievous as to its results upon the entire nervous system of those exposed to its influence.

It has been known to produce an excessive, an undue mobility of the entire nervous system, which has chiefly manifested itself at about the age of from thirteen to sixteen years. As I am now adverting only to the nervous and epileptic constitution or temperament, I forbear any further allusion to this practice amongst females, with reference to its equally mischievous effects upon other important organs and functions of the female

framework. Amongst the influences which we should naturally expect, attended with bad effects upon the epileptic constitution or temperament, are the suppression or retention of the natural secretions and excretions of the body; for, if such secretions or excretions as in health should be evacuated, are morbidly retained within the body; or, if, on the other hand, such as in health should be retained are evacuated from the body, we cannot be surprised, nay, rather we should expect that among other parts of the body likely to suffer from these irregularities, and so become diseased, the nervous system in its various parts would become affected with varied and numerous derangements. That this is so, all observed and recorded medical experience combine to substantiate.

In confirmation of what has been here advanced, we may remark that there are few parts of the human framework that are not weak, and occasionally imperfect in some families; so much is this the case that in a physical as well as in a moral sense, most, if not all, of us may be said to have our weak points; parts of our bodies which ordinarily are the first to take on a morbid action, and if this be truly so, in regard to many other parts of our physical frame, it is by no means difficult to comprehend that any weakness or imperfection of the nervous system should be as hereditary as the weakness or imperfection of any other part or organ of the body.

Thus we see, as we might reasonably expect, that apoplexy, paralysis of various kinds, epilepsy, convulsions, and hysteria may be, and very frequently are, transmitted from parent or parents to their offspring.

The classification of the numerous varieties of cases of epilepsy, into the two great divisions of *sympathetic* or *symptomatic*, and *idiopathic* epilepsy, is a classification of the utmost practical value and importance in regard to prognosis, as well as, in many cases of the disease, in regard to treatment; the cases which fall under the first of these two great divisions, that is, the *sympathetic* or *symptomatic*, being so much more amenable to treatment, and

therefore, offering so much more reasonable grounds for hope of successful results, than do the cases that fall under the second of these great divisions—that is, the *idiopathic*.

In perusing attentively, the works of the various authors who have taken the trouble to record facts and observations in relation to this dire disease, it is really encouraging, and not a little surprising to note, in how many cases such authors speak of satisfactory and successful results, even in those where the disease is said to have been attended with very violent symptoms during the attacks.

Hippocrates, the "Father of Medicine," as he is very commonly termed, observed, and pointed out that an excessive irritation of the stomach, not unfrequently produced attacks of very severe epilepsy, and which, he asserted, were, in such cases, caused by the presence of bad, black bile in that viscus; and such attacks arising from such a cause, he of course would relieve, and very possibly cure, by either vomiting or purging, or by both these remedies administered simultaneously. Galen, too, in his writings, speaks at great length of the influence of the stomach upon the brain, as productive of vertigo, delirium, convulsions and epilepsy, notoriously a convulsive disorder; whensoever the nerves which supply the stomach are disordered or deranged by vicious, offensive, bilious conditions of this important viscus or organ. He speaks of a certain young man who was attacked with violent convulsions, very possibly epileptic, or epileptiform, who was speedily relieved therefrom, as soon as he had freely vomited a considerable quantity of offensive, black bile. He says also that he has known many persons in whom owing to a bad condition of stomach, this disease, epilepsy, made its appearance whenever they suffered much from indigestion. He writes an interesting case of epilepsy which occurred in the person of a literary young man, following upon undue fasting, accompanied with undue exercise of mind; from these facts he inferred that the seat, the origin of the disorder in this instance, was in the stomach; and being well satisfied

as to this point, he directed the treatment of his patient accordingly, and completely cured his patient. This successful case of this disease recorded by the old Roman physician is well worthy of recital in detail.

A certain literary young man experienced an attack of epilepsy whenever he studied more than usual, or whenever he instructed his pupils more forcibly than common, whenever he was more vexed or more irritated than customary, or whenever he fasted longer than was usual with him. "I suspected," says Galen, "that the superior, the cardiac orifice of the stomach, which is a very sensitive part of that viscus or organ was the seat, the origin of the disorder, and that the brain and the nerves were affected consequently or coincidently, I therefore directed the patient to make use of all such remedies as would be likely to promote a good, complete digestion of his ordinary food; to take every three hours a little dry bread or biscuit if he were not thirsty; and if he were very thirsty, to take the bread or biscuit moistened with a diluted, slightly astringent wine, a wine so weak or diluted; as not to affect the head, and yet such as would fortify and improve the tone of the stomach. The relief that this patient obtained by adopting this mode of living, of dieting, convinced me that my conclusion as to the cause of the disease in this case was true and correct, and I treated the patient accordingly."

Subsequent to the time of Galen, many physicians have recorded numerous observations of this disease as produced by a similar cause, that is, more or less derangement of the healthy functions of the stomach.

Valleriola, a celebrated physician of the sixteenth century, practising at Avignon, relates an instance of a female patient in whom derangement of the healthy functions of the stomach caused attacks of epilepsy of the most violent description.

In the medical consultations of Fernel, a case is recorded of a young woman, twenty-three years of age, attacked with epilepsy, which evidently depended upon some derangement of the

proper functions of the stomach as the exciting cause of the paroxysms. Forrestus, too, relates a similar observation in regard to one of his patients, In the collection of medical cases and observations of Theophilus Bonnet, is a record of a male patient, thirty years of age, in whom the disease was produced from a similar cause or causes; and Dr. Woodward, a physician of our own country, in his select cases in physic, has related the case of a surgeon, subject to attacks of epilepsy, and who, at the conclusion of each paroxysm, suffered very violent pains in the stomach, attended with copious vomitings of acid, frothy bile; and who, moreover, whenever these vomitings did not take place, was seized with a second paroxysm of the disease, as violent as the first. In fact, there are individuals in whom, the superior, the cardiac orifice of the stomach is so acutely sensitive, that the very slightest cause of irritation may suffice to produce attacks of paroxysms of this disease.

I think it may be affirmed, that, next in order after the stomach, the intestines, small and large, are the most frequent seat of the causes of *symptomatic* or *sympathetic* epilepsy, and this, more especially, in cases where the disease affects children under ten or twelve years of age. Not to speak just now emphatically of the existence of parasitic animals, such as worms, in the intestines, a well-known and long recognised exciting cause of *symptomatic* or *sympathetic* epilepsy, the continued presence of others, and, it may be, of less irritating matters lodged in the intestines, not unfrequently give rise to attacks or paroxysms of this disease; and these matters, less irritating than worms, may be almost, if not entirely, attributable to improper, irregular diet, or the allowed indulgence in the frequent, daily use of unwholesome sweetmeats, or other articles of indigestible trash—mis-called food. The presence of these and similar matters in the intestines, operate prejudicially in two respects; in the first place, the proper healthy nutrition of the body not being adequately performed, the nervous system throughout the bodily frame becomes relaxed, weakened, and

wanting in tone; and, in the second place, these offensive matters becoming lodged, or, at any rate, retarded, in the intestines, constitute a source of irritation to the intestinal canal itself, to its proper nerves, or to the nerves of its blood-vessels, and transmitted from these to the ganglionic nerve-substance of the spinal cord, medulla oblongata, and brain, thus giving origin to attacks or paroxysms of the disease under consideration—epilepsy. Tulpius, in his medical observations, relates the case of a young female, who suffered from frequent and distressing paroxysms of epilepsy, the chief exciting cause of which he attributed to a prolonged constipation, succeeded by obstructions, and the formation of offensive, and, consequently, irritating matters existing in the spleen, the pancreas, the mesentery, and the large intestines, accompanied by a sensation of pain and heat in the sides and in the loins; in this case, in proportion as easy, loose, regular evacuations were obtained from the bowels, the paroxysms of epilepsy gradually diminished in frequency and in intensity, until at length they altogether disappeared, and the patient ultimately recovered.

The presence, the existence of worms in the intestines, either *per se*, as in conjunction with other irritating substances, has been long known, and recognised as a frequent exciting cause of epileptic paroxysms; indeed, so much so, that it passes almost for a medical axiom, in such cases of *symptomatic* or *sympathetic* epilepsy, to say, expel the worm or worms, and, *at the same time* you expel the demon, the disease. Daily medical experience confirms and assures us of the correctness of the opinion, that the presence of parasitic animals, such as worms, is amongst the most frequent, common causes of epilepsy in young persons; and, moreover, not an uncommon, exciting cause of *symptomatic* or *sympathetic* epilepsy in adults; so much so, that this has been acknowledged, that all writers upon this disease refer to this as a frequent exciting cause, and hence we have a variety of the disease spoken of by some under the epithet of *verminous* epilepsy—"L'epilepsie vermineuse," of French medical authors. Other organs in the abdomen not unfrequently become the seat, the source of origin of *symptomatic* or *sympathetic* epilepsy.

Many cases are upon record, and, therefore, to be found scattered throughout the writings of physicians, in which the spleen, the pancreas, the gall-bladder, the kidneys, and the urinary bladder, have each, or all, been the seat or origin of paroxysms of the disease under consideration. The presence of calculi in the gall-bladder, has been known to give rise to paroxysms of epilepsy, and there is one very remarkable case in which pressure over the region of the spleen sufficed to produce epileptiform convulsions. The presence of calculi, also, in the pelvis of the kidneys, has been known to give rise to similar epileptiform convulsions; and the presence of a calculus-stone in the urinary bladder, has been known to produce attacks of tetanic spasms, a form of convulsions pathologically almost akin to epilepsy. After all, the organs situated in the abdominal cavity, which, next to the stomach and intestines, are more commonly productive of epileptic paroxysms, are the organs of generation, those organs concerned in the reproduction of the species, both in the male and in the female sex; and disturbances in the proper functions of these parts or organs of either sex, and from whatever cause, are, I apprehend, amongst the more frequent sources of origin of very many cases of *symptomatic* or *sympathetic* epilepsy; without, however, entering into detail, it may at present suffice to say that all, or nearly all, in this class of cases of epilepsy, may be explained with tolerable, if not with sufficient clearness, upon the physiological principles enunciated and illustrated by modern observers and experimenters in the domain of nerve physiology, especially, by the scientific researches of Brown-Séquard and Schroeder Van der Kolk.

We may occasionally witness attacks of epilepsy in animals, and very frequently attacks of convulsions in them. I have myself seen epilepsy in the horse, the particulars of which I

forwarded to the *Veterinarian*, a monthly journal devoted to veterinary science; and it is well known that we may produce at pleasure epileptiform attacks or seizures in guinea-pigs; yet, notwithstanding these observations of convulsive affections in animals, no one I apprehend would assert that, in any animal lower in the scale of being than the human animal, he had seen attacks or paroxysms of hysteria; this disease, as it appears to me, puts forward its claims for dominion only over poor suffering human nature, leaving brute nature totally exempt from its control and authority. Comparative pathology may doubtless throw considerable light upon many of the diseases that affect our common humanity; but I fear that it will not contribute *directly* very much to our stock of knowledge in regard to epilepsy, although *indirectly*, in regard to convulsive diseases, it may possibly hereafter aid in removing some portion of that error and ignorance concerning these, which, unhappily, still becloud our understanding, and thus too successfully baffle, and sometimes altogether interpose between our well-intentioned efforts and our patient's welfare and restoration to health.

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HYSTERIA:

THE HYSTERICAL CONSTITUTION OR TEMPERAMENT:

WITH SUGGESTIONS AS TO ITS

PATHOLOGY AND TREATMENT.

BY

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HYSTERIA AND ITS TREATMENT,

etc., etc.

In the early part of last year, 1865, I published a little work on the "Relief and Curability of Epilepsy," which was based upon a Paper or Essay on that disease read by me at a meeting of the Harveian Medical Society of London, having this title, "In what class of cases, and under what circumstances, may we reasonably hope for cure in Epilepsy?" It gives me much satisfaction to know that this Essay has been very favourably received by the medical profession both in this country and in America; and, therefore, I am the more induced to publish the present essay, on another, and cognate Nervous Disease—Hysteria, not unfrequently almost as distressing and intractable as Epilepsy too commonly is found to be.

In that Essay I treated briefly of the origin, nature, and attendant circumstances of this especial disturbance in the animal economy, together with reference to the appropriate remedies which when duly administered were, it was thought, calculated to afford *relief*, and even in some cases *cure* in that formidable disease. Holding, as I do, the opinion, that Epilepsy and Hysteria are cognate disease, are pathologically akin, the one to the other, I need scarcely inform my readers of the present Essay on Hysteria, that some of the remarks contained herein may, if not actually in substance, in words, yet in thought or idea, be found already expressed in my former Essay on Epilepsy now alluded to.

There can, I think, be no reasonable doubt in the mind of observant and intelligent practitioners of the medical art, that diseases, disorders, and derangements of the nervous system, have of late years greatly multiplied in number, if not

in severity of degree. More than this, not only have they greatly multiplied, but perhaps it is not saying too much to assert, that, even at this present time, they are greatly upon the increase. From whatever cause or causes the increase in this class of diseases may arise, and it would not be a difficult task to point out some amongst others, as tending to produce them, the fact, as it appears to me, remains indisputable. Some physicians affirm that formerly human beings, men, women, and children, were generally stronger and more robust, and less frequently attacked with disease than they are at the present time; in fact according to the opinion of such, there was a less amount of disease as well relative as absolute amongst mankind at large.

However this may have been, whether true or not, the causes which tend to produce diseases of one or more parts of the nervous system have greatly increased, and it is much to be feared that this increase does but keep pace, *pari passu*, with the everyday increase of population and of progressive civilisation. Especially is this the case as regards residents in large towns and cities, in which the daily toils and burdensome anxieties of life make increasing demands upon the nervous energy and brain-power of all engaged in the arduous struggle for life and social position.

The older physicians do not, in their records of diseases, treat at length of diseases of the nerves ; in fact, paralysis and convulsions of more or fewer parts of the body would seem to be all, or nearly all, the diseases of this class that they recognised as such, although a careful and attentive perusal of their writings will show, that they had observed and recorded many diseases to which they affixed no names, and to which they did not, or could not, assign appropriate causes; diseases which, at the present day, by the aid of a more enlightened physiology and pathology, we know to belong to the class of nervous diseases ; the phenomena they present to our observation indicating most clearly to the intelligent practitioner, some lesion in the functions if not in the organism, of the nervous structure of the human frame.

The chief object aimed at, and which we design to keep steadily in view, is to submit to the notice of the readers of this essay, whatever, up to the present time, is received as truth, in relation to the physiology, pathology, and treatment of the disease under consideration ; whatever may be reasonably dictated by an experience, now of some years' standing; and whatever may be considerately suggested by *á priori* reasoning, as probable to be of service in the remedial management of one of the most troublesome and intractable disorders to which the human being is subjected.

It is not the place now to speak of the higher functions of the nervous mass, or of those affections of the nervous system, attended with evidences of *impaired* and *perverted* intelligence, thought, perception, consciousness, volition, imagination, memory, and other so-called mental powers, yet it will be manifest, that this domain of pathology is now being very widely extended, and will embrace a department of medical observation and reflection, not included in any other region of professional oversight and solicitude.

The ruder anatomy of the parts concerned in this class of disorders may be stated at once, as simple, and far from complex ; consisting on the one hand of the entire nervous mass of the human framework ; and on the other hand, of the blood-vessels that supply, and, in many cases, that accompany the nervous mass in its grosser parts, or in its numerous ramifications throughout the body. In cases, however, of *impaired* or *perverted* motion, as in paralysis, and in convulsions for example, there is another anatomical element that must be taken into account and this element is one, that hitherto, in nervous diseases, has not received the attention that it obviously deserves, I mean by this, the muscular tissue, a tissue, the proper and healthy function of which is contraction or contractility.

By the nervous mass of the human framework will, of course, be understood, the brain, including the cerebrum and cerebellum, the medulla oblongata, the spinal cord, the nervous ganglia, situated in various parts of the body, as well as the ramifications of the various and numerous trunks connected with the cerebro-spinal axis and the great sympathetic or nerve of organic life.

The application of anatomy to the nervous masses informs us of the intimate structure of the brain and nerves under their different forms, and, at the same time, makes us acquainted with their manner of distribution and arrangement, as ganglia, trunks, and branches, throughout the various parts of the body.

The universally acknowledged importance of nervous affections, and the deep interest now felt in this extensive department of medical observation, as well as the active and refined inquiry devoted thereto, sufficiently warrant any amount of renewed attention to the subject even supposing that little more than a renewed attention be asked and given to facts already known. The very intricacy itself,

affords one of those instances wherein new conclusions and a nearer approximation to truth may be rendered possible, we might even say probable, merely by recasting the order of these facts, regarding them from new points of view, and by using them in new or in different considerations.

In hospitals and other kindred establishments for the reception and treatment of the sick, the student and practitioner commonly enough meet with affections of various parts or organs of the nervous system, yet, for the most part, those particular cases of this class of disorders which are there to be found, are by no means such as come under observation and treatment in the course of daily professional life; in this latter condition, that is in the great hospital of the world at large, many of these cases of affections of the nervous system, present themselves to our notice under most troublesome, and frequently under very unsatisfactory conditions; in fact they occasionally, and especially in very civilised life, are amongst the most intractable disorders that the practitioner can have to do with. We are often called to see diseases of this class, in ordinary practice, in which by a careful and attentive examination of the patient, we may be convinced that we have to do with a morbidly physical condition of the body; whilst, at the same time, the exalted exaggerated state of the imagination of the same patient, magnifies to himself or to herself, as the case may be, their sufferings, and the danger of their condition; the medical attendant, knowing all the while, that the disorder is as evidently a physical disorder, as an attack of jaundice or of dropsy in the same patient would be.

Fortunately, however, such disorders are rarely fatally dangerous, although exceedingly troublesome, and whilst they do not frequently shorten life, yet, nevertheless, they despoil it of its pleasures, and they cause much anxiety and annoyance to the sufferer, to their friends, and to all around them. By their influence on the moral nature of the patients, they are led to look at all objects that surround them from a wrong point of view, and fashioning their conduct accordingly; their behaviour is not unfrequently a mystery as well to themselves, as to their acquaintance; in fact, their whole being appears to have undergone an entire metamorphosis, a metamorphosis however, which is always unhappily to their discomfort and disadvantage.

This disease, *hysteria*, the subject of the present Essay, when presented to our observation in practice, in fully developed, I will not say in exaggerated cases, not unfrequently offers to

our notice, instances in which are comprised, one, or more, or on rare occasions, simultaneously, all these three perplexing and important disturbances of the bodily and mental functions: namely, *impaired* and *perverted motion*, *impaired* and *perverted sensation*, and *impaired* and *perverted intelligence*.

Sometimes the hysterical affection which we may be called upon to treat or relieve, is attended with one, sometimes with another of these abnormal, unhealthy conditions; yet, as a general proposition, it may be stated, that in very many, in most, if not in all such cases, the volitional power, or, to speak in more simple language, to express in plainer terms the condition referred to we may say that the due, proper, healthy command over the will, is *impaired*, *antagonised*, and occasionally even *overcome*. In my opinion, if there be any one physical bodily ailment or disease whatever which might be regarded as forming, or constituting a connecting link between diseases of the body and diseases of the mind, or, in other words, between *mental* and *bodily* disease, it is this one now under consideration, *hysteria*. It is in my power to give some striking and remarkable instances of the truth of this statement just now made, with reference to the position which hysteria may be said to hold as a link between mental and bodily disease, disorder, or derangement. Sometime ago, I had under my care a patient affected with hysteria, *chronic*, be it observed, not *acute*, who, during my attendance, frequently assured me, that when thus affected, it was at times as though the *mental* condition was as much altered as was the *bodily* condition. However this may be, I can confidently affirm, that occasionally, during this attack of illness, the power the patient possessed to penetrate into, and to discriminate between, the various shades of character in those around, whether attendants, friends, acquaintances, or strangers, was very great. The patient was certainly more quick at observation, more clever, more ingenious, and penetrating, in reading countenances, and in interpreting motives of conduct and action, than any of those around, whether as visitors, or as attendants.

It will be a more fitting occasion to do this, when I come to advert to the symptomatology of hysteria, and of other nervous disorders: for, in my judgment, it is mainly, by observing and recording such, and similar facts and observations, that we can at all hope to unravel with success the almost inextricable perplexity in which at present many nervous diseases still remain. Nothing, I am convinced, will tend more to draw aside the curtain which as yet conceals from

our clear, distinct perception of the true causation of nervous diseases, than a careful, patient, laborious observation and record of these symptoms and phenomena as they present themselves to our notice, as medical observers and practitioners.

Be it observed, that very few, even of the worst cases although attended with distressing and painful concomitants, are but seldom attended with fatal results; and even if it were so, in my opinion after-death examinations of the body would do but little towards revealing to us the true causation of the diseases themselves. And even in the living subject, whilst under medical care and treatment, the application of organic chemistry, and the use of the microscope from time to time will, I fear, but in few instances, be productive of very fruitful and satisfactory results. Still, however, these valuable aids to diagnosis and treatment must not be neglected, whilst a proper value should be assigned to any pathological facts with which their application may happily furnish us. We must gladly avail ourselves of any and of every adjunct that may be reasonably expected to throw additional light upon our present obscurity, and so to rescue us from error and from ignorance, the two worst enemies to human health and happiness.

A better acquaintance with diseases of the nervous system, or, in other words, the removal of error and ignorance in regard to them, will do more than almost anything else to rescue many of our suffering and afflicted fellow human beings from the relentless hands of the pretenders to medical science and practice scattered up and down throughout the metropolis and the country at large. The medical name of the disease under consideration—Hysteria—as is well known, is derived from the Greek word for the uterus or womb, Hystera—I forbear the use of the Greek characters of the word—from the ancient and long continued, but erroneous opinion that it arose from some disorder in that organ; but, inasmuch as the disease in question is not confined to the female sex, this opinion must be now discarded.

I have seen several well-marked cases of the disease in male subject, but I do not remember ever to have seen it in either male or female subject until after the age of puberty, and more commonly in both sexes during the period of manhood or of womanhood. I propose to treat subsequently of this period of life in both sexes, and of the influence of the passions at that period, as factors in the production of nervous diseases of one kind or another. There are certain portions of the

nervous masses of the body situated within the abdomen in both sexes, which, in my opinion, have much more to do in the production of hysteria than has been commonly supposed, and of these two nervous masses, the spermatic, and hypogastric plexus of nerves play a most important part. And to the former of these, when disordered either in function or in structure, we may refer very many of the troublesome, perplexing phenomena observed in severe, obstinate, intractable cases of hysteria.

Let us now, for a moment, consider how, in what manner, and by what means the *spermatic plexus* is formed, made up, or constituted, and in attempting to effect this little piece of descriptive anatomy, it will be sufficient for present purposes to take as our starting point the convex or lower part of the seminular ganglion, the result, for the most part, of anatomising branches of the great sympathetic or intercostal nerve, and from the lower or convex part of which many nervous filaments or branches are given off, which filaments or branches, reinforced by others from the trunk itself of the great sympathetic or intercostal nerves, form behind the kidneys a plexus of nerves of a considerable size, in which, most commonly, although not universally observed, are disseminated numerous small nervous ganglions. To this nervous plexus thus constituted has been given the name of *renal plexus*, from its destination and distribution to the *renal* or *emulgent* artery, and its branches through the substance of the kidney and the supra-renal capsules. Anatomy teaches us that whether the capsulary artery arises directly from the aorta, or whether it arises as a branch from the renal or emulgent artery, filaments from the renal plexus of nerves accompany it in its course of distribution through the substance of the supra-renal capsule. The renal plexus of the right side of the body has a direct communication by numerous nervous filaments with the hepatic plexus, whilst the renal plexus of the left side of the body has a direct communication by numerous similar filaments with the splenic plexus, and both right and left renal plexus receive filaments of reinforcement from the great stomachic nervous plexus. These anatomical facts have no inconsiderable bearing even upon the subject now under consideration — the hysterical constitution or temperament; but when I come to speak of the chief or prominent symptoms, the symptomatology of hysteria, and more particularly of its paroxysmal characters, the pathological application of these anatomical facts will, I trust, be rendered at once evident and important, and consequently well deserving

close attention ; and, therefore, I offer no apology for adverting to them at this time. From the lower part of the renal plexus of nerves there pass off certain nervous filaments, which, uniting with others from the mesenteric plexus, form or constitute the plexus of nerves, occasionally attended with a nervous ganglion, from which ganglion, when present, and plexus, arise the special nerves which, in their course of distribution, accompany the spermatic blood-vessels proceeding to the testicles in the male, and to the ovaries in the female, and to the external parts of generation. To this nervous plexus thus constituted, anatomists have given the name *spermatic plexus*, and it is the *spermatic plexus* chiefly, together with another plexus named the hypogastric plexus, that, in my judgment, plays so important a part in the morbid phenomena observable in cases of hysteria. At the proper time I shall produce evidence in favour of this statement ; that it is to the *spermatic nervous plexus* we must look, rather than to the uterus, for satisfactory explanation of the morbid phenomena of this disease ; in fact, certain of the phenomena or symptoms observed in some cases of hysteria could not possibly be accounted for, on the supposition that they were altogether, or even in any way, due to derangements in the uterus, as, for instance, what shall we say in regard to cases of hysteria occurring in the male sex, as I maintain they do occasionally ; for in these cases, no one will be absurd enough to impute such, whenever they occur, to derangements in an organ never present, but always absent in that sex.

I entertain but little, if any, doubt that these two nervous plexuses, with their nervous ganglia, the spermatic and hypogastric plexus, constitute the chief efficient factors or producers of that assemblage of symptoms constituting the disease now referred to. Let it be well borne in mind that the nervous energy, agency, or power supplied by them is distributed to all the parts or organs contained within the pelvis in the two sexes, both male and female ; as also to the lower intestines, the rectum, to the various parts of the bladder, to the uterus, to the broad ligament, and to the Fallopian tube, with its fimbriated extremity, in the female. Anatomy further teaches us that these nervous plexuses and ganglia contain but few nervous filaments derived from the cerebro-spinal axis, but that they are constituted almost entirely of derivations from the trunk of the great sympathetic or internal intercostal nerve.

I have repeatedly, when, on various occasions, reading papers on nervous diseases before the medical societies of the

metropolis, maintained, that further investigations into the functions of this great nerve and its derivations, would lay open to us a very wide and extended domain of pathology, and consequently of medical treatment of disease ; and that further research into this subject would not fail to pour upon us a flood of light, over some of the dark, obscure paths of medicine, along which we had hitherto groped our way, guided only by the dimness of empiricism itself. A further and more extended acquaintance with the normal healthy operations in the organic, as well as in the animal nervous system, cannot fail to enable us to understand, and consequently to appreciate at a better and true pathological value, the abnormal and unhealthy operations observed in the same nervous systems respectively. Already the scientific labours of Claude-Bernard, Brown-Séquard, and many others in the same field, have enabled us to comprehend much that, until now, was always painfully, and often pathologically obscure, and consequently unsatisfactory.

The importance of a due estimation of temperament or constitution in discussing the disease now under consideration, will be made even more evident that it now is, when I come to treat of another severe, intractable disease of the nervous system—epilepsy ; in doing which it is my intention to enter at some length upon the consideration of what I term the epileptic temperament or constitution. For, as in the porduction of the paroxysms of epilepsy, so in the productions of paroxysms of hysteria, two states or conditions of the body, or certain parts of the body, are absolutely essential ; in the former disease—epilepsy, these are—first, a tendency or disposition of the brain or spinal cord, or both together, to assume a state of contraction more readily than in health ; and, secondly, the presence of some irritating cause or causes, which in their operation upon this, or upon these organs, compel or excite this tendency or disposition to assume an abnormal or unhealthy state of contraction. So, too, in the latter disease, hysteria, two states or conditions of the body, or of certain parts of the body, are absolutely essential, these are—first, a tendency or disposition of certain parts of the nervous system to assume a state of contraction more readily than in health ; and, secondly, the presence of some irritating cause or causes, which, in their operation upon these parts of the nervous system, compel or excite this tendency or disposition to assume an abnormal or unhealthy state of contraction. It will, I think, be in my power to adduce good evidence, derived from cases met with in practice, denoting a

manifest connection between these two severe, intractable diseases; in fact, in very severe forms of hysterical paroxysms, it is by no means easy to discriminate between the two diseases. One of the very worst cases of hysteria I ever witnessed, was one under my own care in this neighbourhood, in which the attack or paroxysm so closely resembled an attack or paroxysm of epilepsy, that it was not until after consulting with a physician of acknowledged reputation that I was able to satisfy myself which of two diseases I had to treat. Severe, however, as was that attack, the patient had a good, complete recovery, and has continued well from that time until this, a period now of some years duration.

Amongst the lectures which Dr. Brown-Séquard delivered at the National Hospital for Paralysis and Epilepsy, were one or two upon Hysteria; but, unfortunately, I was unable to hear them, owing to other engagements; yet, from conversation with him subsequently, I think I am correct in stating that he is of opinion that the hysterical temperament, or tendency to hysteria, is not unfrequently as intractable to deal with, as difficult to cure as, even if not more so than, is epilepsy itself.

The ancient practitioners of the healing art, in their discourses on medicine, direct the attention of their readers to what they called *temperaments*, or different conditions of *constitutions;* but for the want of accurate physiological knowledge of most parts or organs, as well solid as fluid, of the human framework, they greatly failed in demonstrations in regard to these subjects, or to express the fact; in other words, their descriptions of these subjects were very imperfect, owing to want of a more exact information. Advancing, progressive scientific information, here as in many other departments of general pathology, has by slow, yet, it is hoped, by no uncertain steps, removed extensively the dark veil of obscurity which long hung suspended between the human mind and the operations of nature. By many of the moderns, too, by which term I would be understood to mean those practitioners of the healing art who flourished and wrote endless treatises on the theory and practice of medicine, the study and observation of the temperaments or constitutions, and consequently of the doctrines deducible therefrom, have been almost altogether neglected. It is much to be desired, that the diverse temperaments and constitutions which undoubtedly exist in nature, differing in different individuals, and in different members of the same families, should be more accurately scrutinized, and more carefully observed, by means of light to be derived from a more enlarged acquaintance with the principles of modern science, as applied to various functions of the body, as the circulation of the blood, respiration, absorption, and innervation, &c., &c.; the application, for instance, of organic chemistry to the known differences in constitution between arterial and nervous blood, the recent discoveries made in the anatomy and physiology of the lymphatic system, the exact constitution of the fluids therein contained; the chemical analysis, in fact, of all the solids and fluids of the body, with that of the various secretions and excretions, as they exist in different individuals; the discoveries in regard to, and experiments upon, the nerves themselves; discoveries in regard to, and experiments upon, electricity, galvanism, &c., and their modifications; also upon heat, light, and the atmosphere, &c., &c., must unitedly tend to remove from the medical mind much that still remains of obscurity, ignorance, and prejudice.

To our own English physician—Sydenham—more is perhaps due, as an observer of nervous disorders, than to any other physician living before his time; he has, moreover, in his works, left behind him one of the best and most graphic descriptions of the vapours in females; to him, too, is due the clear perception of diseases of the nerves—doubtless hysteria in one or more of its forms—assuming the characters of almost every other form of disorder. I am not sure that he speaks of hysteria, and of nervous diseases, as proteiform in character; although, however, he remarks that at one or more times nervous disorders are capable of assuming the characters of almost every disease; and that all these symptoms observed, however varied and multiplied, depend solely, or for the most part, upon too much or too little, upon excess or upon deficiency, of nervous action, agency, or energy. In the course of my papers upon affections of the nervous system, I shall have repeated occasions to refer to the writings and opinions of Sydenham; and possibly, next to him, amongst other physicians of the last century belonging to our own country, to one of a later date—Cheyne—who, like his predecessor, Sydenham, has left behind him many valuable observations upon the general pathology of nervous disorders. Much attention, however, as Sydenham had given to, and much observation as he had made upon, diseases of the nervous class, neither he, nor his contemporary Willis, nor even later, Cheyne, nor his contemporary Hoffman, most probably from insufficient physiological knowledge, appear to have recognized the true pathological import of many of the symptoms which they severally observed and recorded.

To a French physician, Charles Pison, of Lorraine, is justly due the merit of being the first to assign to hysteria its proper nosological position, as a disorder of the nervous system, as he did in a work published in 1618, some years before either Sydenham or Willis gave to the world the results of their very valuable observations, whether relating to practical medicine, or to anatomical and physiological researches.

It must have occurred to the observation of all intelligent medical practitioners, that amongst the many, the various agencies, operating to produce disorders, well or imperfectly recognised, of the nervous system, a suppression or non-evacuation of healthy, natural discharges, or secretions from the human body, whether male or female, would be one of the most common and efficient of all known influences tending to such derangements of health.

This being so, it is not surprising, indeed it is no more than might be expected, that in a disease like that under consideration, Hysteria, or in a class of diseases commonly spoken of as Nervous Diseases, which, like hysteria itself, more generally affects the female than the male sex, the suppression or non-evacuation of the natural periodical secretion peculiar to women should, in many instances, play a most important part in the production of such diseases.

The subject is fresh and vivid before my own mind, having at this time two cases under my observation, in which the suppression or cessation of the accustomed menstrual evacuation has had much, if not nearly all, to do in evoking a series of hysterical symptoms of an aggravated nature, so aggravated as, happily, not commonly to be met with or observed, in which the influence of the suppression or cessation of this secretion is very well marked, and in which nature is taking her accustomed course, but from some cause or other taking that course attended with deviations of a most irregular, troublesome description.

In the following remarks I shall by no means restrict myself to that period of life, as in these two instances just mentioned, at which the menstrual discharge or secretion ceases of itself, or naturally, as it is termed; but, on the contrary, I will include the entire period of female life, from the age of fourteen or fifteen up to forty-five or fifty years of age. The natural menstrual secretion peculiar to women may, and frequently does, conduce to the development of various diseases of the nervous system, and, amongst others, to the development of hysteria in several, yet altogether different conditions; as, for example, in young persons in whom this natural

evacuation is about to take place at first; in persons of delicate sensibility, at every period of its reappearance; in persons in whom it becomes suddenly suppressed; in persons of a similar constitution at the usual natural period of its cessation, which, as in the two cases above briefly referred to, is commonly in this country at about fifty years of age; it may also lay the foundation of many distressing, troublesome symptoms, affecting the nervous system when it becomes too abundant, especially if, at any time, amounting, as it sometimes does, almost to hæmorrhage. The approach of the period of puberty, in either sex, male or female, is always more or less critical, yet, in the female, it is peculiarly so, for many and obvious reasons, amongst others, for the supervention of the special secretion now adverted to; another reason being this, that in females the nervous system is commonly more delicate and more highly developed than in males; and in consequence thereof the sensibility and mobility of the entire framework of the body are more easily excited than in males; and, moreover, their ordinary mode of life conduces to many accidents tending to evoke and establish disorders of the nervous system, whereas the ordinary mode of life amongst young persons of the opposite sex offers an easy remedy to such accidents, either by way of prevention or of cure.

The concurrence of many accidental circumstances to females at this period of life, favours the production of a high degree of mobility and of sensibility in the nervous system; and it is by no means rare to witness in such, at this period of life, an extremely nervous and hysterical tendency; and which may continue, and even increase, in intensity, until the natural periodical secretion is completely and regularly established. At no period of life is it of more importance to direct attention to whatever may tend to strengthen and fortify the nervous system, in readiness for the numerous and daily recurring exigencies of life and of society.

All of us, as medical practitioners, must be perfectly familiar with numerous cases of this nature, by way of illustration of the foregoing remarks.

The suppression, however, of the natural periodical secretion is very commonly attended with phenomena denoting extremely important disorder of the nervous system, even after it shall have been well established, and for some time even performed with due regularity.

Hysterical and other symptoms affecting the nervous system occurring concomitantly with suppression of the menstrual discharge, whether they operate in the relation

either of cause or of effect as regards the suppression, will, as I know, assume the most extraordinary character, so as almost to surpass belief; and I have no doubt that in days now happily gone by, in days of darker ignorance than the present, such cases imperfectly recognized, and inaccurately observed, were, by the unthinking and unreflecting, ascribed to evil, if not to satanic influences, in fact, such unfortunate patients were spoken of as being *possessed*.

Some time ago, I had a patient under my care affected very much after this mode, and in whom the customary periodical evacuation peculiar to females was totally suppressed for many months, in fact, writing now from recollection, I may say, for upwards of twelve months, and whose conduct at times during this period was very extravagant and very extraordinary. I have myself witnessed in this patient some of the most out-of-the-way actions. I have seen this patient cling to and clamber up her bedposts as we may see cats cling to and clamber up posts or trees; on other occasions I have seen the same patient crawl along the floor of the room and over objects lying in the way, just as we may see some reptiles and other lower animals crawl along the ground. This patient was an intelligent person, and would sometimes describe her own condition as that of one *possessed*, and who needed to be *exorcised*. All these irregular extravagant actions subsided, and ultimately totally disappeared upon restoration of the bodily health, including a regular return of the usual periodical secretion peculiar to females.

The nervous system of females, especially of such as are liable to hysteria in any of its varied forms, is extremely likely to become more or less affected at the period of life when this periodical secretion altogether ceases or becomes permanently suppressed.

One of the most distinguished practical physicians of the last century, our own countryman, Dr. Fothergill, in his valuable work entitled "Medical Observations and Inquiries," has treated most ably of the management proper at the period of the cessation of the menses in females; and to this work of Dr. Fothergill I take the liberty to refer such of my readers as may be interested in this particular department of pathology. This work is not now before me, and therefore I do not offer any quotations from that author; and, besides, his observations therein are not specially directed to disorders and derangementi of the nervous system, whether hysterical or otherwise; therefore I content myself with merely directing attention to one of the most useful and practical essays in our own language bearing upon that subject, without especial reference to nervous pathology.

At this period of life, and under the circumstances in which the human female is then placed, it cannot be matter of surprise that the nervous system in that sex should at that time in many females become liable to the supervention of any symptoms whatever denoting disorder or derangement of that system, and the hysterical, more, perhaps, than any other females, become affected with various forms of that proteiform disease to which they are so unfortunately subjected.

In order to confirm, to corroborate the statements that have been hitherto advanced on this subject, let us now consider, and endeavour to realize to our minds, what is the actual state of things with which we have to deal; for, in my opinion, few conditions in which the human body can be placed (and be it observed, I am now speaking exclusively of the human female), will illustrate more pointedly the pathological principles which it is the express object of these essays on affections of the nervous system to teach and to enforce. Let us, I say, present vividly to our minds what is the precise pathological condition of a human female, of a nervous, and still more so, of one of a decidedly hysterical constitution or temperament, at the time of the suppression, or of the cessation, of the customary periodical evacuation of the menses. What may we reasonably expect, or, to speak more emphatically, what may we not reasonably expect, as the result of the present actual state of things in such subjects? What do we not, on some occasions, meet with in our patients at this so well denominated critical period? I do not hesitate to affirm, that the very worst, the most troublesome cases, of the nervous and hysterical class, that I have met with, have been in females at this time of life.

Nor need this be matter of surprise to us, as practitioners, under the circumstances in which our patients are then placed. For, what is then the condition of the entire mass of the blood then circulating throughout the body, and thereby affecting the entire mass of the nervous tissue of the framework, whether this nervous tissue be in the form of nerve fibre or of nervous ganglia? Some of the older physicians have spoken of the blood at such periods as being an acrid fluid, and some others have even spoken of it as possessing poisonous properties; but, without going so far as these, we may, I think, confidently regard the blood of the human

female at such times, and speak of it, as an impure, undepurated, unpurified fluid pervading the entire framework of the body. This being so, need we be surprised to meet with, in the nervous, and in the hysterical, vitiated secretions of one or more organs ; ought we to be surprised to perceive in some, the indications of vitiated, perverted sensations ; to perceive in some, evidences of vitiated, perverted emotions ; and even in some few, evidences of a vitiated, perverted intelligence ? An application of the soundest medical reasoning would almost lead us to expect the existence of many such phenomena under such existing circumstances. For if blood degeneration betokens, nay more, if it involves or implies thought degeneration, is it not to be expected that it (that is, blood degeneration) should still more betoken, involve, or imply sensation degeneration, motion degeneration, secretion and excretion degeneration, and in fine, tissue degeneration, with all its essential, necessary, concomitant derangement and disorder of the entire material framework of the body ? Surely, it is merely to reason from anatomy and physiology to pathology, to advance and maintain such opinions as these just now heretofore enunciated. All the phenomena observable in nervous and hysterical patients at this time of life combine to lend support, and to substantiate the correctness of, the views here laid down. It is more particularly at this time of life, and under these circumstances, in which we have to do with the human system suffering in the ordinary course of Nature, from a depraved, vitiated, degenerated condition of that vital fluid, the blood, that we meet with those exceedingly troublesome, nervous and hysterical disorders, which almost invariably, when at all severe and protracted, despoil life of its pleasures and its enjoyments, and which at the same time are such a frequent source of anxiety and annoyance to the friends and acquaintances of our unfortunate patients.

It is, moreover, under these and similar circumstances, that those nervous disorders and derangements of the bodily health supervene, in which, in consequence of their influence on the moral nature and character of our patients, they are unhappily disposed to regard nearly all surrounding occurrences from a wrong, a perverted point of view, and these wrong, these perverted aspects of surrounding occurrences determine their ordinary conduct and behaviour ; and deporting themselves accordingly, their common course of actions is thus rendered an enigma, a mystery alike to themselves and to their acquaintances ; in fact, such sufferers may be

said to have undergone an unfortunate change, an unhappy metamorphosis as well of mind as of body. Incomplete, however, as our present knowledge on these topics must be confessed to be, we yet possess sufficient evidence to convince us, that the quality of the blood must have considerable effect, more or less, as the case may be, not only upon the circulation of that fluid itself, but also upon the various tissues of the body subjected to its influence. We cannot but admit that this must be so, looking at the complex composition of the blood when in health, a composition intimately connected with its own proper vitality, and which has, at the same time, such important relations to every part and to every organ of the body, including especially those parts and those organs of the body, recognised as constituting the nervous masses making up the entire nervous system. Under the head of treatment of hysteria, I shall hope to enlarge much further upon this important pathological subject ; for the present, however, I content myself with stating, that both the cerebral and the ganglionic nerves must be engaged in this relation ; but in what precise intercommunication with each other, and with the entire mass of the blood, and the vascular system, neither anatomy nor physiology have as yet sufficiently explained ; still, these sciences have, even now, afforded us sufficient evidence that these most important relations between blood and nerves do exist.

In discussing the subject of the hysterical constitution or temperament, it is incumbent upon us to ask ourselves this question : Is this disease—hysteria—hereditary ? I have no doubt whatever, from actual experience, derived from observation, as well as from reading descriptions thereof in the works of medical authors who have written upon this malady, that this question must be answered in the affirmative, and that, in some instances, hysteria is directly transmitted from mother to child ; but, in regard to diseases of the nervous system in general, as affected by parental transmission, this all but universal law, may be expressed thus : that if one, or still more so, if both parents be affected with almost any disease whatever of the nervous system, the offspring, whether one or more, is with rare exceptions, extremely liable to suffer from some one nervous disease, although the particular disease affecting the offspring may not be exactly the same disease as that affecting the parent or parents. The state of things in relation to parent or parents, and offspring, may be briefly expressed in this manner : given a parent or parents affected with almost any nervous disease,

and the chances are, that the offspring of such parent or parents will, most probably, suffer from nervous diseases in one form or another.

Thus, by way of illustration, one or both parents may suffer, or may have suffered, from epilepsy; yet it by no means follows, that the offspring of such parents shall suffer from that same disease—epilepsy; although it is highly probable that they may suffer from convulsions, or from hysteria, or paralysis, or some other form of nervous disease; or conversely, the parent or parents may suffer, or may have suffered, from paralysis, or hysteria, or convulsive disease of some kind or other, whilst the offspring of such parents shall suffer from epilepsy. In my own practice and observation, I have known instances of this description. I remember, too, distinctly, on one occasion, in conversation with Dr. Brown-Séquard, one of the physicians to the National Hospital for the Paralysed and Epileptic, to have mentioned this circumstance in connection with diseases of the nervous system, when that physician completely concurred in that opinion, as a fact he had frequently observed in nervous patients. One remarkable instance, amongst others of a similar kind, is now before me, in the person of a grandfather, whom I have known for a long time, as affected with partial paralysis, several of whose children suffered from one form or other, of nervous diseases, and his grandchildren, also are to my knowledge sufferers from nervous affections of one kind or another. The very remarkable case of tetanic catalepsy, which was under my notice some few years ago, occurred in a female grandchild of this identical grandfather, who was affected with partial paralysis.

In support of the foregoing statements bearing upon the peculiar, yet varying character of the heriditariness of nervous ailments, as transmitted from parent or parents to their offspring, or from direct or remote ancestors to their direct or remote progeny, I now take leave to adduce the following instance of this kind, in connection with the nervous affections, although not of the hysterical class; I have at this time, under my own observation, an interesting, intelligent young lady, of about sixteen or seventeen years of age, who is affected, although but slightly, with sleep-walking, somnambulism, whose father has been frequently under my care, in consequence of severe and protracted nervous affections, assuming a great variety of symptoms, both physical and psychical, and whose paternal grandfather and grandmother suffered long and severely during their lives from one or more nervous affections. The grandfather when in middle life, had

an attack of apoplexy, followed by complete hemiplegia, from which he completely recovered, yet, leaving him, throughout the remainder of a good long life, affected with brain-disease at times, almost amounting to insanity. The paternal grandmother, from the middle period of her life, suffered at times from local or partial epilepsy, attended with persistent partial hemiplegia until her death, which took place at a somewhat advanced age. The particulars of this case of somnambulism, I shall hope to lay before my readers when treating of sleep, dreaming, illusions, or delusions, with other psychical conditions bearing upon nervous affections attended with *impaired* or *perverted* sensation and intelligence. Just as we sometimes observe a constitutional or hereditary weakness in most other parts or organs of the human framework in both sexes, so, in like manner, we not unfrequently observe a similar weakness in the various portions of the nervous tissue pervading the human body, whether male or female; and, moreover, we may affirm, that just in proportion as this constitutional or hereditary weakness of the nervous system is more or less strongly developed in the individual, in like proportion is the same weakness easy or difficult of eradication; and in some exceptional cases, although it may not be absolutely ineradicable, and, consequently, incurable, still, such rare cases will of necessity demand the utmost care and attention that medical skill can afford, throughout all periods of life. In regard to females, perhaps there is no habitual practice that has done more to favour the unhealthy development of any latent constitutional or hereditary weakness of the nervous system, than the pernicious custom of tight lacing a custom that so long prevailed in their physical training; and of all the unnatural errors connected with the physical education of young ladies, this has always been one of the most mistaken, and one of the most mischievous as to its results upon the entire nervous system of those exposed to its influence.

It has been known to produce an excessive, an undue mobility of the entire nervous system, which has chiefly manifested itself at about the age of from thirteen to sixteen years. As I am now adverting only to the nervous and hysterical constitution or temperament, I forbear any further allusion to this practice amongst females, with reference to its equally mischievous effects upon other important organs and functions of the female framework. Amongst the influences which we should naturally expect, attended with bad effects upon the hysterical constitution or temperament, are

the suppression or retention of the natural secretions and excretions of the body; for, if such secretions or excretions as in health should be evacuated, are morbidly retained within the body; or, if, on the other hand, such, as in health should be retained, are evacuated from the body, we cannot be surprised, nay rather, we should expect, that among other parts of the body likely to suffer from these irregularities, and so to become diseased, the nervous system in its various parts would become affected with varied and numerous derangements. That this is so, all observed and recorded medical experience combine to substantiate.

Whilst thus briefly adverting to the bad results of suppressed secretions or excretions, I forbear to enter now into any detail as to the special, the particular, effects that are well known to ensue upon the suppression or retention of special natural discharges. At another time I may hereafter enlarge upon this subject.

In confirmation of what has been here advanced, we may remark that there are few parts of the human framework that are not weak, and occasionally imperfect in some families; so much is this the case, that in a physical as well as in a moral sense, most, if not all of us, may be said to have our weak points; parts of our bodies which ordinarily are the first to take on a morbid action, and if this be truly so, in regard to many other parts of our physical frame, it is by no means difficult to comprehend that any weakness or imperfection of the nervous system should be as hereditary as the weakness or imperfection of any other part or organ of the body.

Thus we see, as we might reasonably expect, that apoplexy, paralysis of various kinds, epilepsy, convulsions, and hysteria may be, and very frequently are, transmitted from parent or parents to their offspring.

The facility to acquire the aptitude or tendency to hysteria depends greatly upon age and upon sex. There are, however, some individuals of both sexes so fortunately constituted as to their physical framework, so strong, so robust, in whom the nervous system is so well developed as not to be affected with undue mobility, and not to be unduly affected either by external or internal impressions; and in whom the muscles are so firm and tense as not easily to be susceptible of undue contraction, so as to be thrown into states of convulsion, and who, consequently, do not appear to be susceptible of attacks of nervous diseases, unless from the application of unusual, and it may be really accidental and uncommon exciting causes. In these rare and fortunate individuals,

we are almost compelled to admit the persistent existence of that natural and beautiful harmony of part with part, which characterizes good sound health; a healthy harmony existing between the blood on the one hand, and the nervous masses on the other; such a harmony as enables each part to perform its appropriate function in the human economy, and thus enabling the individual to possess and enjoy a large amount of physical well-being. We may easily suppose some such healthy harmony of part with part to exist in the bodies of many animals, wild and domesticated, whose life, as long as it lasts, is one continued period of physical enjoyment and well-being.

When we meet with this formidable, troublesome disease hysteria, in its exalted, may I say, in its exaggerated condition, and by this, I mean, where it presents itself to our notice as medical practitioners, in patients in whom not only the bodily, the physical, framework is more or less affected; but, at the same time, the intellectual and moral framework, (if I may be allowed the expression) are also affected; we have, as it seems to me, a derangement of that part or, of those parts of the human framework which connect together man's physical and man's psychical nature.

Not long since, whilst engaged in friendly conversation with an intelligent medical acquaintance upon this subject, I suggested to him that such cases of diseases as these exalted, exaggerated instances of hysteria, might with propriety be designated as cases of *somapsychopathy*, denoting their combined disorder or derangement of body and of mind.

Regarding hysteria from this point of view, we may claim for it, when intensified as in cases now under consideration, a very high, possibly the highest, place in our nosological classification; a higher place, in fact, in a nosological arrangement, than we can claim even for that formidable disease epilepsy, which, formidable as it doubtless is, still appears to me to be a more purely physical disorder than hysteria. In support of this opinon, I remark, that we may occasionally witness attacks of epilepsy in animals, and very frequently attacks of convulsions in them. I have myself seen epilepsy in the horse, the particulars of which I forwarded to the *Veterinarian*, a monthly journal devoted to veterinary science; and it is well known that Dr. Brown-Séquard was accustomed to produce, at will, epileptiform attacks or seizures in guinea-pigs; yet, notwithstanding these observations of convulsive affections in animals, no one, I apprehend, would assert that, in any animal lower in the scale of being than the human animal, he had

seen attacks or paroxysms of hysteria; this disease, as it appears to me, puts forward its claims for dominion only over poor suffering human nature, leaving brute nature totally exempt from its control and authority. Comparative pathology may doubtless throw considerable light upon many of the diseases that affect our common humanity; but I fear that it will not contribute *directly* very much to our stock of knowledge in regard to hysteria, although *indirectly*, in regard to convulsive diseases, it may possibly, hereafter aid in removing some portion of that error and ignorance concerning these, which, unhappily, still becloud our intellect, and thus too successfully baffle, and sometimes altogether interpose between our well-intentioned efforts, and our patient's welfare and restoration to health.

I will not, on the present occasion, trouble my readers by bringing under their notice the ordinary and, therefore, well known symptoms of the more common forms of hysteria; these are to be found, at considerable length, and sometimes described in graphic detail, in most of our works on systematic medicine, and that treat of the general principles of medicine as well as of the practice of physic. My object rather, will be, in the present communication, to give the leading features, the more prominent outlines of a case of this disease of more than common severity, that has been under my own care.

The patient in this instance was an intelligent lady, unmarried, rather over than under fifty years of age, consequently, at a period of life when the natural periodical evacuation, peculiar to the female, ordinarily ceases; her constitution or temperament was more than commonly nervous or hysterical; and, as might under these circumstances, be readily supposed, she came, in the first instance, under my notice, presenting many of the more common characters of hysteria; yet, as the disease gradually became developed, the case presented in addition thereto, many of the characters or symptoms of those severe and aggravated forms of the disease to which I have already drawn attention. In addition to the ordinary characters of hysteria, there were, not unfrequently, paroxysms of *perverted, involuntary* movements of various parts of the body, chiefly, however, confined to the trunk; and, at first, almost restricted to the left side of the trunk, yet occasionally affecting both lower extremities; these *perverted* movements by degrees extended upwards, so as at last to affect, although in a slighter measure, both upper extremities, attended concurrently with

occasional palpitations of the heart, and heavy, laborious respiration. Subsequently, the patient displayed an excessive general restlessness of the body, so that, when not lying down on her couch, or when not in bed, she was almost incessantly in bodily motion or action of some one kind or another; seldom, or but very rarely, if ever, sitting down, and sometimes, not even when taking her meals; she would very frequently be in bodily motion of some description even whilst standing, and still more frequently, she would walk hurriedly about from room to room, or in or around the garden, or in other places adjacent to the house in which she resided.

This undue, excessive restlessness of the body, not unfrequently assumed the form of what is not inaptly termed fidgetiness, indicated by all sorts of low, vulgar, actions, such as biting the finger nails, picking the nose, scratching the head, and pulling out the hairs of the head one by one. To such an extent were these practices indulged in, that the finger nails were bitten almost as low down as the lunula itself, and by almost incessant scratching of the scalp of the head, it was rendered in most places quite sore and even raw and bloody. This excessive restlessness of the body generally was followed by, and accompanied with, an equally excessive motion of the muscles of the tongue, engaged in talking, so that there was a corresponding excessive talkativeness, so much so, as to be exceedingly fatiguing to her usual companions. When remonstrated with, and requested to be silent,—"to hold her tongue"—her reply was, "I cannot, I must talk, for I cannot help it." The most ordinary subject of this talkativeness, or conversation, was almost without exception, herself, and her own peculiar ailment, and bodily and mental condition; and this incessant talking about herself and her condition ultimately assumed a form of the most intense selfishness or egotism that I have ever at any time witnessed. This form of egotism or of intense selfishness was frequently expressed after this manner, as thus: "I seem to want everybody and everything, and I seem to want these always; I am not willing that anything whatever should be done until I am better than I am just now."

At the commencement of the attack there was no perceptible impairment or derangement of the special senses, nor of the general cuticular sensation; the sight, hearing, touch, taste, and smell were then severally unimpaired. As the disease progressed, however, the organs of sight, of hearing, and of touch became more or less impaired in their

functions, and their respective sensations became consequently more or less *impaired* or *perverted;* for, at times, the patient would complain that objects seen did not make their proper healthy impression upon the eyes; that at times she could not see so as to read distinctly; and at times she would complain of deafness, sometimes of one ear sometimes of the other, and sometimes, though not frequently, of both ears at once; and moreover, her sense of touch of minute articles, as pins and needles, and other articles in common use with ladies, was at times *impaired*, and inefficient, for general purposes of usefulness or amusement.

I now proceed to show in what manner the several nerves, with their appropriate muscular apparatus, concerned in the production of voice, and of articulate speech, were, in this patient, morbidly effected.

Anatomy teaches us, that the special nerves herein concerned are derived, for the most part, from the eighth pairs of cerebral nerves, consisting of the glosso-pharyngeal branch and of the superior and inferior or recurrent laryngeal branches of this same eighth pair of cerebral nerves: together with branches or filaments derived from the ninth pairs of cerebral nerves, the so-called lingual, or hypo-glossal nerves.

This morbid, *perverted* action of these various nerves, and of their appropriate muscles, was indicated by the occasional and, therefore, spasmodic, yet unusual tone of voice when speaking. I, more than once, observed the tone of voice to resemble somewhat that of some kind of household dog; not unfrequently the voice was pitched in an altogether unnaturally high, shrill key, and very commonly disagreeably loud in its tone, accompanied with very rapid utterance of words; and all this, too, even in spite of or in opposition to all well-meaning, friendly remonstrance to talk or speak more slowly and quietly, or, in other words, not to vociferate so loudly.

In this particular case, and I have, moreover, in the course of my practice, in private life, witnessed some others of a somewhat similar description; the patient from time to time exhibited morbid phenomena, denoting a diseased or disordered condition of nearly all, if not all, the nerves of the body; for there was at times a *perverted*, rather than an *impaired*, action of the *motor* nerves, which extend from the upper portions of the cerebro-spinal axis downwards to the termination of the cerebro-spinal axis; or, to take the case in the opposite direction, as it first came under my care, and as it suits my own purpose better to describe it, there was

at times, a *perverted* action of the muscles supplied by their appropriate nervous stimulus, whatever may be the precise nature of this appropriate nervous stimulus, influence, or agency; there was, I repeat, from time to time, a *perverted* action of the muscles supplied by the appropriate nerves, extending upwards from the *sacral* termination to the *cerebral* termination of the cerebro-spinal axis. Not only so, but even more than this, I am of opinion that there is abundant evidence now before me to warrant me in coming to the conclusion that, in this patient, not only were the nerves, and nervous masses, plexuses and ganglia, which, taken together, make up or constitute the cerebro-spinal system of nerves, morbidly affected in this patient; but that, to a very considerable extent, the nerves, and nervous masses, plexuses and ganglia, which, taken together, make up or constitute the sympathetic system of nerves, were more or less also morbidly affected.

From the gradually progressive supervention of the perverted muscular movements, choreic movements, as I have elsewhere termed them, of the trunk and face, it is evident that the sacral, lumbar, dorsal, cervical, and cerebral *motor* nerves were more or less morbidly affected in this patient. The frequent or even occasional occurrence of these automatic, involuntary, choreic movements of the lower and upper extremities and intermediate parts of the trunk of the body, and also of the various muscles of the face, concurrently combine to indicate, that the several parts of the *motor* nervous apparatus now referred to, were in an unhealthy, *impaired*, or irregular functional activity. The muscles employed in giving the varied forms of expression to the countenance were, at times, thrown into remarkable irregular functional activity, thus imparting singular shades and varieties of expression to the patient's countenance; from these observed facts, I infer, that the nerves supplying these muscles of expression with nervous energy, whatever may be the nature of this nervous energy, as well as the nervous masses of ganglia, from which the nerves themselves derive their peculiar force or power, were more or less affected with disorder or derangement of their respective functions; for anatomy teaches us that the nerves which supply with nervous energy the muscles of the face are, for the most part, derived from the fifth and from the motor portion of the seventh pairs of cerebral nerves which have their so-called origin at the upper part of the cerebro-spinal axis. An inspection of the base of the brain, as commonly seen in

the dissecting-room, or in the dead-house, will confirm this statement.

Further, I may add, that the *sensory* nerves which supply the general cutaneous surface were in this patient, at times, in a state of hyperæsthesia; I do not use this term, in the present instance, as denoting the presence of pain, for the patient seldom, or almost never, complained of pain in any part whatever of the body; but rather, as denoting an exalted, *perverted* state of sensibility of the general cutaneous surface; and from the phenomena I occasionally observed, I was led to the conclusion that a brighter light of day than ordinary exerted an undue, irregular action upon the cutaneous membrane, which was also, I conclude, more or less affected by other imponderable agents besides light, such as, for instance, heat and atmospheric electricity. I am decidedly of opinion that, in this patient, light, heat, and electricity as existing in the atmosphere, and more especially the former of these agents, *light*, exerted a very marked influence upon the cutaneous membrane. For, on very bright days, and in what is commonly termed cheerful weather, the patient was more than usually excited to general motion of the body; so much so at times, that it, the light, appeared to act too powerfully, not so much upon the organ of the sense of vision, as upon the organ of the general cuticular sense. The patient would not unfrequently complain that in bright days and during cheerful weaiher, she could not control a general restlessness of the body, that, in common language, she could not keep herself still and quiet in one position of the body, but that she felt herself compelled to move about from room to room of her house; and this, too, at times, with considerable energy and rapidity of motion.

Now, anatomy teaches us that the nerves of sensation supplying the general cutaneous surface are derived from the various portions of the cerebro-spinal axis, and therefore I regard this general restlessness of the body as the expression of an excito-motor, or reflex action, induced by irritation of the sensory nerves of the cutaneous surface; and as such, altogether automatic, *involuntary*, and independent of the action of the will exerting its influence upon the motor nerves of the trunk of the body. At these same periods of bright days, and cheerful weather, the patient was most unwilling to subject her body to any kind of restraint from the action of tight clothing; this was preferred to be of the lightest and loosest description of apparel. When walking in the garden she preferred to be without cap or bonnet, and much more

so whilst within doors, when she would seldom be prevailed upon to wear any kind of cap fastened in the ordinary mode upon the head, the hair of which consequently was most commonly worn in its natural unadorned state.

The visage or physiognomy of this patient at times, without being in any marked degree convulsed or in motion, presented a very remarkable appearance, as may very easily be imagined, if we consider that on these occasions the action of the muscles of expression of the countenance was not spasmodic, as in convulsions, although it was altogether *perverted* in its character.

In direct relation to the fore-mentioned circumstance, namely, the influence of light or bright weather upon the disordered nervous system of this patient, I may state, that this circumstance might be considered as nothing more than a part of the influence which weather is well known to exert upon the human subject, even when in health, not to speak of its more potent influence upon the human subject when suffering from disease.

In the able and classical work of Sir Henry Holland, entitled "Medical Notes and Reflections," the author has devoted one entire chapter to the consideration of the influence of weather in relation to disease, yet, in that chapter, he does not enter upon the discussion of the influence of *light* as an element upon disease; although it may be possible he would regard *light* as so closely connected with the term weather, as not to be dissevered from it when treating of the influence of weather upon disease. In the case of my patient it seemed to me that variations in degree of this imponderable agent, *light*, exercised a most marked influence upon the nervous system, and this too, not through the organs of vision, but rather by means of its influence upon the general cutaneous surface.

In opposition to this view of the subject, I readily admit that it might be alleged, and which I have attempted to describe, were due, not so much to *light*, *per se*, as to heat or alterations in temperature, and consequently to atmospheric electricity; for the recent investigations of modern science have made evident to us, that the existence of bright light is coincident with the existence of increased heat or temperature, and the presence or existence of both light and heat are attendant with an evolution of atmospheric electricity; for it is now known that no two bodies can be present to each other, having different temperatures, nor can even separate parts of the same body be heated to different degrees of

temperature, without causing an evolution of electrical change.

This important subject cannot now be fully discussed; still, I need not forbear quoting from the chapter in Sir H. Holland's book to which I have but just now adverted. The chapter is entitled, "Influence of weather in relation to disease:"—

"Little though its influence has yet been defined, I believe that the electrical state of the atmosphere is that, of all its conditions, which has most important and diffused effects on the animal economy; more rapid and pervading than any other, and is one of the vital stimuli more intimately allied to the functions of the nervous system. It is that, further, which most closely blends itself, either as cause or effect, with all other meteorological changes; producing thereby many of the difficulties already noticed in estimating their relative amount of influence." And further, in the same chapter, Sir H. Holland writes:—"It is difficult to advert to the effects of atmospheric electricity on the body, either as a vital stimulus or cause of disease, without noticing the question, whether this great natural agent is not itself directly engaged in the functions of the nervous system? If this were eventually determined to be so, the relation of the actions without to those of the same agent within, would present itself under forms still more difficult to apprehend, and little amenable to our present means of research. But, taking the simplest view of the influence of electrical states of air on the human frame, many circumstances occur well deserving notice, though yet wanting the certainty needful to give them a place in science. Without adverting to those singular cases in which the balance of electricity with external objects seem altered by the production of an excess of it within the body, it is obvious that changes of atmospheric electricity have much influence both on the sensations and voluntary powers, producing results variously analogous to those which attend certain morbid states of body more familiar to us."

In many of the various diseases affecting the nervous system—and in none of these more than in the one now under discussion, Hysteria—the subjects of observation, are those in which both matter and mind are simultaneously concerned; matter in its most subtle and complex organization; mind in its almost inexplicable relations to this subtle and complex organization, and both subjected to various influences from without, as well as liable to great changes of state and condition, from morbid actions going on within the body. This being so, the pathological importance of these various morbid affections of the nervous system cannot fail to arrest and detain the attention of all observing and reflecting practitioners.

I have already detailed the leading particulars of a very severe, protracted and intensified form of Hysteria under my own care, and in doing which, I attempted to describe the gradual, yet regular progression of the symptoms or phenomena, as they advanced from below upwards, showing therein that the several motor nerves, with their appropriate muscles, were morbidly affected in this patient. I showed by what means the evidence of morbid affection of the muscles, which anatomy makes known to us, are supplied by motor filaments of the seventh and fifth pairs of cerebral nerves, was almost constantly furnished to me in this particular case; and I may here mention, that the evidence of similar morbid affection of the muscles supplied with nervous influence or energy, by filaments derived from the sixth, fourth, and third pairs of cerebral nerves, was furnished to me by peculiar spasmodic actions of the two globes of the eyes.

I need not here repeat the evidence, that the second and first pairs of cerebral nerves, namely, the optic and olfactory nerves were morbidly affected; for I have already stated that the senses of sight and smell were frequently impaired or perverted. This disposes of the bodily or *somatic* portion of the case; and the *psychical*, mental, or intellectual portion was not less instructive and interesting, in consequence of throwing light upon not a few particulars, necessarily concerned in some of the milder, transitional forms of mental or psychical pathology. The scientific and therefore satisfactory detail, necessary to elucidate the obscure, because imperfectly recognised forms of disease of this description, and of this case in particular, would occupy more time and space than can now be given to this important subject. I should have wished to adduce evidence to show how far, and to what extent in this patient the intellectual functions were or were not morbidly affected. The peculiar actions or manifestations denoting the condition, whether morbid or healthy, of the memory, the imagination, the judgment; as well as of the emotions, the affections, the conscience, and the will, presented from time to time, very many points of the highest psychological value and importance. As in most, if not in all well-marked cases of hysteria, there was very commonly great impairment of the self-controlling power of the will; or

to express the same fact in different terms, the emotions, very commonly appeared to antagonise and frequently to overcome that high mental faculty—the will—the queen-regent of the mind.

It would occupy far too much time, as well as space, in this short essay, to give in anything like adequate detail, the particulars of the whole of the treatment adopted in the foregoing case; although the result of the treatment was in the highest degree satisfactory, alike to the patient, to friends, and to physician. The recovery, the restoration to health was slow, yet gradual.

The general principles involved in the course of treatment to be adopted and persisted in, in this particular disease, are, in brief, as follows:—

Abundance of the best and most nourishishing foods and drinks, occasional use of cordial stimulants, fresh, pure air, copious ablutions with cold and tepid water, as much repose, both of body and mind, as the patient could and would obtain, occasional but not too free purgations, frequent administration of chalybeates, especially of that very agreeable form of them known as steel wine, of which the patient drank very freely; phosphorus, in various forms and vehicles; and by way of moral treatment, the avoidance, so far as possible, of all causes or sources of irritation, leaving the patient as much permission to do what was most pleasing and amusing to herself, in modes too varied to be enumerated now.

To comprise within the compass of a few pages of letter-press the extensive subject of therapeutics adapted to diseases of this class, would be a vain and profitless attempt, as well as, if even it were possible, an undertaking that would probably prove not a little wearisome to the reader. In the limited narration of the foregoing cases, the general principles of treatment involved and demanded are more than glanced at; for here, as in most other diseases, each case must, to a certain extent, be treated upon its individual requirements, and these will of course be furnished according to the skill and judgment of the practitioner in attendance. The appropriate, the proper remedies for ordinary cases of hysteria, are amply detailed in all works that treat of diseases in general, and of the practice of medicine. Tonics, evacuants, anti-spasmodics, and calmants, as a variety of sedatives, will include all, or nearly all the remedies demanded from the stores of the druggist; whilst in the mode, and form, and time of their administration, will be seen the medical art and

skill of the physician. Of tonics I have already stated, that the chalybeates or preparations of iron have, with me, proved of essential service. Good, generous wine I have also found sometimes instantaneously to act efficiently; and in cases of great irritation, to calm, to soothe, and to tranquillise. As a good and reliable anti-hysteric draught, I do not know a better than repeated doses of rum and milk, sweetened with sugar. In fine—for a whole treatise might be occupied with the discussion of remedies appropriate in this and other nervous disorders—whatever tends to favour the production of healthy blood should claim the earnest attention of the physician.

In the appropriate and successful treatment, not only of the disease now under consideration—hysteria—but also of many others affecting the brain, spinal cord, and nervous system, there is, I conceive, no one element of greater importance than a just estimate of the value of *time*, or continuous duration; for not only hysteria but many others, such as, for instance, epilepsy, chorea, and the various forms of paralysis, as hemiplegia and paraplegia, are in their very nature diseases which from their commencement assume a chronic rather than an acute character; and, therefore, this particular disease, as well as the others just now mentioned, may be reasonably expected to make great demand upon the time and attentive patience both of the practitioner and the attendants, as well as of the sufferers themselves. It should even be borne in mind that Nature as in formation, so too in reparation of tissue, is seldom or never in a hurry, taking time to do well whatever is done for her own requirements.

In the mental or moral treatment of the severe or more exaggerated forms of the disease, whether occurring in the male or in the female sex; I mean by these forms of the disease, such cases as in some of their more prominent symptoms indicate a psychical as well as a somatic or physical derangement or disorder of the system—symptoms which at times compel us to apprehend the transition to or supervention of a disturbance of the intellectual or moral faculties; in the mental or moral treatment of all such and similar cases of the disease it is, I am convinced by experience and observation, and in some cases, too, by a successful experience, important ever to bear in mind, never to lose sight of, the extremely delicate nature of the tissue or tissues morbidly affected in the disease under consideration. These are, on the one hand, the liquid tissue—the blood with its corpuscles; and, on the other hand, the nerve cells and nerve filaments, the former of these, the nerve-cells, constituting for the most part the numerous nervous ganglia scattered

through various parts of the bodily framework; and, moreover, where they, the nerve-cells, are brought into closest relation with the blood and blood corpuscles. The very extreme delicacy of structure, with the especial and peculiar anatomical arrangement of the nerve cells in the nervous ganglia, must have been well seen and observed by means of the microscope, to be duly and adequately estimated, in order to enforce and inculcate the necessary avoidance of all means or measures adopted throughout the treatment of these cases of disease, wherein such very delicate tissue is morbidly affected, that might by possibility in any way cause or produce a sudden, or too abrupt, or unnatural disturbance, or breaking up or disorganisation of these delicate nerve-cells.

Regarding the subject from this point of view, it will not fail to be seen how important it must be in the mental or moral treatment of this disease to avoid or remove, so far as may be practicable, all causes or sources of annoyance or irritation to patients under our care. And, conversely, the means or measures adopted should, as far as practicable, be of such a nature as are calculated to calm, to soothe, to tranquillise both the body and the mind of patients under our treatment. In many of these and similar cases, the conduct, the deportment, the general demeanour of the ordinary attendants, whether as members of the family of the patients, or as hired nurses or companions to them, is of no little importance. I have, I may here state, been induced to believe that no little mischief to the patients, as well as hindrance to their recovery, has resulted from the injudicious selection of attendants but ill-qualified for their duties. And, conversely, I have known instances where real recovery has commenced, and become apparent, upon the substitution of a proper for an improper attendant or companion.

Underlying, although by no means in the sense of subordination or of inferiority, all the facts, reasonings, or opinions that have been submitted to the reader's notice in the foregoing papers, there has been this one chief, leading, prominent idea, which it is hoped has not only claimed, but has also attracted its due share of attention, as being of the highest importance, not only to the particular subject that has been under consideration—hysteria, but at the same time to the general subject of nervous disorders.

It has been my direct aim and intention in this contribution to medical literature, so far as time and space would allow, to expand and develope this leading idea, this cardinal point, upon which, as it appears to me, so very much of the true pathology of the nervous system must of necessity hinge and depend. This leading idea to which I refer may be

briefly expressed, as the relation physiologically and pathologically subsisting between *blood* and *nerve*, between blood-corpuscle and nerve-cell; or, if I may be allowed the expression, whilst speaking of the entire mass of blood and the entire mass of nervous matter in the human body, the relation between the *blood-tissue* on the one hand, and the *nerve-tissue* on the other, for I am convinced, that the more closely the entire subject of nervous pathology is regarded from this point of view—I do not say to the exclusion of all other aspects of the subject—the more sure and certain will be our knowledge of various nervous diseases, and consequently, the more reasonably may we hope to attain to a more rational and successful treatment of them.

Park street, Grosvenor square, W., 1866.

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THE

PRODUCTS AND RESOURCES

OF

TASMANIA,

AS ILLUSTRATED IN THE

INTERNATIONAL EXHIBITION,

1862.

BY

GEORGE WHITING,

SECRETARY TO THE INTERNATIONAL EXHIBITION COMMISSIONERS FOR TASMANIA:

SECOND EDITION ENLARGED AND CORRECTED.

WITH AN APPENDIX, CONTAINING PAPERS ON

THE VEGETABLE PRODUCTS EXHIBITED BY TASMANIA, BY THE HON. W. ARCHER, F.L.S.,

AND

ON THE CLIMATE OF TASMANIA BY DR. E. S. HALL.

Hobart Town:

PRINTED AT THE DAILY "ADVERTISER" STEAM PRESS.

1862.

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LOCAL EXHIBITION

IN

HOBART TOWN.

THE Products collected by this Commission, to illustrate the Resources o Tasmania in the International Exhibition in London in 1862, were opened for local exhibition in Hobart Town, December 3rd, 1861. The following report of the ceremonial is taken from the *Hobart Town Daily Mercury*:—

"The Exhibition was formally opened yesterday by His Excellency the Governor Sir H. E. F. Young, Honorary President of the Commission.

"Amongst those present were Sir Valentine Fleming, Chief Justice, the Hon. T. D. Chapman, Premier, the Hon. W. Henty, Colonial Secretary, the Hon. F. M. Innes, Colonial Treasurer, W. L. Dobson, Esq., Attorney-General, R. Byron Miller, Esq., Solicitor-General, the Hon. W. Nairn, President of the Legislative Council, Hon. W. Archer, M.L.C., the Right Worshipful the Mayor of Hobart Town, the Ven. Archdeacon Davies, Lieutenant-Colonel Russell, J. Allport, Esq., M. Allport, Esq., with other gentlemen. Several Ladies graced the ceremony with their presence.

"His Excellency and Lady Young, accompanied by Colonel Gore Browne and Mrs. Browne, arrived at half-past two o'clock, and were received by the Chairman and members of the Commission.

"The Chairman (Dr. Crowther) addressing His Excellency said,

SIR HENRY YOUNG,—

"The Commissioners have done themselves the honor of requesting that you would favour them by formally opening the Exhibition of Tasmanian products, intended for the International Exhibition. They have done so, not only from a desire to give all possible prominence and *éclât* to an event so important in all its bearings on the future of Tasmania, but because they feel that the object of the Commissioners has had your cordial sanction

and responsible aid from the beginning, and, moreover, because the ceremonial of proclaiming that this first stage of their labours has attained a practical maturity, would form a graceful termination of a long official connection with this colony, which has been distinguished by a marked desire to develope our material resources.

"Your compliance with their request would also leave, with many of the advocates of scientific progress in Tasmania, a pleasing memento of a valued friend and coadjutor.

"The Commissioners whom your Excellency appointed to represent the interests of Tasmania, feel some gratification in soliciting your inspection of the results of their labours, which have at length reached a stage in which success appears no longer doubtful.

"This point has not been reached without considerable difficulty and anxiety. The public appeals of the Commissioners, copiously advertised and addressed in circulars to almost every official and professional person in Tasmania, met with no adequate individual response, excepting in some few honourable instances. The Commissioners soon learned that if Tasmania were to be fairly represented in the Great Exhibition this important result must be brought about rather by the purchase of suitable products as a matter of business, than by reliance on the uncertain exercise of individual patriotism and liberality.

"The co-operation of every individual who had taken an active interest in former exhibitions was solicited, and in many cases this aid was cheerfully accorded. Individual Commissioners, each according to his facilities, have exerted themselves to carry out the objects of the commission, and amongst these gentlemen the name of Mr Boyd, of Tasman's Peninsula, stands pre-eminently conspicuous. The main part, however, of the products now displayed before the public have had to be sought for under circumstances of no ordinary difficulty, and to be purchased by public money.

"Among those products the timber of Tasmania occupies the most conspicuous position. H.M. Commissioners in England have granted permission for a Trophy of Tasmanian Timber to be erected in the Central Avenue of the Great Exhibition Building, the Commissioners have felt bound to respond to this act of consideration by endeavouring to occupy so prominent a position in the world's view, in a way creditable to Tasmania. Every portion of this structure now before your Excellency, for the design of which we are indebted to our Secretary, Mr. George Whiting, (who has been ably seconded in the mechanical arrangements by Mr. Kipling, builder,) will serve some purpose of illustration. Our spars, railway sleepers, joists, quartering, flooring boards, ship's knees, planking, &c., together with our valuable splitting timber, will be shown in every variety of kind and condition. New specimens will be seen fresh from the bush, others which have been felled in proper time and fairly seasoned, together with specimens, which have sustained the severest tests to which timber can be subjected, and have stood the wear and tear of a term exceeding that of a human generation. Piles and planks which have experienced the alternations of exposure to salt-water, fresh-water, and dry air, in our wharves; planks, timbers, and trenails, which have been exposed to all sorts of destructive agencies, in our stranded ships; posts which have remained in the earth

almost intact for thirty-five years' duration, and many other such illustrations, will offer incontestable evidence that Tasmanian timber, if judiciously selected and prepared, is unsurpassed by the timber of any other country—in durability, and stubborn resistance to the ordinary vicissitudes to which wooden fabrics are liable. Much labour has been required, in this most unfavourable time of the year, in procuring the timber of which the trophy is constructed, the main portion of which was growing green in the forests when the Tasmanian Exhibition Commission was appointed.

"All these specimens will bear their Tasmanian and botanical names. They will be accompanied by an Herbarium (prepared by Mr. Boyd) of their leaves and blossoms, and will, it is believed, convey to the world a fair notion of what our woods really are.

"Of our ornamental woods, which are now coming into general request in the neighbouring colonies for cabinet work, a more varied and beautiful collection has never been exhibited. Many of the specimens will equal, if not surpass, for furniture, the finest samples of walnut, rose-wood or mahogany. The timber-buyers of Europe will find in this trophy a great variety of our fresh-felled timber. In close proximity to these will be seen specimens of similar kinds of woods cut in Autumn, and carefully seasoned under cover. Near to these a department of durability will arrest the attention by displaying the specimens which have been so long in use, and to which I have already alluded.

"The structure of the trophy itself will serve to display our Blue Gum, Stringy-bark, Peppermint, Blackwood, Myrtle, and Huon Pine; whilst around its base and in every available foot of surface will be disposed our most handsome cabinet woods, some in neat packing cases, and more in the varied and grotesque forms of their original growth. Our ship planking, measuring 80 and 90 feet in length without a defect, cannot fail to attract the notice of those who are searching the world for a substitute for the now no longer easily procurable British oak. Prices will be attached to those sorts of timber which form so large an item in our exports to other colonies.

"The Trophy will also be made subservient to the illustration of another of our main branches of industrial production—namely, our sea-whaling. Two-whaleboats by the best boat builders of Hobart Town (Chandler and Miller) will be suspended from the sides of the pedestal. These boats are made of Colonial wood,—and the harpoons, and all other gear connected with them fitted up by colonial workmen.

"The octagonal column of the trophy will be surmounted by two jaws of the sperm whale. Whalebone as taken from the black whale, will be open to inspection. At each corner of the pedestal will be placed oil-casks, water-casks, and flour casks, for whalers, of colonial manufacture, on which will be suitably displayed, the Oil and Head matter which command so sure a market in other countries. Tasmanian Wool, choice brands of which fetch the highest price in foreign markets of the wool of all these colonies, will be adequately represented, as the clip of the present season becomes secured. Already promises have reached the Commissioners of a large number of specimens on their way for exhibition, and it is gratifying to

believe that in this our chief export Tasmania will still maintain the high character which she so honorably achieved in 1851.

"The mineral resources of Tasmania suggest hopes of great advantages at no very distant period, more especially as regards our coal, of which Your Excellency will perceive a varied and valuable collection from numerous localities selected by Mr. Gould, whilst other samples have been exhibited by private proprietors. Indeed coal is found to exist in nearly all parts of the Island, and it is hoped that before long some practicable mode of rendering our unquestionably valuable coal beds available, will induce capitalists to enter largely into this important branch of industry.

"Our metalliferous collection comprises gold, which metal exists in greater or less quantities in various parts of Tasmania—particularly of the Fingal district. We cannot as yet claim to be considered a richly producing gold colony, but it has been deemed desirable that the small portion collected by a few hands in one district during the few months in which the commission has been in operation, should be shown, in order to prove that amongst our prospects of latent mineral wealth the discovery of gold in payable quantities is a contingency to be constantly kept in view. A much larger quantity of Tasmanian gold might have been purchased, but the sample exhibited is sufficient to show the characteristics of our gold.

"Our Iron Ores have representative samples, from various localities, some of the specimens being of great richness, and may possibly yet be profitably worked.

"Our Building Stone, which has been extensively used in constructing the public edifices of other colonies, is fairly illustrated. The valuable collection of Mr. Calder. who has taken an active interest in this branch of our industry, contains specimens from numerous quarries; yet so abundant is this valuable material that this ample collection represents only a portion of the quarries now in work. A church font, worked in stone from Point Ventenet, illustrates in a striking manner the admirable adaptability of this stone to this and various other purposes to which it has not previously been applied. Amongst these latter may be mentioned some grindstones, exhibited, of great size and fine quality, and also some smaller ones said to be eminently suitable for glass-cutting. Some of our Marbles, which have hitherto been used only for the making of lime, and which cover a considerable portion of Tasmania, have been discovered, when properly polished, to be eminently beautiful and suitable for internal decoration. Whilst on this subject, I cannot refrain from directing your Excellency's attention to some specimens of Flinder's Island topazes, the splendid appearance of which, when suitably mounted in articles of jewellery, as they are now exhibited, cannot fail to strike every spectator. The products of our fields, our orchards, and our gardens, deserve a passing notice. Our autumnal fruits are represented in admirably executed wax models from casts of last year's fruit in plaster of Paris. English Horticulturists will find amongst them many well known superior sorts, which have been greatly improved since their introduction into this country. Indeed, our climate seems peculiarly calculated for the growth of English fruits, which are exported hence to other colonies in vast quantities.

"The skins of the opossum and other Tasmanian animals will be sent to

England in considerable quantity and variety. When it shall become known to European furriers that skins so well adapted for railway travelling as those of the opossum may be purchased in almost unlimited number at five shillings per dozen, this circumstance can scarcely fail to ensure their general use. Among the novelties of our exhibition will be found an extensive collection of the barks of Tasmanian trees. Some of these—as the bark of the blue gum and stringy bark trees—have been reduced to fibre by a process with which Your Excellency is familiar, ready for experimental trials of their suitability for paper-making, &c. Should they be found to answer that purpose, a vast demand may be created for a material which Tasmania could supply at a moderate cost in any quantity.

"I cannot venture to detain Your Excellency by a particular reference to many objects of interest which this collection comprises. A desire to conform as closely as possible to the directions of Her Majesty's Commissioners in England has induced the Commissioners here to confine this selection to articles which directly represent our material resources; and those which either have, or possibly soon may have, a positive commercial value in the world's market. Had they chosen to have converted the exhibition into a collection of mere curiosities, these might have added to its varied attractions, but such a collection would not have harmonized with the objects of the forthcoming international exhibition. Although many of our colonial manufactures form important items of our exports, such as carts, furniture, colonial axes, splitting knives, &c., yet these are not such articles (excepting cabinet furniture for the purpose of showing our ornamental woods) as would excite much attention in England. It is mainly on our capacity for supplying valuable and abundant raw produce, to be moulded to their varied purposes of elegance and utility, by the manufacturing industry and artistic skill of older communities, that Tasmania must for the present be content to rest her celebrity.

"In conclusion, the Commissioners would beg to impress on your Excellency the fact, that in the hurried collection which they have been able to make, they have included no article of an exceptional character, but have kept the one object in view, of giving a faithful and honest exemplification of what Tasmania can really furnish out of her ordinary resources, and what she can immediately reproduce should the occasion require it.

"I have the honour to request that your Excellency will now be pleased to declare the Exhibition to be opened.

"His Excellency replied—

DR. CROWTHER,—

"The interesting details which are set forth in your comprehensive Address as Chairman of the local International Exhibition Commissioners, establish for you, for them and for your indefatigable and intelligent Secretary, a claim not only to my thanks, but to the thanks of the whole community.

"The difficulties you have overcome, with comparatively speaking, so little of the aid which was expected from the general body of the colonists, greatly enhance the merit of the success of the Commission.

"I desire too, to observe, that had the indiscriminate zeal and profuseness of voluntary contributors made the collection as universal in its

character as the contents of an Economic Museum, the unique, definite and most appropriate Exhibition, now before us, would be less strikingly, conspicuous and suitable.

"The direct faithful representation of Tasmania's material resources, of commercial value, actual or prospective, as raw produce; and deserving of the attention of British and Foreign Manufactories; is truly a fulfilment, so far as this island is concerned, of the special design of an International Exhibition.

"The sight before us, is a very gratifying one. In common with others, I am desirous of allowing no further delay to take place in its examination.

"I thank you for the flattering consideration which has induced the Commissioners to give me opportunity, amongst the closing acts of my administration, to take part in this pleasing ceremonial.

"I now declare the Exhibition to be open.

"The Vice-regal party accompanied by the Chairman then proceeded round the building, and spent a considerable time in examining the various productions. The Exhibition will be open gratuitously to the public during the remainder of the week."

During the five remaining days of the "Carnival Week," the Exhibition remained open from 9 a.m. till 5 p.m. Nothwithstanding the counter attractions of the Intercolonial Champion Horse Race and Regatta, the Exhibition was visited by upwards of six thousand persons, whose names are recorded in the Visitors' Book.

PRODUCTS AND RESOURCES

OF

TASMANIA,

AS

ILLUSTRATED IN THE INTERNATIONAL EXHIBITION, 1862.

BY GEORGE WHITING.

ALTHOUGH the International Exhibition of 1862 will probably form a more complete collection of the World's produce than either of its progenitors of 1851 and 1855—the occasion seems to have been generally recognised, by new and consequently little known communities, as a legitimate opportunity for supplementing its educational utility—by the publication, for presentation with their contributions, of a condensed epitome of well authenticated, statistical, and descriptive information, which no collection of illustrative products can supply. The Tasmanian International Exhibition Commissioners have (in common with the other Australian Colonies) directed their Secretary to prepare such an epitome.

The visitor to the Great Exhibition, who, like Layard at the ruins of Nineveh, may, in idea, stand face to face with a people of whom he knows little—but who have here reproduced themselves to a great extent in their works—may desire further information respecting them; but his inquiries will be greatly modified by his personal interest, objects, and predilections. The Statesman and Politician may inquire into the genius of the people who have produced these works. Are they still identical in blood, in language, and in religion, with the energetic race from whom they sprung? Have they struggled for, won, and do they really appreciate the privilege of Constitutional Government? Is their liberty of speech and action tempered only by the decent restraints of self-moderation, mutual forbearance, and abstinence from infringement on the freedom of thought, word, and deed of their fellow man? Do they carry out the system of local self-government in Municipal and Parochial organization, which has formed the nursery as it forms the safe-guard of English rational liberty? Will they stand by "Old England" in the event of a possibly impending war? Do they volunteer? Are they learning to handle great guns? Did they subscribe liberally to the Patriotic Fund for the relief of the wives and families of our brave fellows who fell in the Crimea? Do they take readily to the Englishman's natural accessories—

the ship, the steam engine, the horse, and (now) the rifle? Are the Cricket Match, the Horse Race, the Regatta, the Rifle Match, the Ploughing Match, the Cattle Show, accepted amongst them as established Institutions? Are they "sailors to the manner born" in matters of whale fishing, boating, and yachting? Do they appreciate the value of intelligent co-operation in forming Companies for Gas, Steam Boats, Mining, Railway, and other purposes?—If they can answer these questions satisfactorily, and if the sterling character of their contributions offers a fair illustration of their country's capabilities and their own energy and enterprise, an honorable future lies before such a country and such a people; whose "manifest destiny" it may be—to work out an original phase of social, moral, or material progress—from the new conditions of race, climate, position, and productiveness in which they fortuitously find themselves combined.

But (the Man of Business will more briefly demand) do they give us any practical proof of this capability? Do they offer us new raw material—for our mill-board or our paper mills—timber superior to oak, or equal to oak at a lower price, for building our ships and constructing our railways? Can they coal, provision, and refit our long-voyaged steamers, and merchant ships?

Very different still may be the range of inquiry of the man into whose mind the project of emigration has perchance constantly obtruded itself amidst the cares and embarrassments of old world competition. He may possibly anticipate increased anxiety as age creeps over him, and his children advance in turn to fight the Battle of Life in fields of employment already over crowded—and in contests requiring, day by day, a higher standard of physical energy and intellectual qualification. Heart-sick with the weary up-hill struggle, he may sigh for some new home, where his family, now sorely perplexing, may prove a source of happiness, where he may rear "an independent shed" on his own land, and pass his remaining years under the shade of his own vine and his own fig tree. In his earnest examination of the evidences of material prosperity which he will find in the English Colonial Department, he may be arrested by the Wheat, or the Wool, or the Timber Trophy of Tasmania, and will ask himself—is the country where these came from the place where an honest and industrious man, with little capital, save the labour of his thews and sinews, and the skill of his hands, may hope to better his own condition, and that of his family? Does it contain or produce the main necessaries of life—abundance of wood and coal for timber or for fuel—plenty of good water for irrigation, manufactures, machine power, and domestic use—animals for labour and for food—corn, oil, English crops, and English fruits—wool and furs, for clothing and for export? Is its climate suitable to the Englishman's constitution—and will it keep "the English rose" on the fair faces of his children? Is it English in its population, its laws, and its habits? Does it offer land worth the buying suitable for an English home, in lots to suit purchasers of moderate means, which may be selected without auction, and paid for by easy instalments—out of which he and his children can work out a present livelihood, and future competence? Is the country exempt from peculiar diseases—from dangerous wild beasts—from hostile Aborigines—from the unnatural and appalling contingencies of

civil war?

These suggestive queries combine so many of the essential elements of human happiness and progress, that a writer may fairly apprehend a charge of exaggeration who should venture to claim them for any one country. Yet, it will be found, on referring to official statistics and notorious fact,—that there are very few of these queries which may not unhesitatingly be answered in the affirmative—on the part of Tasmania.

PHYSICAL GEOGRAPHY.

Tasmania, formerly known as Van Diemen's Land, is a somewhat escutcheon-shaped island, nearly as large as Ireland, lying about 120 miles south of the south-eastern corner of the Australian Continent. Its area comprises about 16 millions of acres, or about 25,000 square miles. It is of 165 miles average length, and 155 miles average breadth,—and has 700 miles of coast line, exclusive of small islands and indentations. The central part of the Island consists of a table land, averaging at least 3,000 feet above the level of the sea—on which are seven lakes, varying in size from 2,500 acres to 50,000 acres, and containing an aggregate of nearly 112,000 acres of freshwater. These lakes form the sources of many considerable rivers. The Derwent runs 120 miles, and its estuary is navigable to and above Hobart Town, where it is two miles wide, for forty miles from the open sea. The Tamar is navigable 40 miles to Launceston from the North Coast. The Huon, running a course of 110 miles, is navigable for steamers nearly 30 miles. These, and eleven other rivers, meander, summer and winter, through the mountain ranges, (some of them 5,000 feet high) and gently undulating hills, which intersect the Island—giving an aggregate course of ever-flowing water of 900 miles. Thirty-one smaller rivers run for considerable portions of every year, whilst thousands of creeks, rivulets, streams, and springs glide, leap, and dash through the wild ravines and rocky cascades of the country in romantic variety, forming a plentiful and continuous supply of the great essential of life and health—pure water, which frequently serves to keep the face of the country fresh and green, long after those of the neighbouring colonies have been parched with drought—and affording an amount of constant motive power for mills or for irrigation, perhaps unequalled, within the same distance from the sea, in any country in the world.

The bold green-stone and basaltic mountains of Tasmania—their heads for many months of the year capped with snow—form striking objects, from whatever quarter the Island is approached. Its undulating intervening surface, mostly covered with forests of gigantic trees extending from the hill-tops down to the water's edge, its singular intersections of land and sea, particularly about the south-eastern coast,—offer to the admirer of Nature's works, scenery of the most wild and picturesque beauty; in lake-like bays and estuaries, fertile islands, rugged cliffs, romantic head-lands, and curious peninsulas. Here and there the crop of a settler reach down almost to the water's edge, and the waves carry the tidal pulses of the vast Pacific Ocean to within fifty yards of the farm-house door.

POLITICAL.

The political institutions of Tasmania secure the utmost latitude of rational freedom. By the Constitutional Act of 1854 the colony is governed by two elective bodies—the Legislative Council (15 members), and the House of Assembly (30 members). The members of the Legislative Council, who bear the prefix "Honorable" *ex officio*, are elected for six years. This Chamber is indissoluble. Its constituency consists of £50 freeholders, graduates of universities, barristers and solicitors on the roll of the Supreme Court, legally qualified medical practitioners, officiating ministers of religion, and retired military and naval officers. The House of Assembly is elected for five years, and is dissoluble at the will of the Governor. Every Money Bill must originate in this House. No member of either House must be a judge of the Supreme Court, nor a minister of religion. Those who elect the House of Assembly are £10 householders in town and country, £10 pastoral licensees and lessees, persons receiving an annual salary of £100, and all the classes entitled to elect the Legislative Councillors. At elections—nominations are not made openly on the hustings, but are addressed, signed by the prescribed number of voters, to the Returning Officer, so as to be published by him some time before the election. Every man votes by ballot, striking out of a list the names he opposes, in a room by himself, and depositing his folded paper openly in the ballot-box. Further to secure every man in the secrecy of his vote, all distinguishing party badges, colors, flags, and bands of music are prohibited. Any person "giving or providing, receiving, or wearing cockades, ribbons, or other mark of distinction" is subject to a penalty of £50. Severe penalties are also prescribed for bribery, treating, and "undue influence." The results of this system of election are most satisfactory. In Tasmania there is no "putting on the screw." An "election riot" is unknown. The excitement and turmoil of an election are almost forgotten in a week. A more quiet, practicable, and business-like system of collecting the real political opinions of a constituency probably no-where exists. The Tasmanians have not derived this system from Imperial or foreign legislation, but have framed it for themselves. So far, the political constitution of Tasmania has worked well, whilst those of some of the sister colonies have had to be constantly altered from their original form. The Tasmanian Statute Book, under Representative Government, may bear comparison with that of any other colony. Few changes of Ministry, and no violent changes of policy, have yet impeded the political progress of Tasmania, since she has possessed the inestimable privilege of self-government. In any country translated within a few years from a form of Government essentially despotic to one comparatively free, an excess of party feeling may be expected to show itself occasionally—but such ebullitions, if not permitted to impede public business or to disturb the public peace—may be taken as healthful indications of the interest taken in public affairs. With a very few exceptional cases (which have been made the most of in disparagement of Tasmania) nothing has hitherto occurred to disturb the harmonious progress of her Legislation; and those

few cases have served the useful purpose of showing that the political power of the colony is really in the hands of the intelligent and orderly portion of the community, of whatever class—whenever they choose to exercise it. Of the loyalty and good feeling of the population, generally, many proofs might be adduced. It has more than once happened that nearly all the Queen's troops have been suddenly taken away to quell disturbances elsewhere. At present there are scarcely regular soldiers enough in Tasmania to mount guard at Government House, and the Imperial establishment of Port Arthur, yet in no country does there exist a more confident sense of security for person and property.

THE TASMANIAN TIMBER AND WHALING TROPHY.

This structure, which was designed by the writer of this essay to illustrate two of the most important branches of Tasmanian industry, will, it is believed, furnish information as to the abundance, variety, and lasting qualities of Tasmanian timber, which may prove acceptable to all persons interested in Ship-building, Railways, Public Buildings, and other purposes to which timber is applied. It will, probably, not less clearly illustrate the peculiar adaptability of Tasmanian Cabinet Woods, from their beauty of colour and marking, for Ornamental Furniture and other requirements of modern elegance and refinement. The fact ought to be mentioned, however, that the greater proportion of the Woods now exhibited was growing in the Tasmanian Forests but a few months since, and consequently may be found to be affected by "shakes," "sun-cracks," &c., which will not be discovered, in the same sorts of timber which may have been cut in the Autumn and seasoned under cover. In juxtaposition with the "green" specimens will, however, be seen—specimens which have been fully seasoned; and again, specimens which have undergone the severest tests to which timber is ever subjected during periods approaching to half a century.

To render this Trophy a temporary Museum of the more useful Tasmanian Woods, specimens have been procured from the oldest Public Buildings of the Colony, each of which is fully labelled, and will tell its own tale. The Old Gaol and the Old Court House of Hobart Town, have furnished sleepers, door-posts, flooring-joists, boards, window-lintels, and architraves—of Huon Pine, Blue Gum, and Stringy-Bark, which are as sound as when built in forty years ago. These relics of the past, had they power of utterance, might relate legends of human trial, suffering, and adventure of early Colonial days, which would now be deemed incredible. But the evidence which they offer of their own durability must be taken as incontestible and complete. Nearly all the timber of the Old Hobart Town Court House has been found to be sound, and has been used in the erection of the New Post Office just completed on the same site. But the Builder and the Railway Engineer may ask, "Will Tasmanian Timber resist equally well the atmospheric influences of the open air?" The Naval Architect will inquire into its "behavior" under water. Let the old piles, and planks, and posts, in the Trophy supply the answer. Some of these old piles, which have been split down longitudinally

in order to facilitate inspection, have been partly submerged daily, as the tide rose and fell, for periods up to Twenty-one years, whilst forming part of the Wharves of Hobart Town. Blue Gum and other planks from the Wharf Platform will shew their power of resistance, for the same period, of copious showers, hot sunshine, dry winds, and heavy traffic. Other material witnesses to the durability of Tasmanian Wood have been summoned from a Colonial-built vessel, which has been stranded for Fourteen Years, in the shape of planking, timbers, frenails, &c., which also fully attest this fact. A Tasmanian schooner, built of Blue Gum—the "Flying Squirrel," 97 tons—has twice been thrown by the surf above high-water mark—and on being got off did not exhibit the slightest defection in her lines, or a sprung trenail, and has never even required to be pumped since undergoing this severe ordeal. Veteran posts from the earliest fences of the Colony, of Peppermint and other Woods, which have stood faithful sentinels over the crops and herds of the settlers of the last generation, here invite inspection of their almost unimpaired condition. What further proof can be required of the lasting and useful properties of Tasmanian Woods?

That these Woods, particularly the Blue Gum, may be seen in all conditions—the Ship-yards and Coach-factories of Hobart Town have furnished specimens as usually seasoned imperfectly, and as seasoned carefully. The specimens of Ship-timber, from Mr. Macgregor, have been ten years, and that from Mr. Ross has been twelve years, lying in an open Ship-yard, exposed to all weathers. With these specimens of rough seasoning may be compared the Blue Gum plank of Mr. Burdon, Coach-maker, which has been carefully seasoned under cover for seven years; and other specimens of Dr. Crowther's, which have been seasoning for ten years. This comparison will serve to shew that much depends on the seasoning of the Blue Gum; that it is a most valuable Wood when fairly seasoned, and that even when roughly prepared, this Wood is unsurpassed for all out-door purposes requiring strength and stability. Another variety of the Eucalypti—the Gum-topped Stringy Bark—nearly, if not quite equal, to Blue Gum, and procurable in greater abundance, of a straighter grain, and of more free working character, has more recently become an object of considerable attention. Its durability and general quality are well illustrated by a plank, which, with the old piles, have been exhibited by Mr. Oldham—that has been in use twenty years in the Platform of the Hobart Town Wharf.

In inviting all persons interested in the supply of the best Colonial Timber for the Dock-yards and Railways of the United Kingdom to examine these well-authenticated and varied specimens, it may be well to lay before them the result of scientific experiments which were tried ten years since, with a view to test the qualities of the Woods of Tasmania with the best Woods of India, of Europe, and of British America.

It is well known in engineering circles that Professor Barlow, in his "Essay on the Strength and Stress of Timber," gives the details of an experiment in England on the English and Indian Woods. These experiments, as also those of Captain H. C. Baker, on the Indian Woods, will be found in the article "Timber," in the *Encyclopœdia Britannica*. Mr. Mitchell, D.A.C. General, made some similar experiments on the Woods of Tasmania, and (in 1851) detailed the results in a paper read before the Royal Society of Tasmania,

which is published in the Society's Transactions, (Vol. 2, P. 1,) the object being to institute an impartial comparison between the Woods of Tasmania and those of India and Europe—as given in the tables of Captain Hall and Professor Barlow. The experiments had been thus performed:—

A piece of scantling of each Wood, two inches square, was laid with its ends resting on supports, seven feet apart. Weights were gradually increased in a scale, suspended from the centre of the piece of wood so placed. Its elasticity was ascertained by increasing the weights till the wood would no longer recover its straightness after they were removed. Its strength was proved by increasing the weights till it broke asunder, and by observing its amount of deflection immediately before it broke. A portion of the broken wood then had a cross bolt passed through each end, and was suspended, to try what weight it would bear before it could be pulled asunder length-wise. To facilitate the experiment, a portion of the middle of this two-inch piece was turned down in a lathe, and afterwards filed to a quarter of an inch square. It was by estimate determined, after it broke—what was its direct cohesion on the square inch.

The trials were made on Blue Gum, Swamp Gum, and Stringy Bark—on green specimens, and on others which had been seasoned under varied circumstances, and for different periods. The following is a condensed synopsis of the mean of all these experiments:—

[Table No. 1.]

No. of Expts.	Woods.	Spc. Gravity.	Weight and Deflection. * lbs.	inches.	Breaking weight lbs.	Ultimate Deflection. Inches.	Direct Cohesion on sq. inch lbs.
31	Morung Saul	947	349	1.09	881	1.128	
3	Teak	745	300	1.151	938	4.32	15.550
3	Poon	579	150	.822	846	5.91	14.787
3	English Oak	969	150	1.530	450	5.90	9.836
3	Ditto	934	200	1.280	637	8.10	10.853
3	Canadian Oak	872	225	1.080	673	6.	11.428
3	Dantzig Oak	756	200	1.590	560	4.86	7.386
3	Adriatic Oak	993	150	1.430	526	5.73	8.808
3	Ash	760	225	1.266	772	8.92	17.337
3	Beech	696	150	1.026	593	5.73	9.912
3	Elm	533	125	1.685	386	6.93	5.767
3	Pitch Pine	660	150	1.134	622	6.	10.415
3	Red Pine	637	150	.735	511	5.83	10.000
3	New England Fir	553	150	.931	420	4.66	9.947
3	Riga Fir	753	125	.870	422	6.	10.707
	MR. MITCHELL'S EXPERIMENTS.						
15	Blue Gum	1031	492	1.650	1031	6.30	29.743
3	Ash or Swamp Gum ‡	978	366	1.50	784	5.91	17.954
9	Stringy Bark	991	417	1.625	867	5.07	23.443

* Whilst elasticity remained perfect.
‡ Only used for Splitting Timber.

By this table it will be seen that Blue Gum will sustain about double the weight of English Oak before it breaks, and will even recover its elasticity after bearing a weight at which Oak will break. Its mean cohesive power beyond Oak is nearly, but not quite, in the proportion of 3 to 1. Mr. Mitchell states in his paper that, "The specimens experimented upon, were chosen because their ages were vouched by the Gentlemen supplying them, and not on acccunt of their being specially calculated to sustain great weights. Pieces could I have no doubt be found capable of bearing greater weights than any I have recorded;" and adds as the result of his experiments, "The strength and elasticity of the Blue Gum exceeds generally those of all woods hitherto tested." There are probably many such superior pieces to be found in the Exhibition collection.

The result of these carefully conducted experiments has been completely borne out by observation in these colonies, whenever that wood has been severely tried, which fact the used and seasoned specimens now in the Trophy will go far to demonstrate. It is to be regretted that the same tests have never been applied to some other Tasmanian woods, such as She Oak, the light and tough Huon Pine, (of which the Whaleboats are built) and the Peppermint wood, both of which latter appear to be nearly impervious to atmospheric influences. The British Government possesses in the International Exhibition ample means of testing practically the Blue Gum, and comparing it in various shapes and conditions with other woods of first-class character. It may not, perhaps, be improper here to suggest that the appointment of a Commission of Enquiry to examine and report on the various woods in the Exhibition, might possibly eliminate results of even National importance, now that a supply of British Oak can no longer be relied on. In another quality for which British Oak is distinguished, it is believed that Blue Gum excels. It has been said that Oak is "less likely to rend, to break across, to splinter with common shot, than any other wood." Blue Gum is essentially a tough wood, the maul-heads, wheel-fellies, and boat-keels made of it, appear to be almost indestructible, and it is believed that it would stand the shot test well. In the possession of the Tasmanian Commissioners in London, is part of the head of a Blue Gum pile, of which about two inches deep of the bruised head was sawn off after the pile had been driven into the earth. This portion of the pile had received 200 blows from a driving ram weighing 21 cwt., 27 feet drop; and the toughness of the small portion which had to be cut off will fully attest its suitability for such purposes. A wood so tough and elastic, which splinters so little, *must* be valuable for constructing railway carriages. It is constantly used for making ordinary carriages and other vehicles in Tasmania.

The superiority of Tasmanian woods, particularly the Blue Gum, having thus been carefully demonstrated by experiment, and amply corroborated by the experience of their durability; it remains to be determined whether they can be supplied of the large size, and shapes required—say for ship-building? The structure of the Trophy, which is mostly formed of ordinary market timber, or of such sample timber as can be supplied in almost any quantity—will afford an answer to this question.

The Octagonal column, is formed of eight spars of Blue Gum, Stringy Bark, White Gum, Silver Wattle, Blackwood, and Sassafras.* The eight sides of this column are formed, at the base, by eight large planks set on end, of Blue Gum and Stringy Bark, from Dr. Crowther's Timber Establishment, at Oyster Cove. The thickness of the Trees from which these planks have been taken will be seen at once by persons conversant with timber. The heart of Tasmanian trees is nearly always unsound. In these planks, as in all planks used in the Colony for ship-building, the heart is cut off, and the width of the plank shows the size of the tree—outside of the heart. To show the length of which Ship timber can be obtained, planks have been sent home of Blue Gum, measuring 90ft., and of Stringy Bark, measuring 80ft. in length, of equal width and soundness throughout.

Samples of other ship timber form the base of the Trophy—which is thus constructed:—Five planks, (20ft. long) of Blue Gum, Stringy Bark, Blackwood, and Myrtle, the two former being fitted for ship-building, and the two latter for cabinet work, are first laid down. Placed across these, are ship's keel-pieces (10ft. long, squared,) of Blue Gum, and Stringy Bark. Immediately on these lie, transversely, joists of Stringy Bark, covered with ordinary flooring boards of the same wood. The frame-work of the Pedestal placed on this floor is composed of Blue Gum, White Gum, and Stringy Bark. The joists, quartering, and flooring boards of the Pedestal platform are also of Stringy Bark. The centre piece of the spiral staircase is formed of a spar of plain Huon Pine, the stairs being made of this free-working and almost imperishable wood. These samples will show what Tasmania can supply of plain timbers. Of large ship's knees—the want of which has even caused a modification of British naval architecture—an unlimited supply can be obtained from Tasmania, where the stumps of the large trees which might supply them are left to rot after the tree has been cut up. These are also shown, in the angles of the Pedestal frame, of various conditions as to seasoning. A large Blue Gum knee, and also a Blue Gum crook have been exposed to the open air nearly ten years, in the ship-yard of Mr. McGregor. In other angles of the frame are three very fine ship's knees from Tasman's Peninsula, exhibited by Mr. Boyd. There are also three smaller knees, a Blackwood crook (for curved bannister work), and a fine Huon Pine knee, in other angles of the Trophy. In the interior of the Pedestal are also some railway sleepers of Blue Gum and Stringy Bark, and pieces of White Gum, or Gum-topped Stringy Bark, 12 x 6, 12 feet in length, contributed by Dr. Crowther, from Oyster Cove, and by Mr. James Boyd, from Tasman's Peninsula—together with some sleepers of Blue Gum and Peppermint wood shown by the Commissioners. The split palings and roofing shingles here displayed are also fine specimens, varying in length from 5 feet to 15 feet, and in breadth from 6 inches to 24 inches. These are

* The Botanic names of these woods, which are here omitted for the sake of brevity, will be found in the Appendix, in a paper on the Vegetable products exhibited by Tasmania, by the Hon. W. Archer, M.H.A., F.L.S. Specimens of the leaves and blossoms, &c., can be referred to in an Herbarium in the Exhibition, prepared by James Boyd, Esq., Civil Commandant, Port Arthur.

specimens of the ordinary splitting qualities of Swamp Gum, which Wood is valuable for this purpose, but is never used for any other. A longitudinal section of the Swamp Gum plank, from Port Arthur, exhibited by Mr. Boyd, will serve to show the extraordinary length and size of Tasmanian timber. The plank from which this section was taken measured 230 feet in length. No available ship could be got to take it to London, whole. The section has consequently been divided into 20 feet lengths, in such a way that the brand cut across shall in each case bear evidence of the former connection of the pieces severed. These large specimens, and some others which could not be sent in time, prove that Tasman's Peninsula with its tram-way and excellent harbour at Port Arthur, and its large forests of these valuable timbers—is well calculated for a timber supply station to the Imperial Dockyards in England. The finest specimens of ship's knees are all from Port Arthur, which, together with Dr. Crowther's establishment at Oyster Cove, have supplied nearly all the best shipping and railway timber now exhibited.

The attention of Railway Engineers is particularly invited to these durable woods, which it is believed can be supplied at a price which would render their use much more economical than the softer woods which have so frequently to be renewed. By the estimate (in 1854) of the late Robert Stephenson 2,800,000 railway sleepers required renewing every year, out of the 36 millions of sleepers in use in Great Britain. A Blue Gum, or Stringy Bark, or Gum-topped Stringy Bark, or Peppermint wood sleeper, would, under the most trying circumstances, last from fifteen to twenty years, and under ordinary or favourable circumstances might last three times that period. The sleepers now in use require renewing, according to Mr. Stephenson, every twelve or fourteen years. It is estimated that this quantity requires the wood of 7,000 acres of English forest land annually, whilst better woods are growing in the wild lands of Tasmania as common as weeds.

Of Ornamental Woods the Trophy furnishes a great variety suited for cabinet work. The Myrtle tree (so-called) of which Tasmania contains immense forests, from its richness of tint and varied venation is well suited to this purpose. Other woods, as Blackwood, Muskwood, Huon Pine, Dogwood, Sassafras, Pinkwood, Native Laurel, She-oak, &c., offer a variety of selection in tint and figure, in which the ingenious cabinet-maker will find ample scope for tasteful innovation. The specimens of these woods exhibited by the Commissioners are the following :—

	Specimens.
Muskwood (*Eurylia argophylla*)	30
Silver Wattle (*Acacia dealbata*)	24
She-oak (*Casuarina quadrivalvis*)	25
Native Cherry (*Exocarpus cupressiformis*)...	4
Ironwood (*Notelea ligustrina*)	8
Dogwood (*Bedfordia salicina*)	8
Sassafras root (*Atherosperma moschata*)	10
Native Laurel (*Anopterus glandulosa*)	15
Native Box (*Bursaria spinosa*)...	6

Stringy Bark Root (*Eucalyptus gigantea*)...	5
Blackwood (*Acacia melanoxylon*)	30
Gum Root (*Eucalyptus globulus*)	10
Native Pear (*Hakea lissoperma*)	2
Honeysuckle tree (*Banksia Australis*)	6
Pittosporum (*Pittosporum bicola*)	10
Prickly Wattle (*Acacia verticillata*)	10
He-oak (*Casuarina suberosa*)	3
Huon Pine (*Dacrydium Franklinii*) (planks in cases)..	4

The export of Timber from Tasmania in 1860, principally to the Colonies, amounted to £73,726. The demand has generally fluctuated with the success of gold mining in Australia. In 1853 this item of export amounted to £443,000, when a pair of sawyers were known to earn nearly £40 in one week.

WHALE FISHERY.

This branch of Colonial Industry, which the Trophy is also intended to illustrate, has nearly regained the prominence in Tasmanian estimation which it occupied before the derangement of all industrial pursuits by the Gold Discoveries. The Fishing Ground of the Tasmanians reaches from their own shores to the Antarctic Regions—and is sufficiently well stocked to attract a large number of American Whale-ships, who frequently discharge, provision, and refit, at Hobart Town. There are now 25 vessels, with an aggregate tonnage of 5,746 tons, engaged in Whaling, from the Port of Hobart Town. The quantity of Sperm Oil and Head Matter from the Southern Whale Fishery exported in 1861 amounted to 710 tuns, worth about £85 per tun, or £60,350. The greater portion of Tasmanian-caught Oil is sent to England *via* Melbourne, and thus appears amongst the Victorian exports. The number of whale-boats attached to these 25 vessels is 81 in use, and 131 including spare boats. The boats suspended from the Trophy are two of such boats—perfectly fitted with all gear, except line and oars, as when starting to capture a whale. Nobody who has not experienced the capabilities of the Tasmanian Whale-boats, manned with a good crew, can form any just conception of their behaviour in a rough sea. Each boat, such as those exhibited, when fitted with line, oars, &c., complete, costs about £70. The 131 boats of the little Tasmanian Whaling fleet represent a capital of £1,750, and find employment for about 700 men.

Specimens of the Oil of the Sperm Whale, Black Whale, Black Fish, Porpoise, &c., together with the Head Matter of the Whale, and the Whalebone of the Black Whale, will be found in the Trophy. The jaws of the Sperm Whale forming the apex of the Trophy (from two of Dr. Crowther's ships) will give some notion of the size of the fish which the crews of these boats have to capture. One of the Whales to which those jaws belonged, produced £1,150 worth of Oil and head matter, and the other £900 worth. It is not a very unfrequent occurrence for a whale to bite asunder one of these boats, when it is approaching to harpoon him—

an operation requiring considerable nerve, strength, and skill in boat management. Dr. Crowther recently had two boats destroyed in this way, by the same fish.

Whaling ships are usually fitted out on what is called the "lay" or share system—by which every man connected with the venture profits in proportion to the extent of his risk, and his more or less onerous position among the crew. The owner risks the ship and the outfit for a cruise of twelve or thirteen months. The officers and crew risk their lives, their time, and their labour. A ship of 250 tons register, with three boats in work, will be worth when fitted for sea, about £5,000. Should this vessel obtain 50 tuns of Sperm Oil, worth say £4,000, at £80 per tun, this sum of £4,000 would be thus divided :—

	£	s.	d.
Share of Captain	290	10	0
First Mate	187	8	0
Second Mate	80	0	0
Ship-keeper	31	0	0
Cook	31	0	0
Steward	31	0	0
3 Boat-steerers, £31 each	93	0	0
18 Men, £25 each	450	0	0
	1,193	18	0
Outfit, provisions, &c	1,500	0	0
Owner's risk, and wear and tear of ship	1,306	2	0
Total	4,000	0	0

This pursuit is not probably more remunerative to able seamen on the average than the common rate of wages, but to "ordinary" and "green" hands it is a good naval school, and offers the chance of something much better. Sixteen whales, yielding an aggregate of 1,400 barrels, or 140 tuns of Sperm Oil, value £11,200—were recently taken in one day (December 7th, 1861), in the vicinity of the Chatham Islands, by American and Colonial Whalers. This single day's work, which is not unfrequently the product of an eighteen months' cruise by one vessel, gave a handsome profit to all engaged in the capture. On the other hand, in adverse seasons, Whalers occasionally (but very seldom) come home "clean," or altogether destitute of oil. Whale-fishing is sometimes attended with great hardship—but being looked on as a colossal aquatic sport, and combining the excitement of bold and perilous adventure with the contingency of a good prize, and promotion according to merit, it has always been a favourite pursuit with the young Tasmanians—from whom might be selected some of the smartest boatmen in the world. It may not improperly perhaps be mentioned, as an instance of the occasional demand in the emergencies of new communities, for business habits and self-reliance—that nine of the above twenty-five whalers belong to a lady,—who, having some years since succeeded to the Whaling business of her late husband, has subsequently conducted it with consummate skill—and it is gratifying to add, with commensurate success.

It would seem that the Southern Whale Fishery, now that the Whales have become more wild and shy, is destined to fall into the hands of the

Tasmanians, from the favorable position of this island as regards the Southern Ocean. No Whaling ships now hail from Adelaide, Melbourne, or New Zealand. In 1860 twelve Whaling ships belonged to Sydney, of which only three are now engaged in the trade. The Americans have to incur the increased expenditure of provisions, &c., of six unprofitable months out of the voyage—three months in reaching the Whaling Ground and three months in returning, and are consequently at great disadvantage as compared with Tasmania.

THE COAL-FIELDS OF TASMANIA.

Coal exists in nearly every part of Tasmania, of which a valuable collection has been made by Mr. C. Gould, Government Geologist, which will be found amongst the Tasmanian products. The main portion of the fuel used in Hobart Town is derived from Mines at New Town, in the close vicinity of the Capital, and from Tasman's Peninsula; but it is generally believed that Coal Beds of far greater value than those which have been worked, principally on account of their easy accessibility, exist in other parts of the Island. The series of specimens from Mount Nicholas will illustrate the Coal Bed to which public attention has recently been more particularly directed. The seam of Coal which crops out at various points on the side of Mount Nicholas, locally known as the Killymoon Seam, overhanging Break o' Day Plains, at a height of about 500 feet—can be worked at an adit level, is distant nine miles from the Port of Falmouth, is highly bituminous, and it is believed is well suited for steam, gas, and domestic purposes. The same Seam crops out near Fingal and at various other parts, but the main Seam is that now illustrated, by samples from different portions of it. This Coal Bed is estimated to occupy an area of about 14 square miles, on the Northern side of the Break o' Day Plains. Various other portions of the Bed are equally accessible, but although they are mostly bituminous, they are inferior in thickness to the Killymoon Seam. Bituminous Coal samples are also furnished from the Coal Bed of the Douglas River and from Long Point, both on the East Coast. The Coal from both these Districts is good, the Coal Bed from which they are taken is said to extend over an area of about 15 miles, and the seam at the Douglas River to be above eight feet thick. At Long Point it is 6 ft. 10 inches thick, very bituminous, and within an easy distance of the shipping place. This Coal is rapidly rising in public estimation, and a Company has just been formed to work it. Beds in the Mersey River have also been found, and, although limited in quantity, have been profitably worked, as they are easy of access. The coal is very bituminous, is used by the coasting steamers and in Launceston, and has been recently exported to Victoria.

The Bituminous Coal from Hamilton is said to be very good. It lies about 40 feet deep, in a seam 4 ft. 6 in. thick, and has been used, and favourably reported on, by the Derwent steamers, from the shipping place of which, at New Norfolk, it is about 20 miles distant.

The Anthracite Coal is abundant on the southern side of the Island, and specimens are exhibited from New Town, Tasman's Peninsula, Adventure Bay (Bruni Island), and Three Hut Point in D'Entrecasteaux Channel. Four collieries are represented in the specimens from New Town, near Hobart Town. The Coal at Tasman's Peninsula has been worked for 25 years and largely used in Hobart Town. The seam is from 3 ft. 6 in. to 4 ft. 6 in. thick, is worked by a shaft 25 yards deep, and within about 100 yards of the water's edge. A new seam has just been struck here, which is said to be of the highest quality.

The Coal formation on the South side of the Island extends round the mouth of the Huon to S. W. Cape, within which range many deposits have been discovered. With a supply so varied and extensive, some localities will probably be soon found to possess coal of first-rate character, easy of access. Private capital is seldom sufficiently in excess in the colonies to admit of its being relied on as the source of development of the mineral wealth which Tasmania doubtless possesses. The matter is one of national as well as colonial importance, now that steam vessels may be expected to take a very prominent part in any future maritime war, and the attention of the Colonial Government has of late been specially directed to it. The labours of Mr. Gould, the Government Geologist, have been almost concentrated on this matter recently, the Parliament have voted a sum of money for its investigation, and a Commission has just been gazetted (March, 1862) to take charge of experiments on, and the selection of some of the best specimens, easily and abundantly procurable, to be tested in bulk by the Admiralty authorities in England.

MINERALS AND METALS.

The general character of the building stone of Tasmania may be ascertained from inspection of the series of illustrative specimens from different parts of the Island—which J. E. Calder, Esq., Surveyor-General of Tasmania, has been at great pains to collect. Tasmanian stone has been used in the erection of Public Buildings in Melbourne, as the best and most available in this part of the Globe. The church-font, grindstones, &c., of the stone of Point Ventenet, Taylor's Bay, Bruni Island, will shew the qualities of the stone which was exported in 1860 to the value of £5,095, principally to Melbourne. Amongst the mineralogical collection, some black and white marble from the Florentine Valley and from Chudleigh, where it is burned for the common purposes of lime—show by their texture and polish that Tasmania is not without the means of ornamental architecture. The Topazes from the Islands in Bass's Straits, when properly mounted, show great clearness and brilliancy. Some specimens of Serpentine veined with Asbestos from the Asbestos Hills, are found to bear a high polish.

GOLD.

The small portion of Tasmanian Gold exhibited has been collected by James Grant, Esq., of Tullochgorum, within a few months, from the few diggers who are surfacing and prospecting about Fingal. More Gold from that

District is in the Hobart Town Banks, and might have been purchased for exhibition, but although, according to geographical and geological analogies, Tasmania *ought* to possess the precious metal in abundance—it has not yet been discovered in paying quantities, and the portion exhibited will give a fair notion of all the gold hitherto found. To stimulate exploration the Colonial Government has just offered a reward of £20,000 for the discovery of a payable Gold Field. Gold has been found, principally of the character of that exhibited, in many parts of the Island which are widely distant from each other. There are abundance of Quartz Reefs in the Fingal district more or less auriferous, some of which will probably eventually be found to pay for the crushing. Even if Gold should never be found in paying quantities in Tasmania she need entertain no mean jealousy of the superior auriferous productions of the neighbouring Colonies, as a fair portion of their Gold *will* probably ever find its way to Tasmania in exchange for products which Australia cannot raise. The prosperity of the Gold Colonies must be indirectly, if not directly, reflected on Tasmania, who is thus bound up in her material interests with their continued progress and success.

Judging by the rate of production which has latterly prevailed, and the enormous extent of surface yet untried in the auriferous regions of Australia, it will be long before the supply of Gold shall be exhausted. But even Gold may be purchased too dearly. The discovery of a Gold Field attracts population only in proportion to the facility by which individuals may become rich; but if new Gold Fields are not continuously discovered—to keep up this standard of easy acquirement—the Gold-mining population soon over-run the average remunerating point, and the possession of a Gold Field may, in such case, prove rather "a mockery, a delusion, and a snare," than an element of solid and enduring prosperity;—necessitating heavy taxes and extravagant expenditure—and entailing individual loss and public debt. Happily, both Australia and Tasmania possess, in unsettled Districts and undeveloped resources, ample means of employment, more profitable than Gold-digging—to which the surplus population of the Gold Fields may advantageously apply themselves. The Gold-miner, ever on the move, now at Ballarat, now at Port Curtis, now at Dunedin, feels little interest in anything beyond the canvas of his tent, or the bounds of his "claim"—which does not relate to Gold.

A gold digging population wholly or greatly dependent on the yield of the precious metal, must always be a restless, irresponsible, and unsettled one. Some years since (1857) in Victoria no less than 140,892 persons out of a population of 410,766, or upwards of one-third, were living in tents. In the election of 1860 in New South Wales, 3300 Gold-miners were qualified to vote for the Western Gold District, of whom 398 only went to the poll. Within 25 years 543,261 persons (rather more than her present population) came into Victoria, and during the same period 264,390 persons, more than one-half the immigrants, went out of that Colony. That Victoria has managed to retain one-half of her visitors speaks well for the colony, which has given them profitable employment more lasting than gold-mining, and which can advantageously set to work any further num-

ber of diggers who may find themselves "redundant" in the more settled occupations of rural industry, which have recently experienced a healthful impulse in Victoria. That most important Colony seems to have a better chance of sound progress, now that the population is rapidly undergoing the process of sifting and settling, than it had probably at any former period.

The average profit of Gold-mining will be shewn by the following comparison of the number of Miners employed, with the Exports of Gold at different periods, from Victoria, the most productive Gold Country in the World,—and the amount which fell to the share of each individual Miner. These returns are taken from the Official Statistics of Victoria, but the price fixed on is £3 13s. 6d. per oz., the price paid by the Melbourne Banks per oz. for standard Gold :—

[Table 2.]

Year.	Miners.	Gold Exported. Ounces.	Value at 73s. 6d. per Ounce.	Each Miner's Share.
			£	£ s. d.
1853	75,626	3,150,020	11,497,573	153 1 3½
1857	132,167	2,761,528	10,148,615	78 15 3½
1860	144,396	2,156,660	7,925,725	54 3 11
1861	165,463	1,939,079	7,131,153	70 9 8
1862 First ten Weeks.	96,682	300,476	1,104,249	(Estimated) 60 6 5

The result of the above table, as to the individual yield of gold, will hereafter be compared with the result of an equal amount of labour applied to Agriculture, Stock-keeping, and Horticulture.

OTHER METALS.

Galena and Copper Ore have been found in different parts of Tasmania, but not hitherto in any considerable quantity. Iron ore abounds all over the Colony. At Ilfracombe, eight miles from the Tamar, there are immense masses of rich ore, similar to that now exhibited, which will doubtless, some day, prove highly advantageous to the colony, in connection with the vast coal-fields of the East Coast. It is said to be nearly identical with the Brown Hematite of Mittigong, in New South Wales, the working of which has recently been discontinued in consequence of the great expense of transporting it over some seventy miles of land carriage to the sea. A Tramway is already in operation at Ilfracombe from the vicinity of the ore to the water's edge, which circumstance may possibly enable these "hills of iron," as they have been called, to be profitably worked, when the same description of ore, less favourably situated could not be made to pay.

Commissioner Bigge, who was deputed to report on the resources of these

Colonies in 1823, and whose report was printed by the House of Commons, thus writes on the Iron ore of Ilfracombe :—

"At the distance of eight miles from Port Dalrymple (the Tamar) in "Van Diemen's Land, considerable quantities of iron ore have been dis- "covered on the surface, which upon analysis in this country, have been "found to consist of pure protoxide of iron (similar to the black iron ore "of Sweden) and furnishing a very pure and malleable metal."

AGRICULTURAL, PASTORAL, AND HORTICULTURAL PRODUCTS.

Count Strzelecki in his excellent work on New South Wales and Van Dieman's Land, draws a comparison between the Agricultural capabilities of the two countries on scientific data, founded on the origin of their respective soils. Exploration and analysis had shown that the crystalline rocks (such as granite) as compared with the sedimentary rocks formed in the area of N. S. Wales a proportion of 3 to 1, whilst in Tasmania they were as 7 to 1. Of rocks containing more than 60 per cent. of Silica as compared with rocks having less than 60 per cent., N. S. Wales has a proportion of 4·1 to 1, whilst in Tasmania the case is reversed—the sixty-per-cent. rocks forming a proportion of only 1 to 3. Strzelecki traces this difference to volcanic agencies, which have been more prevalent in Tasmania than on the Australian Continent. He adds :—

"Indeed, the torn, rugged, furrowed, and contorted surface of the former colony bears ample witness to the formidable revolutions produced by the eruptive greenstone and basalt, overwhelming in succession different members of the series, which then composed the consolidated crust, and sweeping away and burying a vegetation, of which no living traces are now left on the island.

"But these changes have served only to render this island one of the most eligible spots on the face of the globe for the pursuits of agriculture : the irrupted greenstone yields an excellent soil, and the zigzag course of the chain of mountains forms naturally flat-bottomed valleys, between which rises a table-land about 3800 feet, enclosing in crateriform lakes five reservoirs of water, covering, if the surface were united, an area of 200 square miles, and capable of irrigating all the adjacent lands available to cultivation."

This pains-taking and indefatigable explorer infers, as the result of his examinations, that Tasmania is destined to become chiefly an Agricultural Country—and Australia a Pastoral one.

After describing the Pastoral character of New South Wales, Strzelecki thus estimates :—

"In Van Diemen's Land, the agricultural districts are superior in appearance to those of New South Wales. The details of farms and farming are better understood and defined, and the practical results are such, that no country reminds the traveller so much of the *old one* as Van Diemen's Land. There, the tasteful and comfortable mansions and cottages, surrounded by pleasure-grounds, gardens and orchards, the neat villages, and

prominently placed churches, forming as it were the centres of cultivated plains, divided and subdivided by hedgerows, clipped or brushed, and through which an admirably constructed road winds across the island, are all objects which forcibly carry back the mind to similar scenes of rural beauty in England and Scotland."

Those observations, have been very much corroborated by subsequent experience in respect to Agriculture. Tasmania was for many years subsequent to the settlement of South Australia "the Granary of the Australias," and she has continued to export grain in considerable quantities both to Victoria and New South Wales.

Unquestionably the great forte of these latter Colonies lies in their Pastoral capabilities.

That Tasmania has great agricultural capabilities is a fact of which indisputable proof can be given. The increase of cultivated acres has steadily kept pace with the increase of the population. The following tabular comparison (Table 3) shows that at two points in our history, distant from each other nineteen years, the proportion of cultivated land per head of the population was almost precisely the same—namely, two and a half acres. It must not be forgotten that this period comprised the shock of the Gold discoveries, which caused for a time a disruption of all industrial pursuits.

[Table 3.]

LAND CULTIVATED.

Year.	Population.	Cultivated Land.	Quantity per head. Ar. Rd. P.
1841.	53,000	132,614	2 1 38
1860.	87,775	218,315	2 2

The increase of acres has been accompanied by a corresponding increase of yield per acre. The two first items of the following table (Table 4) will show the comparative yield of Tasmania for the two years above named. It may prove useful also, by way of comparison, to add the yield, for 1860, of Victoria and New South Wales.

As in all new countries, much rough and imperfect farming exists in Tasmania—but improvement has proceeded rapidly, and there are numerous farms in this Island which would reflect no discredit on England herself. Guano has been extensively applied, the use of the Threshing Machine has become universal, the Reaping Machine has been greatly used in the Northern District, and a spirit of progressive enterprise is everywhere visible. The Northern and the Midland Agricultural Societies have annual Cattle Shows and matches which form great centres of attraction, and their prizes and exertions have no doubt effected great good. It is in contemplation to establish an Agricultural Society also in the Southern District, where the want of one has been long felt.

[Table 4.]

AGRICULTURAL PRODUCE, COMPARATIVE YIELD PER ACRE, IN TASMANIA, VICTORIA, AND NEW SOUTH WALES—OF WHEAT, BARLEY, OATS, AND POTATOES.

Year.	Wheat.			Barley.			Oats.			Potatoes.		
	Acres.	Bushels.	Per Acre.	Acres.	Bushels.	Per Acre.	Acres.	Bushels.	Per Acre.	Acres.	Tons.	Per Acre. Tons. Cwt.
Tasmania. 1841	63,734	881,318	13	9,010	167,458	18	16,471	250,786	14	4,185	14,138	3 7
1860	66,450	1,415,896	21	6,238	126,605	20	30,303	926,418	30	7,621	33,589	4 8
Victoria. 1860	107,093	2,296,157	21	4,102	98,433	24	90,167	2,533,627	28	27,622	48,567	1 1
N.S. Wales. 1860	128,809	1,581,597	12	2,960	39,901	13	6,534	98,814	15	9,298	28,127	3 1

It will be here seen—that in 1860 Tasmania grew nearly double the quantity from a less number of acres than she produced in 1841.

It is difficult to give a notion of the profits of Husbandry, but the following estimate (Table 5) may convey a rough idea of its results in Tasmania. The value of the year's crop for 1860 may be first taken. The next item will be the value of Meat consumed by the population, allowing 10lbs. weekly (at 3d. per lb.) to every man, 6lbs. to every woman, and half these quantities for Juveniles under 20. Then must be added the estimated consumption of Butter, at the rate of 1lb. weekly (at 1s.) for every man, ½lb. for every woman, and ¼lb. for each minor, together with one-tenth of these quantities of Cheese. If we add the amount of rural products exported, we shall get at nearly the value which is raised by the "Farmers" (who number 4,655), the "Stockholders," (137), and the "Farm Labourers" (8853) in the last census. No account is here taken of the consumption of veal, pork, bacon, eggs, milk, fruit, and vegetables—as these may be left to balance our import of meat from Gipps' Land.

[TABLE 5.]

Crops grown. 1860.	Acres.	Bushels.	Price.	Value.
			s.	
Wheat	66,450	1,415,896	7	495,563
Barley	6,238	126,605	5	31,401
Oats	30,303	926,418	3 6	162,123
Peas	1,047	19,313	5 8	5,472
Beans	197	3,183	7 6	1,193
Potatoes	7,621	33,589 tns	120	201,534
Turnips	1,216	5,829 tns	74	21,567
English Grasses	6,125	69,130 bu.	8 6	29,380
Tares	262	3,866 bu.	9	1,739
Carrots	288	2,593 tns	80	10,372
Onions	186	1,279 tns	11	14,069
Hay	31,837	62,318 tns	90	280,431
Mangold	1,256	11,262 tns	95	53,495
Tobacco	146	299,358 lbs.	8	9,978
Meat (estd. consmp.)	.....	26,260,000 lbs	.....	328,250
Butter & Cheese do.	.....	2,645,500 lbs	.....	132,275
Bark	EXPORTS.	.....	.....	8,240
Butter and Cheese..	.....	.....	.....	7,054
Tallow (say)	.....	.....	.....	492
Fruit and Preserves.	.....	.....	.....	52,988
Hides and skins	.....	.....	.....	4,835
Hops	.....	.....	.....	4,390
Cattle	.....	.....	.....	535
Horses (No.)	1,079	.....	£39	42,065
Sheep	.....	.....	.....	495
Poultry	.....	.....	.....	135
Trees, Plants, & Seeds	.....	.....	.....	2,018
Vegetables	.....	.....	.....	475
Wools	.....	.....	.....	370,427
	Total			£2,272,991

How ought this sum to be divided? Let the 8855 Farm Labourers be first paid £1 10s. per week each, namely, £690,690, out of this total sum. There will still remain a surplus of £1,582,502, which divided amongst the 4,792 Farmers and Stockholders, will give to each man a share of £330 3s. 11d. Dividing the total produce between master and man, all round, each individual's share would amount to £166 11s. 1½d. It will be recollected that the average yield from Gold-digging in Victoria has, during the last four years, never reached that sum for each miner. (Table 2.)

There is nothing dazzling in the state of things revealed in the above table—but it demonstates a sound, permanent, and remunerative measure of success, if not a brilliant one. It comprises the most favorable conditions for the establishment and progress of a Yeoman population, and, moreover, with our liberal land regulations, and vast unsettled country, the same system is susceptible of almost unlimited extension.

In Victoria, where Native Agriculture is greatly fostered, (£8,000 having lately been voted for a Model Farm,) and has recently much increased, the very best lands only are yet cultivated. New South Wales, in Agricultural yield, appears to be about equal to the point reached by Tasmania in 1841. (Table 4.) There is, indeed, still scope for the industry of the corn-exporting Colonies—South Australia, and Tasmania. In 1860 neither New South Wales nor Victoria grew half enough bread-stuffs for her own consumption.

The fact must not be forgotten in this comparison, that in some respects the Australian Colonies have considerable advantages over Tasmania. They can grow to greater perfection the semi-tropical Maize, the Orange, the Grape, and the Olive; and may afford to be excelled by Tasmania in providing the Cereals, the Potato, the Gooseberry, the Raspberry, the Strawberry, the Apple, and other similar indigenous products of more temperate climes.

The Grain and Flour of Tasmania in the Exhibition, will best speak for themselves. In the Great Exhibition of 1851 the Tasmanian Wheat was declared by the judges to be, after that of South Australia, the best in the world. It was equally commended at the Paris Exhibition in 1855. A sample of Tasmanian Wheat which weighed 70lbs. to the bushel, and one of Oats which weighed 49lbs., are to be seen at the Crystal Palace, Sydenham. Every other description of British agricultural produce succeeds in Tasmania almost equally well.

PASTORAL.

That Tasmania does not compare badly with the neighbouring Colonies in Pastoral capabilities, will be seen by the following tables, showing their respective number of Horses, Cattle, and Sheep, per head of Population.

1860.	Victoria.	N. S. Wales.	Tasmania.
Horses	69,288	251,479	21,034
Cattle	683,534	2,408,586	83,366
Sheep	4,794,127	6,119,163	1,700,930

LIVE STOCK, TO EVERY HEAD OF THE POPULATION.

1860.	Victoria.		N. S. Wales.		Tasmania.	
	Popl.	Live Stock.	Popl.	Live Stock.	Popl.	Live Stock.
Horses	7	1	1	0½	4½	1
Cattle	1	1½	1	6½	1	0⅔
Sheep	1	10½	1	17	1	18¼

If the official returns are correct, New South Wales stands first in Horse-flesh, Tasmania second, and Victoria third.

In Cattle, New South Wales again stands first, Victoria second, and Tasmania third.

In Sheep, Tasmania stands first, New South Wales second, and Victoria third.

Amongst the herds and flocks of Tasmania may be seen every superior known breed, which have been spiritedly imported, regardless of expense, from Great Britain, Germany, Spain, and (the Brittany and Normandy dairy cattle) from France.

The Tasmanian cart horses are famed throughout Australasia. 1079 horses were exported in 1860, of £39 average value.

Amongst Tasmania's Staple Exports the raising of Wool is unquestionably her most productive industrial pursuit. Wool-growing has greatly benefitted the Colony, and has directly or indirectly created many large private fortunes. Tasmanian Wools have produced the highest price of any Colonial Wools which have reached the English market; and gained many prizes and commendations in 1851 and 1855. The fine samples exhibited will tell their own tale.

HORTICULTURE.

The Climate and Soil of Tasmania are admirably calculated to grow and to improve all the best fruits of the Temperate Zones. Experienced Horticulturists who come out from England are astonished to see six years gained in the maturity of Pear-trees, three years in Apple-trees, and other fruit trees, whilst the Raspberry, Strawberry, Currant and Gooseberry flourish like indigenous plants. Specimens of a year's short of Rose, Apple, and Plum-trees, (exhibited by Mr. John Abbott,) will shew their great rapidity of growth. It is no uncommon occurrence to see young Apple-trees in the Huon District the grafts of which have grown six feet in the year of grafting. The Apple and Pear far surpass those of Great Britain in size and colour, and are very little inferior in flavour. This inferiority will probably disappear—as the lands of the Country become as thoroughly impregnated with phosphates, alkalis, and organic matter as those of England—and the inferior sorts become superseded by the choicer. The Botanic Gardens of the Royal Society of Tasmania, extending over twenty acres of ground, (Mr. Abbott Superintendent,) have done much towards the introduction and propagation of the best sorts of Fruit-trees; and many intelligent English Gardeners and Horticulturists who have settled in Tasmania, have done much more. There are from 100 to 120 varieties of known Apples now in Tasmania, including most of the best sorts cultivated in England, America, France, Germany, and Italy. A few significant facts will convey to English Horticulturists an idea of Tasmania's capabilities in Fruit-growing. All the sorts described in English Catalogues as "below medium" size, have grown far above "medium;" and those so described as "medium" here attain the catalogue designation of "very large." The models exhibited of the different Tasmanian Apples in wax will afford Horticulturists the means of satisfying themselves on this point. The Autumn Fruits, from which these models were taken, were first cast in Plaster of Paris, and the wax models are made from these casts. The models are, therefore, perfect *fac similes* of the specimens as regards shape and size; although it is feared that the injurious effects of a sea voyage will defeat the attempt to give a fair representation of their colour. The *Esopus Spitzenberg*, and the delicate Italian Apple *Male Carle*, will grow and ripen their fruit here without the protection of a wall. Many of the best old sorts which are dying out in England thrive well here. The Golden Pippin seems to have taken a new lease of life. The Scarlet Nonpareil is greatly improved.

In 1860 Tasmania exported 118,810 bushels of Apples, at prices ranging from 5s. to 15s. per bushel. Some of the Golden Harvey, Pearson's Plate, and Scarlet Nonpareil, from this Island, have sold at the Mauritius at from 2s. 6d. to 4s. per pound.

About sixty good sorts of Pears are cultivated in Tasmania—where many of the tenderest kinds, such as the *Beurre Bretonneau*, ripen their fruit in perfection, without shelter, and have the most delicious flavor. Tasmanian *Beurre Diel* Pears have sold in Sydney at 2s. 6d. each. Indeed, there is always likely to be a demand for Tasmanian fruit in Australia—where the droughts and hot winds sometimes affect the fruits of temperate climates, and

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Amongst Tasmania's Staple Exports the raising of Wool is unquestionably her most productive industrial pursuit. Wool-growing has greatly benefitted the Colony, and has directly or indirectly created many large private fortunes. Tasmanian Wools have produced the highest price of any Colonial Wools which have reached the English market; and gained many prizes and commendations in 1851 and 1855. The fine samples exhibited will tell their own tale.

HORTICULTURE.

The Climate and Soil of Tasmania are admirably calculated to grow and to improve all the best fruits of the Temperate Zones. Experienced Horticulturists who come out from England are astonished to see six years gained in the maturity of Pear-trees, three years in Apple-trees, and other fruit trees, whilst the Raspberry, Strawberry, Currant and Gooseberry flourish like indigenous plants. Specimens of a year's short of Rose, Apple, and Plum-trees, (exhibited by Mr. John Abbott,) will shew their great rapidity of growth. It is no uncommon occurrence to see young Apple-trees in the Huon District the grafts of which have grown six feet in the year of grafting. The Apple and Pear far surpass those of Great Britain in size and colour, and are very little inferior in flavour. This inferiority will probably disappear—as the lands of the Country become as thoroughly impregnated with phosphates, alkalis, and organic matter as those of England—and the inferior sorts become superseded by the choicer. The Botanic Gardens of the Royal Society of Tasmania, extending over twenty acres of ground, (Mr. Abbott Superintendent,) have done much towards the introduction and propagation of the best sorts of Fruit-trees; and many intelligent English Gardeners and Horticulturists who have settled in Tasmania, have done much more. There are from 100 to 120 varieties of known Apples now in Tasmania, including most of the best sorts cultivated in England, America, France, Germany, and Italy. A few significant facts will convey to English Horticulturists an idea of Tasmania's capabilities in Fruit-growing. All the sorts described in English Catalogues as "below medium" size, have grown far above "medium;" and those so described as "medium" here attain the catalogue designation of "very large." The models exhibited of the different Tasmanian Apples in wax will afford Horticulturists the means of satisfying themselves on this point. The Autumn Fruits, from which these models were taken, were first cast in Plaster of Paris, and the wax models are made from these casts. The models are, therefore, perfect *fac similes* of the specimens as regards shape and size; although it is feared that the injurious effects of a sea voyage will defeat the attempt to give a fair representation of their colour. The *Esopus Spitzenberg*, and the delicate Italian Apple *Male Carle*, will grow and ripen their fruit here without the protection of a wall. Many of the best old sorts which are dying out in England thrive well here. The Golden Pippin seems to have taken a new lease of life. The Scarlet Nonpareil is greatly improved.

In 1860 Tasmania exported 118,810 bushels of Apples, at prices ranging from 5s. to 15s. per bushel. Some of the Golden Harvey, Pearson's Plate, and Scarlet Nonpareil, from this Island, have sold at the Mauritius at from 2s. 6d. to 4s. per pound.

About sixty good sorts of Pears are cultivated in Tasmania—where many of the tenderest kinds, such as the *Beurre Bretonneau*, ripen their fruit in perfection, without shelter, and have the most delicious flavor. Tasmanian *Beurre Diel* Pears have sold in Sydney at 2s. 6d. each. Indeed, there is always likely to be a demand for Tasmanian fruit in Australia—where the droughts and hot winds sometimes affect the fruits of temperate climates, and

although their growth be rapid and their size large—the flavor and keeping qualities are generally inferior to those of the more favoured sister Island.

The Pear Tree grows here to a large size. A *Bon Chretien* Pear Tree in the garden of Government Cottage, Launceston, is thus described by Mr. Wade: "It is as near as I can learn about 40 years old, 120 feet in circumference, 86 feet in height, and 8 feet in girth, 1½ feet from the ground. It is a handsome shapely tree, and has produced over 50 bushels of fruit in a season."

A *Bon Chretien* Pear Tree belonging to Mrs. Luckman, of Hobart Town, has also produced fifty bushels of fruit in a season. The models of the *Uvedale St. Germain* Pear exhibited will serve to show the suitability of Tasmania for these productions. The largest of these pears when gathered weighed 3lb. 5ozs. They were grown by Mr. Walker, Pittwater. 22,049 bushels of Pears were exported in 1860 at prices varying from 5s. to 15s. per bushel.

All the choicest sorts of Plums which require shelter in England, ripen freely as standards in Tasmania. Cherry Trees grow from stones as freely as Oaks from acorns in the Weald of Kent. All such are called here Kentish Cherries, and were sold last season at Franklin, Huon, at one shilling per pail-ful. About twelve of the best known varieties of the Cherry are cultivated here. The best strawberries attain an enormous size. Raspberries bid fair to become wild fruit. The Fig-tree bearing well without shelter. The Mulberry is hardy and prolific. About 40 varieties of Lancashire Gooseberries are in cultivation, and produce most abundantly.

The Walnut gains eight or ten years in bearing maturity. The Filbert grows and produces well. Peaches, Grapes, Apricots, Nectarines, Almonds, &c., although not equal to those of Australia—thrive and fruit largely, without unusual care, particularly on the Northern side of the Island, of the capabilities of which district specimens of Maize, Sorghum, &c., grown by Mr. Wade in the Launceston Botanic Gardens, are exhibited.

The total value of Fresh Fruits and Preserves exported from Tasmania in 1860 was £56,203, being nearly 12s. 6d. per head on the population.

Many fine Seedlings have been raised in the Colony, which all have the quality of Prolific bearing. Two Black Cherries, one of remarkable size and flavour, the "Claremont" and the "Heart of Mid-Lothian," and a Pear, having the qualities of the "Winter Nectis," but of superior size, have been raised by Mr. T. Giblin, and Seedling Apples by Mr. Beaumont, Mr. Stanfield, and other Amateurs. The Horticultural Shows in Hobart Town even excel those of the County Town of Kent. In the Grounds of the Hobart Town Botanic Gardens, and of enterprising Tasmanian Nurserymen, may be found nearly every sort of known European Fruit. A Bouquet of above twenty different sorts of Rose, in full bloom, was gathered in June, (the Tasmanian Winter,) and presented to the Commissioners by Mr. J. Abbott. The Fuchsia and Geranium become large Shrubs in Tasmania.

THE LAND SELLING SYSTEM.

The Tasmanian system of Land selling and granting is perhaps the most liberal of that of any British Colony. The Island is divided into the Settled District, which comprises about two-thirds of the Island, and the Unsettled District, which embraces about five millions of acres of the South Western and Western Coasts, including Port Davey and Macquarie Harbour. In the settled portion the buyer has his free choice of all unsold land at £1 per acre, the Town Lands only being invariably sold by auction. If he buy Town Lands he may pay off the amount by three yearly instalments—but if he should select Country Land, he is allowed to pay the price (if above £40) by eight annual instalments, one-fifth of the amount being added for interest. The account for the purchase of 100 acres would stand thus:—

	£	s.	d.
Sale price	100	0	0
One-fifth added for credit, 100 + 20	120	0	0
Deposit at sale, one-fifth of the whole: one-fifth of £120	24	0	0
Balance by eight instalments	96	0	0
Amount of each instalment	12	0	0

The small capitalist may in such case employ the larger portion of his capital in clearing and cropping his land and thus making it repay its own cost.

The system is still more liberal as regards the Unsettled Lands District. The country was originally settled by persons of consideration, military and naval officers and others, who received free grants, in proportion to their capital, and many of whose descendants now possess princely estates and incomes. The Legislature on the principle that it is better for the community to give land to those who will render it profitable than to let it lie waste, have wisely recurred to the free grant system in the Unsettled District. Any man may here select land, between 50 and 640 acres in extent, and will receive a free grant of one acre for every pound sterling that he may possess (in money, farming implements, sawing machinery, or stock), on the following conditions, namely:—That he reside on it for five years, and that within that time he shall have cleared, fenced, and cultivated five acres out of every fifty selected, or have erected buildings or machinery of £250 value for every fifty acres. The Governor may give more time, or grant a part of the land where the conditions have been partially fulfilled. Gratuitous leases in this district for not exceeding 10,000 acres, will be granted for ten years, on condition that the land be kept stocked with 100 sheep, or 20 head of cattle for every 1,000 acres. Any portion of such leased lot not exceeding 640 acres (which may contain a farmstead or other improvements), may be purchased at the rate of ten shillings per acre—payable by eight annual instalments, as in the Settled District. So much eligible land still remains surveyed, and ready for selection, however, within the Settled District—that only 1,804,520 acres have been yet taken up under this very liberal arrangement.

The progress of settlement since the existing Land selling Acts passed in 1858 has been more rapid as compared with the population than in the neighbouring colonies (Table 9); but there can be no question that the improved Land system has also even exercised a beneficial *social* influence

in Tasmania. The discovery of Gold attracted a large number of the floating labouring population to Australia, of whom the least eligible portion never returned. Those who did, earned high wages, and squandered much of their money in drunkenness, the fruitful source of crime. No man could buy a few acres of land except at public auction, and the sale of public lands fell to zero. No sooner was the system of free private selection and credit payments adopted (in 1858) than a more salutary system began to develope itself—the consumption of spirits gradually decreased as the sale of Land steadily increased. This progress, as shown in the following table, will interest alike the Statesman and the Philanthropist.

[Table 8.]

SPIRITS AND TEA CONSUMED, AND PUBLIC LAND SOLD.

Year.	Populaton.	Spirits consumd.	Per head of population.		Land sold.	Tea consumd.	Per head of population.
		Gallons.	gals.	pints.	£	lbs.	lbs.
1857	82,997	141,102	1	5	11,196	.....	
1858	84,080	127,431	1	4	52,364	268,358	3¼
1859	85,968	122,094	1	3¼	72,792	388,538	4½
1860	87,775	111,208	1	2	105,309	793,342	9*
1861	89,977	106,619	1	1½	100,962	357,341	3¾

* Enough was taken out of bond this year to partly supply the next. The average of the two years is 6lb. 6ozs. per head.

This diversion of expenditure from Spirits to Land and Tea, which has been quietly and steadily progressing during the last four years, is no doubt partly attributable to the improved morality of the people. The Temperance Societies have doubtless done much good, but the improvement has, probably, been mainly owing to the facility with which the provident labourer can settle on his own land. About 500 new homesteads, a large proportion of which belong to newly-arrived immigrants, have been founded within the last four years. The money thus expended in Land was not diverted from the Savings Banks, for it will be seen (Table 9), that the individual deposits for 1860 greatly exceeded those of both Victoria and New South Wales.

The consumption of 9¼ pints of spirits for every man, woman, and child of the population must still be deprecated as enormous, but this amount is below the consumption in other Colonies. During the gold excitement (1854), each individual in Victoria consumed on an average six gallons of spirits, and twelve gallons of beer, wine, and cider, within the year. Even in 1860 the average of Victoria was two gallons of spirits, and six gallons of wine, beer, and cider per head. The average for New South Wales was one gallon, 6¾ pints of spirits, with four gallons, 6½ pints of wine, beer, and cider.

POPULATION.

The totals of Population are given in Table 8. By the last Census (April, 1861), there were Males, 49,593; Females, 40,384. The Females preponderated at ages from one to two years, five to ten years, fifteen to

twenty years, and twenty to thirty years. The Males were in excess at all ages above forty. The married Males and Females were nearly equal, the single Males, 33,700; Females, 24,760. Five districts have decreased, and nineteen Districts (Agricultural), have increased. The total Population has increased one-ninth within the last four years, and one-fifth within the last ten years. Deducting children below about eight years old, there were only one-eighteenth part of the whole who could not write or read. In only one year (1858) out of the last four—the "Departures" have exceeded the "Arrivals."

COLONIAL STATISTICS.

The following table compiled from Official Public Documents will shew the position of Tasmania, in some important particulars, as compared with the two neighbouring Colonies.

[Table 9.]

1860	Victoria.	Per Head of Popula-tion.	New South Wales.	Per Head of Popula-tion.	Tasmania.	Per Head of Popula-tion.
Population . . .	548,412		348,546		87,775*	
Public Debt. . .	£ 12,196,915	£ s. d. 22 2 7	£ 3,830,230	£ s. d. 11 0 0	£ 399,560	£ s. d. 4 8 9
Taxation . . .	2,958,572	5 13 8	1,880,508	5 7 10	266,937	3 3 9
Mortgages on Land, Wool, and Stock	3,460,573	6 5 1	2,609,120	7 9 8	236,418	2 12 6
Savings Bank Deposits. . . .	484,519	0 16 2	357,639	1 0 6	222,107	2 9 4
Acres Cultivated .	358,727	A. r. p. 0 2 24	260,708	A. r. p. 0 2 39	218,815	A. r. p. 2 2 0
Acres Sold (1860)	492,247	0 3 23	109,216	0 1 33	87,004	1(nearly)
Price per Acre .	£ s. d. 1 6 11		£ s. d. 1 9 0		£ s. d. 1 4 2	

* The Population of Tasmania by the Census of April, 1861, was 89,977.

CLIMATE, PUBLIC HEALTH.

An elaborate Article on the Meteorology and Sanatory Condition of Tasmania, by Dr. E. S. Hall, will be found in the Appendix.

NATIONAL SPORTS—THE CARNIVAL WEEK.

The genius of a people may generally be judged of by their public sports. The Tasmanians, in December last, offered a prize of £500 for a Champion Horse-race. To this attraction was added a £200 prize for a Yacht race, and £100 for a whale-boat race. Various minor prizes brought up the sum total raised by public subscription to about £2,000, which prizes were thrown open to all competitors, and the public sports lasted a whole week, during which nearly all business was suspended. The interest in the contests of this "Carnival Week" was intense, for Tasmania possesses some of the best English racing blood; a little flotilla of private Yachts may generally be seen moored off Hobart Town, and the whale-boat in rough water is to the young Tasmanian as the Desert Horse to the Arab. A clever Tasmanian journalist did no more than give expression to the genuine enthusiasm of the people when he thus wrote. "Horse-racing is traditionally, and by inveteracy of habit, an English sport, a national pastime; and we are ashamed of the Englishman who is ashamed of it. It has always been a popular sport amongst heroic people, but has never taken root so thoroughly in any national soil as in our own Old Home. * * * * There is another pastime quite as national, and quite as congenial to our habits. If an Englishman is at home on the back of a horse, he is equally so when floating on the waves, dashed by the spray, and tossed about by the rough winds of ocean. We came from a line of old Sea Kings; we are essentially a people of maritime enterprise; we are prouder of Britannia with her trident, than of the Lion and Unicorn. There is no air so pleasant to the nostrils of an Englishman as that laden with the odours of the sea."

The result of these spirited intercolonial contests was not discreditable to Tasmania. The Champion Turf Prize was won by Mr. Henderson's "Mormon," a Victorian horse, but two Tasmanian horses "Shelalagh" and "Panic," both owned by Mr. Blackwell, ran second and third—beating the horses of New South Wales, South Australia, and Western Australia.

In the Champion Sailing Match (prize £200,) for Yachts under 35 tons, two Tasmanian vessels, the "Maggie Laurie" (Ross), and the "Secret" (Chandler), came in first and second—the "Surprise" (belonging to the Sydney Yacht Club) being third. The Tasmanian Prize (£100), for whale-boats—similar to those suspended from the Tasmanian Trophy—was carried off by a fine picked crew from the Sydney boatmen (having a Tasmanian coxswain) who pulled with light, broad, smooth-water paddles, instead of the heavy oars generally used in rough sea whaling. The following comments on these exciting contests deserve a wider promulgation.

"The reaction that has set in, in favor of open air and gymnastic exercises, which is a curious and interesting phase of the present-age civilization of the mother country, is still more marked in these colonies.

*Mr. Bright, *Hobart Town Mercury.*

There is surely some significance in the fact that the people of Australia, as a general rule, have the leisure and the means to take frequent holidays. Talk as we may about depression and poverty, it is impossible to witness the spectacle of a people wholly given up to enjoyment, not for a day, but during a week: not on one occasion, but on many throughout the year; without feeling that there is an essential difference between their condition and that of the classes corresponding to them in either of the three kingdoms. What impression must have been produced upon the mind of a stranger just arrived from one of the manufacturing or agricultural districts of England as he saw yesterday from a steamer on the Derwent, the thousands of persons of all degrees who crowded the Domain, on no care intent but to enjoy fine weather and witness pleasant sights; who walked through the deserted streets of the city and saw warehouses and shops closed, and all the operations of industry suspended; and who learnt that it was the Friday of a week almost every previous day of which had been in some way devoted to the same task of pleasure seeking! He would surely conclude that he had come amongst a people with whom the conditions of life were easier, than with the struggling mechanics and laborers of lands where a half-holiday, enjoyed once or twice a year, has to be purchased by long pinching and over-work. No thoughtful mind can doubt that even in this colony, which is held to compare unfavorably with others in point of material prosperity, the severity of toil which leaves little opportunity of recreation is comparatively unknown.

"The time dedicated to public pastimes is a satisfactory proof of our practical interest in that physical education, which tends so much to the development of a true manliness of character."

Cricket has ever been a favourite game in Tasmania, which contains many settlers from the South of England, who talk warmly of the halcyon days of English pastime,

> When the good old Kent Eleven, full of hope and pluck, began
> The battle with All England—single-handed—man to man."

On the recent visit of the "All England Eleven" to Australia, that instinctive desire to try their mettle against superior odds, which is alike the most healthful attribute of competitive emulation, and the best guarantee for future excellence, urged the cricketers of Tasmania to invite them to a friendly match. They "came, saw, and conquered," as they did in every case, save one; but the Tasmanian Twenty-two made a higher score (250) than had been made by any other twenty-two of any other colony. One of their batsmen—Mr. Whitesides—made the highest score (50) of any single Australasian against All England, and a Tasmanian bowler (Mr. Spicer) brought down the wicket of the celebrated Caffyn, who is said not to have been previously bowled out for several years. The Englishmen expressed themselves pleased with their frank and hearty reception, with the truly English character of the Colony, with its resuscitating climate, and with the fair and manly play of their aspiring competitors.

Enough has been said of Tasmanian *manly* sports. A word is due to the amusements of the more retiring sex. The Whaling enterprise of Mrs. Seal has been noticed as illustrative of the more stern occasional requirements of Colonial life—but a reference to the drawings of Mrs. Charles

Meredith and Mrs. Allport, the embroidery of Mrs. Burgess, the *bouquets* of sea-weed and shell-work of Miss Collins and of Mrs. Cook, the wax fruit models of Mrs. Luckman, and the ornamental feather-work of Mrs. Crowther, senr., all on purely Tasmanian subjects—will amply prove that whilst cultivating business habits of practical utility, the fair Tasmanians by no means undervalue those pleasing and elegant accomplishments which diffuse an atmosphere of cheerfulness around the enjoyments of home, and elevate and purify the graceful amenities of social life. On the point of personal attractions the evidence of numerous, trustworthy, though not perhaps impartial, witnesses might be adduced. Colonel Munday thus writes ("The Antipodes," vol. 2) of a ball which he attended here at Government House:—"For an hour or two dancing was kept up exclusively by children, amongst whom were many beautiful specimens of rising Anglo-Saxons, for the rearing of whom the climate is evidently very favourable. The same must be said of human plants of more advanced growth. *I saw in five minutes, this night, more fair faces tinged with the English rose than I had seen in New South Wales in as many years.*"

An apology is due for the brevity with which many interesting points have necessarily been treated in this *brochure*. Had the occasion permitted a volume might have been written on many matters yet untouched. It is hoped, however, that this rapid sketch may convey some idea of the physical characteristics, the material resources, and the moving life and manners of Tasmania. Taken with the collection of Tasmanian Products, it will at least serve to show what a comparative handful of earnest and self-reliant men, with a fine climate and fine country can manage to do, in blending the free and lasting institutions of their forefathers with the energetic habits and improvements of a riper age.

GEORGE WHITING,

Secretary to the International Exhibition Commission for Tasmania.

APPENDIX

NOTES ON THE VEGETABLE PRODUCTS OF TASMANIA,

AT THE

INTERNATIONAL EXHIBITION FOR 1862,

BY WILLIAM ARCHER, F.L.S.

TIMBER.

The principal timber trees of Tasmania, such as the Blue Gum, Stringy Bark, White Gum, or Gum-topped Stringy Bark, Swamp Gum, and Peppermint Tree, —furnish a hard, close-grained, and strong timber, which is used in ship-building and house-building, and generally for all the purposes to which Oak is applied in England. Huon Pine is very durable, and is employed for boat-building, for which it is peculiarly adapted, and for house-fittings, &c. Blackwood makes excellent naves and spokes, cask staves, &c. Native Myrtle is valuable for house-fittings. Swamp Gum yields the finest palings and other split-stuff in the world. Sassafras affords timber for house fittings, bench-screws, lasts, &c. Celery-topped Pine is chiefly used for masts and ship's spars. The different kinds of timber in the following list are arranged according to their value. The diameter of the trees is measured at the height of 4 feet from the ground.

Blue Gum.—(*Eucalyptus Globulus, Lab.*)—The common name is derived from the bluish-grey color of the young plants. Diameter, 5 to 30 feet; average of those felled for use, 6 feet. Height, 150 to 350 feet; sp. grav. about ·945 to 1.055. Abundant in the southern and south-western parts of the Island. Cut for house-building it sells at 8s. to 10s. per 100 superficial feet—for ship-building at 12s. to 14s.

Stringy-Bark.—(*Eucalyptus gigantea, Hook. fils.*)—Common name taken from the coarse fibrous bark. Diameter, 4 to 24 feet; average of those sawn about 5½ feet. Height, 150 to 300 feet. Sp. grav. about ·905. Abundant everywhere upon hilly ground. Price, the same as that of Blue Gum.

Swamp Gum.—White Gum.—(*Eucalyptus viminalis*, Lab.)—Common names from its growing to perfection in humid situations—and from its gigantic white trunk. Diameter, 4 to 18 feet; average about 5½ feet. Height, 150 to 300 feet; sp. grav. about ·885. Growing in forests with other kinds of *Eucalyptus*, in rather humid localities. A small variety called the Manna Tree, grows abundantly about Hobart Town and in other places, on dry ground. Price, for general purposes the same as that of Blue Gum; 5-feet palings, 6s. to 8s. per 100.

Gum-topped Stringy Bark, sometimes called White Gum.—(*Eucalyptus gigantea, var.*)—A tree resembling the Blue Gum in foliage, with rough bark similar to Stringy Bark towards the stem. It has been found recently that this wood possesses nearly all the properties of strength, solidity, and durability of the Blue Gum—whilst being straight-grained, it is much easier to work. It is very abundant about D'Entrecasteaux Channel. An old plank from the Hobart Town Wharf, which has been twenty years in use, may be seen in the Trophy. Price, about the same as Blue Gum.

Peppermint Tree.—(*Eucalyptus amygdalina*, Lab.)—Common name from the odor of the leaves. Diameter, 3 to 8 feet; average about 4 feet. Height, 100 to 150 feet; sp. grav. about ·895. The Peppermint Tree abounds throughout the Island, on gravelly and other poor soil. Price, about the same as that of Swamp Gum.

Huon Pine.—(*Dacrydium Franklinii*, Hook. fil.)—So-called because it was first discovered on the banks of the Huon River. Diameter, 3 to 8 feet; average about 4½ feet. Height, 50 to 120 feet; sp. grav. about ·650. Abundant in portions of the south-western part of the Island. Price, about 16s. per 100 superficial feet, in the log.

Blackwood.—(*Acacia melanoxylon*, Br.)—So called from the dark-brown color of the mature wood which becomes black when washed with lime-water. In moist

shaded localities the tree grows more rapidly, and the wood is of a much lighter color. Hence this variety is called "Lightwood," (in Hobart Town), to distinguish it from the other. Diameter, 1½ to 4 feet: average, about 2½ feet. Height, 80 to 130 feet. Sp. grav., about ·885. Found throughout the island, but not abundantly in any one locality. Price, about 12s. to 14s. per 100 feet super., in the log.

Native Myrtle.—(*Fagus Cunninghamii*, Hook.)—Common name from the fancied resemblance of its dark-green leaves to those of the myrtle. Diameter, 2 to 9 feet; average, about 3½ feet. Height, 60 to 180 feet. Sp. grav. about ·795. The Native Myrtle exists in great abundance throughout the western half of the island, growing in forests to a great size, in humid situations. Price, about 30s. per 100 feet super., in the log.

Celery-topped Pine.—(*Phillocladus rhomboidalis*, Rich.)—So called from the fancied similarity in form of the upper part of the branchlets to celery. Diameter, 1½ to 2 feet: average, about 1½ feet. Height, 60 to 150 feet. Sp. grav. about ·645. Rather common in damp forests in the southern parts of the island, and in some sub-alpine localities.

ORNAMENTAL WOODS.

The different kinds of wood included in the following list are all in constant use for cabinet and fancy work. They are arranged according to their value. The finest specimens of Native Myrtle, Musk-wood, Huon Pine, and Black-wood, exhibit qualities of the highest excellence, both in tint and variety of veining.

Native Myrtle.—(*Fagus Cunninghamii*, Hook.)

Musk-wood.—(*Eurylia argophylla*, Cass.)—Named from the musky odor of the plant. Diameter, 6 to 15 inches—the butt enlarging towards the ground to 2, and even 2½ feet. Height, 15 to 30 feet. Spec. grav. about ·685. Abundant throughout the island in damp localities.

Huon Pine.—(*Dacrydium Franklinii*, Hook. fils.)

Black-wood.—(*Acacia melanoxylon*, Br.)

She-oak.—(*Casuarina quadrivalvis*, Lab.)—A portion of the common name is evidently derived from the resemblance of the markings to those of oak. Diameter, 1 to 1½ foot. Height, 20 to 30 feet. Spec. grav. about ·845. Very common on dry stony hills, excepting in the north-western districts.

He-oak.—(*Casuarina suberosa*, Otto.)—Diameter, 9 to 15 inches. Height, 20 to 25 feet. Spec. grav. about ·855. Common on stony hills.

Honeysuckle Tree.—(*Banksia Australis*, Br.)—Named from the large quantity of honey in the flowers. Diameter, 1½ to 2½ feet. Height, 20 to 40 feet. Sp. grav. about ·645. Abundant on sandy soil.

Dogwood.—(*Bedfordia salicina*, D.C.).—Diameter, 6 to 16 inches. Height, 15 to 25 feet. Sp. grav. about ·985. Common of small size, but rare of large proportions.

Native Laurel.—(*Anopterus glandulosus*, Lab.).—So named from its laurel-like leaves. Diameter 6 to 10 inches. Height, 15 to 22 feet. Sp. grav. about ·675. Tolerably abundant in some sub-alpine localities.

Blue Gum.—(*Eucalyptus globulus*, Lab.)—Curly-grained variety.

Peppermint.—(*Eucalyptus amygdalina*, Lab.).—Some specimens of this timber have a fine wavy marking.

USEFUL WOODS.

Silver Wattle.—(*Acacia dealbata*, Lindl.)—So called from the white moss on the trunk, and the silvery green of the foliage. Used for cask staves and turnery. Diameter, 1½ to 2½ feet. Height, 60 to 120 feet. Sp. grav. about ·965. Very common.

Iron Wood (Tasmanian).—(*Notelæa ligustrina*, Vent.)—An exceedingly hard close-grained wood, used for mallets, sheaves of blocks, turnery, &c. Diameter, 9 to 18 inches. Height, 20 to 35 feet. Sp. grav. about ·965. Not uncommon.

Swamp Tea-tree.—(*Melaleuca ericæfolia*, Sm.)—So called, probably, because the leaves of an allied plant (*Leptospermum lanigerum*, Sm.) with similar bark, are said to have been used as a substitute for tea. Diameter, 9 to 20 inches. Height, 20 to 60 feet. Sp. grav. about ·824. Used for turnery chiefly.

Native Cherry.—(*Exocarpus cupressiformis*, Lab.)—So named because the color of the fruit is similar to that of a Kentish Cherry. Diameter, 9 to 35 inches.

Height 20 to 30 feet. Sp. grav. about 785. Used for tool handles, spokes, gun-stocks, &c.

White-wood.—(*Pittosporum bicolor*, Hook.).—Wood white. Diameter, 8 to 13 inches. Height, 20 to 35 feet. Sp. grav. about 875. Used in turnery. Probably fit for wood engraving.

Native Box.—(*Bursaria spinosa*, Cav.).—The leaves are somewhat like those of the English Box. Diameter, 8 to 12 inches. Height, 15 to 25 feet. Sp. grav. about 825. Used for turnery.

Pink-wood.—(*Beyeria viscosa*.—*Croton viscosum*, Lab.)—Diameter, 6 to 10 inches. Height, 15 to 25 feet. Sp. grav. about 815. Used for sheaves of blocks, and for turnery.

Native Pear.—(*Hakea lissosperma*, Br.)—The woody seed-vessel is somewhat pear-shaped. Diameter, 8 to 12 inches. Height, 29 to 30 feet. Sp. gravity about 675. Fit for turnery.

SCENTED WOODS.

Tonga Bean Wood.—(*Alyxia buxifolia*, Br.)—The odor is similar to that of the Tonga Bean (*Dipteryx odorata*). A straggling sea-side shrub, 3 to 5 inches in diameter.

Native Box.—(*Bursaria spinosa*, Cav.) The scent is pleasant but fleeting.

TANNING BARK.

Wattle Bark.—The bark of the Black Wattle (*Acacia mollissima*, Willd), the Silver Wattle (*Acacia dealbata*, Lindl.), and the Blackwood Tree (*Acacia melanoxylon*, Br.). The first named yields the most valuable bark, and is common on dry stony hills.

FIBRES.

Currajong.—(*Plagianthus sidoides*, Hook.)—The fibres of the bark are very strong. It is a large shrub, found chiefly on the southern side of the Island, in ravines and shady places, and grows rapidly.

Lyonsia.—(*Lyonsia straminea*, Br.)—Fibres of the bark fine and strong. The Lyonsia is met with, rather sparingly, in dense thickets with its stems hanging like ropes among the trees.

Blue Gum.—(*Eucalyptus globulus*, Lab.)—The bark of this immense tree yields a fibre which may, probably, be found available for making the coarser kinds of paper.

Stringy-Bark.—(*Eucalyptus gigantea*, Hook. fil.)—The fibres of the bark are similar to those of the Blue-Gum bark, but are not so strong, or so fine.

Fibrous Grass.—(*Stipa semi-barbata*, Br.)—After the seed has ripened the upper part of the stem breaks up into fibre, which curls loosely and hangs down waving in the wind. The condition of the fibre at this time is undoubtedly far inferior to what it would be if rightly prepared. Common in some localities.

GUM.

Kino.—This gum, which seems to have similar properties to those of the East Indian "kino," exudes from the woods of all the Tasmanian species of *Eucalyptus*.

Wattle Gum, the gum of the Silver Wattle.—(*Acacia dealbata*, Lindl.), is exceedingly viscous, and, probably, quite as useful as Gum Arabic. The gum of the Black Wattle (*Acacia mollissima*, Willd.), which is often mixed with the other, is very inferior to it, being far less viscous.

SUNDRY PRODUCTS.

Prickly Fern Tree.—(*Alsophila Australis*, Br.)—This very handsome Fern Tree occasionally attains a height of 30 feet. It is not, by any means, so common a Fern Tree as *Dicksonia antarctica* (Lab).

Pith of Rushes.—This is the pithis made up in Hobart Town into head-*coyinatas*, Br.) It is not rare. This pith is of the largest Tasmaniain rush (*Juncus* dresses.

Gelatinous Seaweed.—(*Gracilaria sp.*)—This Alga, which may, perhaps, be regarded as a variety of *G. confervoides* (Grev.), is occasionally used for making jelly. It abounds on the shores of Sloping (or Slopen) Islands, in Frederick Hendrick Bay.

Native Bread.—(*Mylitta Australis*, Berk.)—An insipid, under-ground fungus, which sends up no stem, and is generally met with by accident. When growing rapidly it sometimes causes the ground to crack, and may thus be discovered by a careful observer, as it probably was by the Aborigines, who used it as food.

CLIMATE AND HEALTH OF TASMANIA.

BY E. SWARBRECK HALL,

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"A sound body is better than immense revenues."
"There are no riches above the riches of the health of the body; and there is no pleasure above the joy of the heart."
"Better is a poor man who is sound and strong of constitution, than a rich man who is weak and afflicted with evils.—Ecclesiasticus."

The space allotted to the elucidation of this subject in the Tasmanian Exhibition Pamphlet is too limited to permit me to do more than briefly allude to the edeavour of Medical Philosophers from the earliest ages—beginning with the father of Medicine himself, Hippocrates,—to establish on sound data, the intimate connection between climate and health. In all subsequent times the labourers in this interesting and important research have been many, but only within the last quarter of a century have the enquiries culminated in any remarkable success. From the date of the application of the science of numbers—statistics—to cosmical variations, and vital phenomena and disease, are the grand triumphs of modern hygiene to be dated. The facts and figures collected, arranged, expounded, and disseminated by the Registrar-General of England, and his numerous coadjutors of the medical profession, were the great levers which enabled sanitary reformers to effect their brave and bloodless victories. Dr. William Farr has been the "thaumaturgus"—the wonder-worker—of the age we live in; and the figures he has arrayed, and the centres of disease-breeding he has indicated, with the unsparing exposure of their origin in the neglect of Nature's own sanitary teachings, has opened an entirely new sphere for medical practice. The master-minds of the profession are now assuming the first duty of medical skill to be to prevent disease. The curative department is rapidly becoming a secondary branch in the exercise of medical science. Wherever these new principles—new at least comparatively to any extent in practice—have been fairly acted upon, human lives have been saved by thousands. We now scrutinize

suspiciously every mortuary record where the deaths exceed a certain assumed normal standard. No longer can the unphilosophical *oi-polloi* safely mask their ignorance and attribute excessive mortality to recondite causes, or take shelter in vague generalities, and the untangible mystic influences of the weather.

Meteorologists, by the use of improved instruments and carefully conducted observations, with accurate long continued records scientifically tabulated, have given invaluable data for sanitarians to reason from, and to aid them in constructing their reforming operations.

Tasmania has had peculiar advantages over most other Colonies, from having been selected as one of the localities for a Magnetical and Meteorological Observatory, at the suggestion of the British Association. From 1841, when the observations were commenced in the immediate vicinity of Hobart Town by Sir James Ross, up to 1854, a continuous series of meteorological facts were registered. For eight years, out of the fourteen, hourly observations both by night and day were made by instruments and observers entitled to the highest confidence. Two large volumes of the records then made, have been edited by General Sabine, and printed, published and circulated. The third volume, now many years overdue, in which the peculiarities and advantages of the Tasmanian climate were promised to be elaborated by Professor Dove of Berlin, is yet wanting to complete this desideratum to meteorological science. To those in Tasmania who have long yearned for its appearance, the delay of publication has been a constant source of regret.

When the Ross-bank Observatory was closed, observations were continued by Mr. Francis Abbott at his private Observatory in an open garden in the central Valley be Hobart City, 37 feet above the sea level, and about quarter of a mile above tidal influence. The best instruments that the most esteemed London makers could furnish, have been used, and the results every month tabulated, and presented to the Royal Society and printed. When 1860 had completed a twenty years' continuous series of Meteorological records, Mr. Abbott zealously devoted much time in compiling and combining all the data into "40 Tables," which, under the patronage of the Governor Sir H. E. F. Young, and the Council of the Royal Society, have been printed and published at the Government Printing Office, in a manner highly creditable to Tasmanian typography. Having lent my assistance in the preparation of this work, and being familiar with the subject from my twenty-eight years' residence in the Island, and constant study of meteorology in many parts of it, I shall, in this article, make use of Mr. Abbott's Tables as the ground work of my observations on the climatological division of my essay. Sir Thomas Maclear, in charge of the Observatory at the Cape of Good Hope, and so deservedly eminent as an Astronomer and a Meteorologist, in acknowledging the receipt of a copy of Mr. Abbott's work, pronounces it to be:—"A standard of reference, leaving nothing to be desired for the climate of Tasmania."

Situated as Tasmania is in the temperate zone, between the 40th and 44th degrees of latitude, in the Southern Pacific, with an almost boundless extent of ocean on its Southern, Western, and Eastern aspects, and separated from the Australian Continent by a wide Strait; had not the Island enjoyed a highly salubrious climate, it must have arisen from local causes. On the contrary, its local topography tends much to enhance its geographical advantages. The Island has an undulated surface throughout; its highest mountains only attain a height exceeding 5,000 feet in two instances; the Country rises from all its shores gradually to its central water-shed, along which is arrayed a chain of lakes that give origin to the principal rivers of the Island. These rivers generally have a rapid fall, and marshes are entirely exceptional. Nevertheless, as in all Islands of this configuration, there is considerable variety in the meteorological phenomena in different localities. The Northern side of the Colony has a warmer and moister climate than the Southern, and the Western has a more stormy and rainy character than the Eastern shores. But allowing for these, and differences in altitude, Hobart Town exhibits a fair climatic type for the whole of Tasmania. There are no volcanoes, and I have never noted any symptoms of earthquakes, though others have observed slight shocks which they believed to originate in these causes.

The mean atmospheric pressure of the 20 years' records, is 29·808 inches. (The height of the Ross-bank Observatory above the sea level differing only a few feet from Mr. Abbott's). The extremes of annual means, were:—Lowest, 29·696 for 1856; highest, 29·944 for 1860. April of all the months has the highest mean,

29·885; January the lowest, 29·715. The greatest pressure ever noted was 30·522 in July 1846; the smallest 28·518 in July 1857; the extreme divergence in the 20 years, being therefore 2·302 inches. The widest range in any twenty-four hours, 1 p.m., to 1 p.m., within the last years, from the present month of March 1858, was a rise of the barometer of + 1·014 inches in January 1856. The extreme ranges during any month in the same period was 1·649 inches in May 1855.

As every variation of one inch in the Barometer indicates a difference of nearly half a ton of pressure on the adult human body, it is easy to understand that rapid and extensive fluctuations of pressure must have a marked influence on health. In my monthly "Health Reports" I have frequently demonstrated this influence, in its effects upon diseases of the brain, and the organs of circulation and respiration. A continued high atmospheric pressure when accompanied with a stagnant state of the air, is characteristic in this island, as Mr. Glaisher has shown it to be in England, of an epidemic constitution of the air. It is a very unusual occurrence, nevertheless, in Tasmania, but was signally exemplified in June and July 1860, when an epidemic influenza ravaged all the Australasian Colonies, and proved so destructive to aged and infirm people.

The mean temperature, deduced from the 20 years' observations, is 54·92 degrees. For the 14 years at Ross-bank Observatory only, the mean was 53·03. "The mean annual temperature from the result of eight years hourly observations, 1843 to 1848," Captain Kay, R.N., F.R.S., who had charge of the Observatory, states to be "53·48," and the "Mean Annual Temperature from observations with the max. and min. thermometers in 1849, '50, '51, '52—55·32 degrees." So close an approximation of results have not been noticed at Mr. Abbott's Observatory. The means of the maxima and minima thermometers average about one degree higher than those of the observations, at 7 a.m., p.m., and sunset. Sometimes, as in last month, they correspond within a few hundredths of a degree. Some observers here, and Mr. Abbott amongst them, are inclined to attribute the higher means since 1854 to the place of observation being within the influence of the warmer air of the City. I do not agree in this opinion, for I have remarked a similar increase in the temperature in places, not subject to such influences; and Sir Thomas Maclear's Tables for the Cape of Good Hope, support my view, that we are now subjected to of the cycles of higher temperature which has been spoken of by Sir John Herschel. January has the hottest mean of any month in the year;—63.57. July has the coldest mean;—45.82. 1855 was the hottest year;—58.58, and the coldest was the very unusually wet year 1849, the mean temperature of which was only 50.98. The 20 years' range consequently was 7.60 degrees. The greatest mean for any month was 71.10 for January, 1856; the smallest was 42.57 for July 1841. The highest temperature in the shade for any day ever recorded was 105 degrees in January, 1849. In February, 1847, 100 was noted; in December of the same year, 103; in December, 1859, 102 was recorded. No other registers of 100 or upwards have been made. In the whole period of now 21 years, the thermometer has only risen to 90 and above 44 times. These have all occurred with North and North West winds, coming from the arid continent of Australia, called hot-winds, but much mitigated in their force and heat by the happy insular position of Tasmania. Hot winds have been known to endure for three days in succession, but with a diminution of 20 to 30 degrees during the night. The usual duration, however, in this island seldom exceeds 6 to 12 hours, and is succeeded by cool refreshing showers, with electrical discharges and thunder. The lowest shade temperature ever registered was singularly enough in the same year as the highest, 1849.—it was in the month of July, and 29.4 degrees. But in the past 21 years the Thermometer sank to freezing point or below it, only 34 times. In 1861, the Minimum self-registering Thermometer never fell below 34. In England the cold of Winter is the most fatal to human life. In Tasmania the Winter season is the most genial and salubrious. Snow rarely falls in Hobart Town, and was never known to remain on the ground for 24 hours. In a small township on the summit of the Water-shed, where it intersects the Main-road of the Island, I have known it to remain three days, and nearly a foot in depth, but it was in the cold, wet, exceptional year of 1849. In Hobarton ice rarely attains the thickness of a penny-piece, and only once do I remember it to have been thick enough in any of the settled districts of the interior to bear my weight. Agricultural operations, therefore, are scarcely ever suspended by the inclemency of the weather from this or other causes. The daily range of temperature is the only weak point, in the every other respect, gratifully delightful and salubrious climate of Tasmania. The 20 years' mean of daily range is 18.16 degrees, which, of course, greatly exceeds that of England. January, the hottest month, has also the widest daily range, 20.75 degrees. December, February, and March have all, also, a mean above 20 degrees. May, June, and July have nearly the same mean, 15.30 to 15.35 degrees. The year of greatest range was 1855—22.15 degrees. 1852 had the smallest mean—14.9 degrees. Of months, January exhibits the extreme mean of daily ranges. 1841 had 25.5, and 1856 and 1861, nearly the same. July 1849 had the smallest mean of any month on record, 8.7 degrees. The greatest range of the Thermometer that ever occurred in any 24 hours was 51.9 degrees in January, 1849; and in February, 1856, there was a day that had a range of 51 degrees. Of course the extremes of heat and cold are recorded from the self-registering maxima and minima Thermometers in the shade in the open air. Solar heat has only been registered since the commencement of 1856. The instrument used is self-registering, with the black-bulb Thermometer inclosed in a glass tube. The mean for the six years is 93 degrees. 1856 had 104, and 1858 only 85. January's mean is the highest—111. July the lowest, 78. January, 1856, mean was 127, being much higher than any other on record. June and July 1859, had the lowest—73. The greatest Solar intensity ever noted on any day was in February, 1857, 143, and the next 133, was one day in December, 1859. The day in February, 1857, referred to, was marked by many sudden deaths. It is remarkable that diseases of the "Brain and nervous system" give more deaths, in proportion to the total from all causes, in Tasmania, than in either Victoria or New South Wales. Count Strzelecki long since drew attention to the fact of the Solar-intensity being greater in this Island than even in New South Wales, owing to the greater diaphaneity of the atmosphere in Tasmania. The haze which usually accompanies the intense heat on the continent of Australia very rarely exists in Tasmania. This unimpeded transmission of the Solar rays is beneficial in every way, and only becomes hurtful by the folly of people exposing the head to its direct influence, without covering, or with such as are ill calculated to afford the requisite protection.

Terrestrial radiation has been noted for the same period as Solar-intensity. The mean of the six years is 43.05. 1861 had a much higher mean, 43.81, than any of the five preceding years. The month of January has the highest mean—32.52, and July the lowest of five years, 34.59, which is also that of August, for the six, only in July 1859 and 1860 was the mean lower than in August, 1861. In every other month of 1861, except November, Terrestrial radiation was considerably above the previous five years' means. Mr. Abbott has this thermometer placed on grass in his garden, clear of all reflected heat from buildings. The lowest reading for any night of the six years was 23·5 degrees in September 1857. The Mean of the 20 years for the Wet-bulb thermometer is 49·95, 1853 had the greatest mean 51·75, 1844 the lowest 48·14; January mean is 56·38; July 43·12; Dew-Point mean for the 20 years is 45·34; 1861 had 47·49, and the opposite extreme, 43·83, was in 1844; January mean is 50·69, and July 39·83, being the highest and lowest means of months. The 20 years' mean for Elastic force of Vapour is 317; 1856, mean 347 was the highest; 1849, 288 was the lowest; January is 368; July 259; Humidity mean of 20 years is 74·75; the greatest mean of any year was 79 in 1849, 1853, 1854. Of months June has the highest mean, 83½; December the lowest, 67. The Rain-fall mean of the 20 years is 21·52 inches, the greatest extreme being 1849 when 33·51 inches fell; and the lowest years fall was in 1843, when only 13·43 inches of rain was precipitated. The largest amount for any month was 10·16 inches in August 1858; February 1854 had 9·15 inches; November 1849, 8·94 inches; March 1854, 7·60 inches; September 1844, 7·14; July 1852, 5·99; October, 5·04 in 1861; April, 5·01 in 1856; January 1859, 4·61; May 1852, 4·38; June 1845, 4·27; December 1861, 3·29. The minima falls have ranged from 0·02 in March 1843 to 0·53, in November 1853. The means for the months beginning with the highest are as follows:—November 2·76, August 2·06, June 1·89, September 1·87, May 1·85, April 1·78, October 1·77, (but the heavy fall in 1861, may put it on a par with August) July 1·73, March 1·52, January 1·50, February 1·47 (but raised by the heavy fall in 1851 to 1·68), December 1·32. The order and the averages differ greatly from those published by Captain Kay in the "Royal Society's Journal of papers and proceedings, January 1853," as the means of the twelve years, 1841, 1852, in fact every years' additional records has tended to approximate the means for the respective months.

For the last seven years the number of days on which rain fell in each month has been recorded. The mean of the six years is 137·63, but 1861 had 167 rainy days, being eight days more than 1859 previously the highest. The mean for September is the greatest, 15·66 days; February the lowest 7·50 days. The rate at which rain falls is of the utmost importance both in the sanitary and agricultural aspect. For instance, in 1861 28·19 inches of rain fell on 167 days. All the months means, except March, June, August and November, were above the average. The rain never fell so heavily as to cause floods, and yet heavy enough to flush all drains and cleanse the surface. In other years more has fallen, but with less beneficial effect In 1858 there fell an aggregate of 35·07 inches, but restricted to 129 days, and four months out of the twelve had 22¾ inches of the total fall. Much of this caused heavy and destructive floods. 1858 was one of our most unhealthy years, 1861 one of the least so; not however that the rains only was the cause of this disparity. Nevertheless in my monthly analyses of health, I have always had to comment upon the beneficial effects of frequent moderate rain-falls, when such have occurred. In a climate like this their influence on health is much more marked than in England. Ere long, Hobart City will have the means of artificially imitating Nature's sanitary operations in this respect. Mr. Joseph N. Gale's engineering skill will soon supply us with an unlimited amount of the purest water from one of the finest "gathering-grounds" in the world, and then most of the evil effects of long continued droughts on a city population can be easily averted. The northern capital, Launceston, has been for some time reaping the benefit of a good and copious supply of water. The heaviest fall of rain ever noted in Hobart Town was on the 26th and 27th of February, 1854, when within thirty-four hours, 8·63 inches fell, doing great injury to life and property, 6½ inches of this rain was precipitated in thirteen out of the thirty-four hours; or at the rate of nearly half an inch per hour. I have however, recorded, short sharp showers, where it fell for a quarter of an hour, at the rate of one inch per hour. In the great rain-fall of August 1858, the rain was continuous from the afternoon of the 9th until that of the 13th, and there was measured from the rain-guage 8·96 inches. Hail-storms are unfrequent in Tasmania. Snow rarely shows more in Hobart Town than as a coating on Mount Wellington (upwards of 4000 feet above us,) during the winter months, and adding variety to the charming scenery by which this young city is encircled. In the midst of summer too, occasionally the mountain for a few hours puts on its wintry garment of snow.

Spontaneous evaporation has been recorded for five years past, but I do not feel confident in the accuracy of the means adopted to measure its amount. Of course in a climate with the air ever in motion, and plenty of sunshine and warmth, evaporation must, as the records show, greatly exceed condensation and precipitation.

The extent of cloudy sky has been registered for 21 years, and the mean is 5·65. The mid-winter month of July is the least cloudy. Often in the months of April, May, June, July, August, we have a week at a time, with a bright cloudless sky. This is the pleasantest season of the year, and a delightful contrast to the bleak pinching winters of the north. Ozonometrical records have been kept since April 1859. The annual mean is 6.87 by Schonbein's chromatic scale, and by far exceeds any records for the adjoining Colonies, or those at home, which have fallen under my observation. Those months which have the greatest rain-fall, and the largest number and force of ocean winds, exhibit the greatest amount of free Ozone.

Atmospheric-Electricity has been registered for the last three years, but I am not altogether satisfied with the Electrometers. Negative electricity greatly preponderates, both in tension and frequency, and so far, I am inclined to think it is mostly associated with, winds from the Australian Continent (N. and N.W.), deficiency of ozone, and an asthenic or typhoid type of disease. On the other hand, when the pure ozonised breezes from the sea prevail; health is at the highest, and the type of disease is sthenic or inflammatory, and positive electricity is in the ascendant. Though I treat of winds the last, I feel assured that scarcely any other atmospheric phenomena, more powerfully influence health. The prevailing character of aerial changes is that of moderate but almost incessant movement. I have contributed to Mr. Abbott's work, a four years calculation of averages, as to number and force of winds. The observations from which I compiled them, were recorded by Mr. Abbott daily at 7 a.m., 1 p.m., and sun-set. The annual average force of all the

winds is, 703·69½ lbs. (on Lind's wind-guage scale), pressure to the square foot. October is the windiest month, and in succession follow December, November, September, January, February, March and April, May, August, July, June. Out of the 1095 observations annually, the four years means show, N.W., to prevail 279 times, with 207·11¾ lbs. of force; N., 222½ times, with 112.08 lbs. of force; S.E. 199¾ times, with 90,90½ lbs. of force; S.W., 97¾ times with 76·22¾ lbs. of force; S., 89¼ times, with 57·74 lbs. of force; W. 79½ times, with 122·67¼ of force, being therefore much the strongest winds we have; N. E., 67¼ times, with 23.54¾lbs. of force; and E. 60 times with the small force of 13.40½ lbs. All but N. and N.W. are ocean winds, and come well charged with Ozone; saturated with it, if accompanied by rain from the S.E., S., and S.W. During the summer months a cool South-East sea-breeze may be expected to set in about 11 a.m., and is very bracing and refreshing. Sometimes it is chilling, when it suddenly overpowers an oppressive wind from the N.W., and those people grumble hard at the variable climate who do not dress judiciously. Light coloured woollen tweeds are the safest kind of garments here for all seasons. Such violent storms as I have seen in England, I have never noticed here. In the 1095 Wind Records, Calms were noticed at the hour of observation 291½ times, but such an event as a day of continuous calm is exceptional, and almost unknown. This Climate is a decidedly breezy and invigorating one, for after the hottest day we may calculate on having a cool night, as the daily range I have before alluded to testifies.

Invalids from India, China, and the hotter Colonies of Australia, if not past recovery, speedily rally in Tasmania, and the increased appetite for food is the first and most surprising change. With such clear skies, abundance of ozone, bracing sea breezes, the lamp of life burns quickly, as well as brightly, and demands a much more abundant and nutritious supply of food than suffices elsewhere. Food of the best and most varied kind is plentiful, and the actual consumption per individual greatly exceeds the highest European calculations. Tasmanians spend much of their time in the open air, and many of the diseases which afflict European communities are unknown. Others have a minimum of intensity. Over-crowded, ill ventilated, and badly victualled ships have at different times brought to this port dangerous types of fever, but the contagious emanations arising have speedily been neutralized by the disinfecting power of our highly ozonised air, and beyond a few who came directly in contact with the first sufferers landed, the disease has not spread. Even eruptive fevers, scarlatina, and measles, though frequently imported, and at times severe, have speedily worn themselves out, only re-appearing at long intervals and in mild type.

In 1854 measles were epidemic. At the beginning of last year we had another visitation, but so much was it mitigated in this island, that out of a population of about 25,000 persons in the Registration District of Hobart Town only 55 persons of all ages died of it. The children under seven years of age, alone, and therefore all liable to the infection, amount to nearly 6000—but many above that age and adults were attacked, and some of the deaths were of these. The zymotic proportion of the deaths in Tasmania is greatly below that of the neighbouring Colonies and England. The Tasmanian born are comparatively little subject to pulmonary consumption, except where the hereditary tendency is strong. The colony is not yet old enough to show what age the native born may attain to, but there is reason to think it will be high. Numerous instances of centenarians who have resided in the island from its first colonization, or other very long periods, have come under my notice.

Though adult males have always so much exceeded adult females in number, the increase of population, by excess of births over deaths, has been at a rate much greater than prevails in Europe. Last year the increase was about 2000 in a population of less than 90,000. The children of Tasmania are as plump and rosy as the finest specimens in England, anp the rosy cheek does not disappear in adult life.

At the Census of 7th April, 1861, there were enumerated for all Tasmania :—

	Males.	Females.	Total.	
Under 1 year of age.....	1,612	1,505	3,117	
Above 1 to 5 „	6,027	5,855	11,882	
„ 5 to 10 „	5,545	5,563	11,108	
„ 10 to 15 „	4,182	4,058	8,240	41,649
	17,366	16,981	34,347	
„ 15 to 20 „	3,384	3,918	7,302	
„ 20 to 30 „	5,965	7,157	13,122	
„ 30 to 40 „	7,976	5,644	13,620	
„ 40 to 50 „	7,322	3,769	11,091	44,162
„ 50 to 60 „	4,504	1,825	6,329	
„ 60 to 70 „	2,270	822	3,092	
„ 70 to 80 „	631	226	857	
„ 80 to 90 „	154	39	193	4,166
„ 90 to 100 and above	21	3	24	
	49,593	40,384	89,977	89,977
Married	15,893	15,616	31,509	
Single	33,700	24,768	58,468	

A slight examination of the foregoing table will show that one-half of the population is under 24 years of age. The total registered births in 1861 were 3,207, but the probable number of living births would be about 3,530. Still-births are not registered. The mortuary tables for 1861 record died :—

	Males.	Females.	Total.
Under 1 year of age	179	144	323
Above 1 to 2 „	68	66	124
„ 2 to 3 „	24	29	53
„ 3 to 4 „	12	15	27
„ 4 to 5 „	20	20	40
„ 5 to 10 „	30	37	67
„ 10 to 20 „	36	26	62
„ 20 to 30 „	45	60	105
„ 30 to 40 „	89	62	151
„ 40 to 50 „	105	64	169
„ 50 to 60 „	103	43	146
„ 60 to 70 „	78	29	107
„ 70 to 80 „	45	15	60
„ 80 to 90 „	19	9	28
„ 90 to 100	3	0	3
„ 100 and above	0	2	2
Age not known	9	3	12
	865	614	1479

1479 deaths out of a population of 89,977 persons is at the rate of 16·43, or less than 16¼ per 1000, so that the mortality rate of all Tasmania is less than that of the 63 healthiest registration districts of England and Wales—17 per thousand—which the Registrar-General of England adopts as a normal standard for death rates. In the purely rural population of Tasmania, counting exclusive of those associated with the urban districts of Hobart Town and Launceston—53,667—the deaths in 1861 amounted only to 619—being at the rate of 11.53, or 11½ per 1000. Glendale, in Northumberland, which has the smallest death rate in the English returns, has 15 per 1000. But even this contrast, favourable as it is to Tasmania, does not exhibit the

whole superiority. For, though our population table when compared with that of England, has not as large a proportion of persons above 60 years of age, it has a very much larger proportion of those under 15 years of age. Again, the smallest rate last year in any district of Tasmania was in that of Oatlands, which in a population of 2,333 had only 17 deaths, being at the rate of only 7.28 per thousand, or less than half of the healthiest district in England. Oatlands is in the centre of the island, and 1308 feet above the sea level. It is an axiom now in sanitary science that the rate of mortality in children, under five years of age, gives the most delicate and surest test of the salubriousness of any climate. In England the death-rate under this age is 65.18 per 1000. In Tasmania not quite 38 per 1000, or 37.93. Did my limits permit I could for every disease in our mortuary records give the rate as compared with those in the English Tables. In an elaborate article on the Vital Statistics of Tasmania, published in the April number, 1858, of the *Australian Medical Journal*, I made such a contrast for 1855 between Hobart Town and London. The additional facts I have stored since that period have fully confirmed, and in many respects strengthened the very favourable report I then made of the natural salubrity of this island. I by no means wish to convey the impression that the laws of hygiene may, in this auspicious climate, be trifled with with impunity any more than in other countries. Indeed, I have frequently published indubitable proofs to the contrary In thts picturesque island and genial climate, it must be man's own fault if the best health, and the highest "chances of long life" are not attained. The meteorological, statistical, and sanitary facts I have compiled in this paper, briefly condensed as they necessarily are, give convincing proof of the correctness of the statement which concluded a paper of mine to the London Statistical Society some years ago, that few countries in the world, whose medico-vital statistics have been published, can equal this beautiful isle of the south-sea—young Tasmania—as an abode where the human race may dwell comfortably, healthily, and to a ripe old age, without deteriorating either physically or morally from the elevated position their British progenitors hold among the nations of the earth.

E. S. H.

Hobarton, Tasmania,
March, 1862.

ON THE

TREATMENT OF RHEUMATIC FEVER

IN ITS ACUTE STAGE,

EXCLUSIVELY BY FREE BLISTERING.

By HERBERT DAVIES, M.D.,

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PHYSICIAN TO, AND LECTURER UPON, THE PRACTICE OF MEDICINE AT THE LONDON HOSPITAL,
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NOTICE.

The following pages have been reprinted from the *London Hospital Clinical Reports*.

Since its delivery, the Author has, in his Hospital and private practice systematically pursued the mode of treatment advocated in the Lecture, and has obtained such valuable results as to lead him to hope that the plan suggested presents the most efficient means of rapidly subduing the pain, limiting the duration and diminishing the tendency to the production of cardiac disease so characteristic of, Rheumatic Fever.

The cases which up to this date have been treated according to this system, amount to nearly fifty in number.

23, Finsbury Square,
Dec. 10, 1864.

ON THE TREATMENT OF

RHEUMATIC FEVER IN ITS ACUTE STAGE,

EXCLUSIVELY BY FREE BLISTERING.

Gentlemen,—I propose this morning to make some observations on the treatment of acute rheumatism, and especially with reference to the plan which you have lately seen me systematically pursuing in the wards of this Hospital. I will call it the treatment of Acute Articular Rheumatism by free blistering without the aid of alkalies, nitre, lemon-juice, bark, opium, colchicum, or, in fact, any of the internal remedies which are and have been considered as specifics in that affection. The treatment has been *absolutely and entirely* local—the cases subjected to it have been for the most part of a marked acute character—and the results, in rapid relief of the pains, quick convalescence, and freedom from cardiac disease, highly satisfactory. I have been greatly assisted in the daily observation of the cases by Mr. George Mackenzie and Dr. Woodman, who have carefully collected the facts every twenty-four hours, and have arranged them in tabulated forms, which I believe will be found to contain some curious and valuable information.

I need not detain you with any lengthened detail of the symptoms of the disease. All the cases to which I shall have to refer presented more or less, the quick, full pulse, varying from 80 to 120 beats in a minute, the hot and acid-perspiring skin, the marked thirst and total loss of appetite, the creamy and usually moist tongue; the scanty, high-coloured and extremely acid urine; and lastly, the acutely painful, hot and swollen joints. The morbid reaction of the perspiration, saliva and urine characteristic of what is called rheumatic fever, pointed to the presence within the system of a *materies* poisonous either from excess of a normal element, or as a

new product, intensely acid in its nature and highly irritating to the synovial and fibrous tissues; and upon the rapid expulsion of this poisonous and irritating agent depended the safety and the cure of the patient, and his immunity, above all, from endo- or peri-carditis. Believing it probable that the virus localized itself for a time in the inflamed joints, and that the intensity of the local inflammations was a measure to some extent of the amount of poison collected by a species of affinity in the parts attacked, I determined to attempt the local elimination of the materies morbi, wherever any external manifestations of its presence existed. I ordered blisters, varying in width, but of considerable size, according to the locality, to be applied around each limb and in close proximity to the parts inflamed; and I hoped to relieve the affected joints, partly on the principle of derivation, but *mainly* and really by affording through the serous discharge from the blistered surface, a ready means of exit for the animal poison. Arm-lets, wrist-lets, thigh-lets and leg-lets, and even finger-lets (if I may be allowed to coin such words) were applied near to, but not upon *every joint inflamed*, at the very *height* of the inflammatory stage when the local pains were the most severe, and the constitutional disturbance the *greatest*. I will give you an abstract of a few of the cases and the results :—

Case 1.—Was a decidedly acute case occurring in an individual of a very delicate and unpromising appearance. Six blisters were applied simultaneously and one subsequently. Great and almost immediate relief to the joints was afforded as soon as the serum commenced to be discharged. The pulse in twenty-four hours fell from 120 to 88 in a minute, and the urine *lost its acidity* in the same time; I mean in twenty-four hours from the time the blisters were removed. I should mention, that most of the cases were admitted in the afternoon, and that the blisters were applied in the evening, and removed the following morning. This must be borne in mind in reading the tables annexed. In this case every joint was perfectly moveable and free from pain on the eighth day after admission. The appetite began to be restored on the sixth day; light pudding was ordered on the tenth; fish on the fourteenth, and meat diet on the eighteenth day from the time he entered the Hospital.

On the tenth day he was allowed to walk about the ward; and as he was anæmic, the ammonio-citrate of iron was ordered and continued until March 30th when he was discharged cured.

The rheumatic fever in this case terminated within a week, but the convalescence was somewhat prolonged as his constitution was feeble. He remained altogether five weeks in the Hospital. No morbus cordis was developed.

Case 2.—Had five blisters applied simultaneously. The pulse fell from 118 to 92, in twenty-four hours from the removal of the blisters. The urine became *neutral* in reaction in a shorter space of time, and soon resumed its normal acidity. Great and immediate relief followed upon the discharge from the blistered surfaces, and perfect mobility of the joints was obtained on the third day from admission, when the pulse had fallen to 80 per minute. The appetite returned on the fifth day. Fish was ordered on the seventh, and meat diet on the eleventh, and he was discharged cured on the eighteenth day. No morbus cordis was developed.

Case 3.—Had six blisters applied on admission, and one subsequently. The pulse fell from 96 to 80 in twenty-four hours from the removal of the blisters, and the urine became *neutral* in a less period of time. Great relief was afforded, and mobility of the joints was established on the third day. Appetite returned on the third, fish was allowed on the eighth, and meat diet on the twelfth day.

This patient had a distinct mitral murmur on admission, which was unaltered when she left the Hospital. The case was of a severe and acute character, and she had been nine days in bed previously to coming under treatment. On the fourth day a blister was applied near the left wrist, which had been till then unaffected by the rheumatic virus.

She remained twenty eight-days in the Hospital.

Case 4.—Had six blisters applied simultaneously. The pulse fell from 100 to 88 in twenty-four hours from the removal of the blister, and the urine was only slightly acid on the day following

admission. On the succeeding day the urine was *neutral*, and deposited crystals of triple phosphate, which were recognized under the microscope, and by the usual nitric acid test.

The joints were rapidly relieved, and mobility soon re-established. The appetite returned on the fourth day, and he was discharged cured on the eighteenth day. The case was very acute, and the temperature in the axilla high. The heart was unaffected.

Case 5.—Was a delicate female, aged 18, who had already suffered from rheumatic fever. On admission, the joints affected were only one shoulder and the wrists; but the right elbow-joint became subsequently severely inflamed. Four blisters were applied with the usual beneficial result. An undoubted regurgitant mitral murmur was audible on the day of admission, and the respiration was short, and hurried, and difficult, although no pulmonary physical signs could be detected to account for the dyspnœa. The cheeks presented a somewhat livid appearance, and there was an evident embarrassment of the heart's circulation, consequent upon a (most probably) recent deposition of lymph upon the valve. These symptoms rapidly disappeared upon a free discharge of serum being established: and when she left the Hospital (twenty-eight days after admission), *no trace of mitral murmur* could be detected. Is it possible that the serum of the blood, being restored to its normal degree of alkalinity by the removal of the acid materies morbi, was enabled to re-dissolve a slight layer of lymph which had been deposited on the valve, and had produced the murmur and the embarrassed breathing?

The pulse was 96 on the day of admission; but on the next day rose to 116, and then fell to 84. The patient was delicate in constitution, and subject to severe indigestion and irritability of stomach —for which, after she had been allowed to walk about the ward, it was found necessary to prescribe bismuth and hydrocyanic acid. Strong broth and sherry were allowed on the ninth, fish on the fourteenth, and a chop on the twenty-second day. She remained under treatment twenty-eight days.

Case 6.—Was one of great interest, as the affection was very

severe, the man helpless, and the relief afforded so manifest. Here seven blisters were applied simultaneously, and three subsequently.

The pulse (although the case was very acute) was only 80 on admission. It fell, in forty-eight hours after the blisters were removed, to 68, and afterwards to 60, at which it remained, when he was discharged cured.

The temperature in the axilla stood, on admission, as high as 103°, and fell eventually to the normal 98°. The urine scanty and acid at first, became more abundant and neutral on the fourth day.

The case was most instructive to watch—as so many joints were acutely inflamed—the thirst intolerable, and perspiration intensely acid and abundant. He had not slept for a week previous to coming under treatment; and yet, after the removal of the seven blisters, his pains were so much relieved as to allow him to have six hours of continuous sleep. A slight relapse occurred upon two following days, when one and two blisters were respectively applied, and with the most favourable results. All traces of the rheumatic affection were removed in six days, and he was discharged cured, on the sixteenth day after his admission. On questioning him respecting the pain he had suffered from the blisters, he expressed himself most grateful for the application, adding that "he would prefer to have forty blisters applied than undergo the agony caused by rheumatic fever."

The heart was unaffected.

I will not stay to analyze each case, but I cannot refrain from giving some details of the last instance which I have had to tabulate.

Case 13.—A large-made, plethoric, beer-drinking carpenter, was admitted one Thursday evening with most severe articular rheumatism, affecting seven joints.

The pulse was 120, and hard; the temperature of the left axilla as high as 102·5°; the urine, perspiration, and saliva intensely acid; thirst excessive; appetite nil, and tongue foul. He had had no sleep for four nights. Seven large blisters were applied next (Friday) morning, around each limb affected, and in close proximity to the inflamed joints. I saw that they were carefully put on. On the Saturday morning they were removed, and linseed meal poultices

kept on for sixteen hours. By this means a large amount of serum flowed away, and on that (Saturday) morning the pulse had fallen to 86, the axillary temperature to 99·5°; the urine had become *absolutely alkaline*, and although the thirst was still great, he had some return of appetite. He had lost all pain in his limbs, and his joints were freely moveable. On Sunday he was dressed and sat up for three hours. On Monday he was so far recovered as to be able to walk by the aid of a stick; and on Tuesday morning on entering the ward, I found that he had risen and dressed himself of his own accord. The appetite was then good, and he declared himself to be only weak. He had eggs on the Monday, fish on the Tuesday, meat on Friday, and was discharged perfectly well on June 18th, after being sixteen days in the Hospital.

His heart was perfectly sound at the time of his discharge.

Being an intelligent man, and accustomed from his business to measurement, I desired him to write me out a short account of his case, and to calculate how much blister-plaster had been applied to his skin. The following is his letter, from which it appears that taking the mean of the thigh measurements to be sixteen inches, the number of square inches of blister-plaster amounted to 296½. No symptom of strangury appeared, and no inconvenience whatever beyond the pain to which he alludes. Their beneficial effect was rapid and complete, and their constitutional action, exhibited in the fall of the pulse from 120 to 86, and the production of *alkalinity* of the urine, as soon as full discharge of serum had been established:—

June 16th, 1864.

Sir,—The following is a true statement of my case, to the best of my knowledge and belief. I entered the London Hospital on Thursday the 2nd day of June, and was treated in the following manner:—

June 3rd.—Received application of seven blisters on different parts, viz., one on left shoulder, three by three inches and a-half; one on each thigh, seventeen inches and a-half at greatest length, and sixteen inches and a-half at lesser length, with a width of five inches: one near each ankle, ten inches by four; one near each wrist, eight inches by three inches and a-half. I received relief from rheumatic pains immediately the blisters began to draw. At midnight on the 3rd inst. they caused me much pain.

4th.—The blisters were dressed at 4.30 A.M., and linseed-meal poultices applied, which were continued till 8 P.M., when they were dressed with zinc ointment. In the meantime the rheumatic pains had almost entirely left me.

5th.—I got out of bed, and dressed with the assistance of a fellow-patient. Sat up three hours, the rheumatic pains having entirely left me.

6th.—Dressed myself without assistance; felt rather stiff; was able to walk about the ward with a stick. Sat up five hours.

7th.—Could walk about the ward without a stick.

8th, 9th, 10th, 11th.—The skin having healed up, I could walk as well as ever.

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

Dr. Herbert Davies. J. B.

P.S.—The following particulars I forgot to mention in the preceding part of this letter:—

I was attacked with pains in my left shoulder on Sunday the 22nd of May, but I did not know what was the cause; I thought it was only a cold. It got to my left leg at night. On the 23rd I got worse. I was told that I had the rheumatic fever. Had some medicine and a powder given me, and was ordered to apply hot bran poultices to my shoulder, and to bathe my ankles (where I felt most pain) with a solution of soda and water as hot as I could bear it.

I got so much worse, that I was compelled to lie in one position (on my back) for several days, the agony being intense. I remained in this state till the 2nd of June, when I was got down stairs with much difficulty, placed in a cab and brought here, and was received into Harrison's ward at 3.15 P.M. J. B.

Returning to this plan of treatment, I must impress upon you forcibly the fact that its success depends entirely upon the blisters being well applied and allowed to remain until they have thoroughly acted. Linseed-meal poultices subsequently applied will be found highly serviceable in promoting a sufficient flow of serum. The blisters should be placed entirely around the affected limb, and when the knees are inflamed, I order them to be cut at least three inches wide. You need have no fear of strangury supervening. In one case only did this inconvenience occur, but to so slight a degree as to be unworthy of mention, compared with the benefit afforded by the free vesication.

It will be observed that in none of the cases tabulated was any medicine given, beyond an occasional purge. At one time I associated in some previous cases the alkaline with blister treatment, but I found no advantage to result from the combination. On the contrary, I came to the conclusion that when a full discharge of serum had been established, the addition of alkalies to the blood did

not cut short the inflammation and its attendant agonizing pain, but rendered the period of convalescence more protracted. The altered constitution of the blood produced by perseverance in an alkaline treatment leads to a depression of general power too well known to require comment. I think it is reasonable to infer that if the acid materies morbi be really eliminated bodily, and the system rid of its prejudicial influence by the blister treatment, any amount of alkali internally administered would be not only useless, but injurious to the patient; and that the poison is really thrown out may be deduced as well from the rapid and permanent relief resulting from the local treatment, *as from the neutral and even alkaline condition of the urine*, the usual and early consequence of the treatment. The most important result observed in the cases thus locally treated was the rapid diminution in the force and frequency of the pulse, and the immunity of the heart from inflammatory mischief. In no case where the heart was sound at the time of admission, did any organic lesion subsequently develop itself; and in two cases in which soft but distinct mitral murmur was audible when the patient came under treatment, every trace of the sound rapidly disappeared as soon as free and abundant serous discharge had been established. I have already hypothetically explained this favourable result by supposing that a change effected in the alkalinity of the blood by the removal of the acid materies morbi from the discharging surface enabled that fluid to re-dissolve the lymph recently deposited on the surface of the valve.

Experiments are much needed to determine the degree and range of alkalinity of the blood of healthy individuals, and of those suffering from rheumatic fever. A comparison of the two would lead, I believe, to valuable inferences. I trust that we may be able to work out a portion at least of this problem within the next few months. Still, whatever may be the *rationale* of the treatment, there can be no doubt that our cases bear out most fully its immense value in shielding the heart from an organic lesion which would cripple it for life and render existence a burden. I do not doubt the value, to some extent, of the chemical neutralizing method of treatment, by alkalies rapidly and largely poured into the system. But *direct* elimination is evidently more likely to succeed than simple neutralization and possible subsequent elimination

by the kidneys. The lactate of potash resulting from the alkaline treatment may not be fully thrown out by the kidneys—part may be detained in the blood, and, becoming again decomposed, its acid constituent may be once more thrown upon the synovial and fibrous tissues, and lead to the relapses which occur during the alkaline treatment of the affection. The elimination which I have advocated, strikes at the root of the evil itself by drawing the poison at once from the system, or in such quantities as leaves only a residue in the blood, which the oxydizing and other chemical powers of that fluid can fairly cope with and destroy. Relapses under the blistering treatment have been so far very slight, and by no means frequent.* An extended series of cases is of course required to confirm these views; but as far as the experience of nearly twenty-five instances will admit (thirteen of which I have carefully tabulated), I believe that in the plan which I have laid down—of *elimination*, and not *neutralization*, resides the true, safe, and rapid mode of combating rheumatic fever.

Many interesting questions arise in the consideration of this treatment.

What is the nature of this power of affinity between certain substances and certain tissues? We see this force exemplified in numberless cases, as, for instance, in the deposit of lead in the muscles, of mercury in the bones, of arsenic in the liver, of silver in the brain and skin, &c. We observe it clearly in gout, in the crystalline, needle-like crystals of urate of soda, which are deposited *interstitially* in cartilage, and which incrust "ligamentous and fibro-cartilaginous tissue, tendons and their sheaths;" and are also found in white, streaky lines, in the substance of the kidneys. The same force is shown in the preference of morbid poisons for different parts of the body, as in scarlatina, whooping-cough, measles, hydrophobia, syphilis, &c. No one has separated, and isolated, and brought to chemical examination and analysis any of these poisons; but, although, up to the present time, they have escaped the penetration and patience of the chemist, there can be no shadow of doubt of their positive existence. Lactic acid is, with some reason, supposed to be the materies morbi

* "Relapse occurs more or less decidedly in twenty-five out of one hundred and nine cases treated in the ordinary way."—On *Rheumatic Fever*, by Dr. Wade.

of acute rheumatism; but as yet the evidence is too incomplete to establish this statement as a fact.

Again, for what length of time does this affinity—this power of attraction between poison and tissue continue? It is indeed difficult, if not impossible, to answer this question; but the condition of the poison, its persistent fluidity, or rapid tendency to crystallization, will go far to determine the probability of its being removed by such means as blistering. There is no evidence to shew that the poison of rheumatic fever—supposed to be the lactic acid, is ever deposited as a solid, while Dr. Garrod tells us that true gouty inflammation is *always* accompanied by a crystalline and interstitial deposit of urate of soda, which is infiltrated into the cartilages and ligaments, and remains there for a lengthened period of time, and perhaps for life. We can readily understand, then, how the fluid poison of acute rheumatism may be readily expelled from the system by setting up large discharging surfaces in the proximity of the poisoned joint; and, on the other hand, how the same amount of benefit cannot be readily expected from similar treatment in gout when the solid crystalline urate of soda has become deposited interstitially and beyond the pale of the circulation. I have no doubt that in the earliest stage of the joint affection, when the urate is still in the blood stream, some amount of elimination and consequent relief might be effected by free blistering; but, unfortunately, the rapid tendency of the poison to crystallize, steals a march upon our local efforts and renders them abortive. Still there can be no objection to the employment of blisters: and I have in some cases seen considerable relief effected by the application; but relapse has not been infrequent—a circumstance readily understood when we remember that we have been unable to remove a substance already part and parcel of the tissues.

Dr. Garrod has established the fact that uric acid can be usually detected in the blister-serum, derived from every portion of the surface of a gouty individual, except from the skin of the inflamed joint—the gouty inflammation appearing to him to have the power of chemically destroying the virus. Is it possible that the urate does not appear in the blister-serum, obtained direct from the joint, for the simple reason that it is rapidly separated from the blood, thrown into the tissue, and therefore really absent from the fluid?

In the very large large majority of cases, the poison of acute rheumatism fortunately tends more especially to the joints rather than to similar structures in the heart. It would appear also, from the cases before us, that the application of the blisters restrains the tendency of the acid poison to desert the limbs for the heart. Hence I infer the immense importance of *simultaneously attacking* every joint—great or small—which, by the slightest appearance of inflammation, indicates within the tissues the presence of the rheumatic virus. And I may say with some amount of confidence, derived from the observation of twenty-five cases, that we may fairly hope and expect, by bold and efficient treatment, to deprive this fearful affection of its most dreaded result—organic disease of the heart.

Cases are met with, I admit, where the poison appears to attack the heart before exhibiting its effects in the joints. Happily, these are very rare. Alkalies must be, in such cases, our main mode of treatment, until evidences are shewn of the joints becoming affected, when full and efficient blistering may so throw out the rheumatic virus from the system, as not only to relieve the joints, but, perhaps, the heart also, as I have shewn to have occurred in two of the cases which I have tabulated.

It will be seen that daily thermometrical observations have been made in most of the cases of the temperature of the affected joints, and that, as a rule, the diminution of the local inflammation has been attended with a corresponding fall in the heat of the affected part. The variations are, however, difficult to refer to any law, and I believe that real dependence for prognosis can only be placed upon the temperature in the axilla, where the thermometer can be well embedded and protected from atmospheric influences. The tables shew that the axillary temperature almost invariably falls with the discharge of the serum. Hence I infer, that the general cooling of the blood must be a direct consequence of this mode of treatment, and that this fluid being restored to its usual degree of alkalinity by being deprived of the acid poison which it previously contained, ceases to stimulate the heart to the abnormal degree characterizing the acute stage of the fever.

The organ loses its excessive irritability, as shewn by the diminished force and frequency of the pulse, and every tissue and structure is, coincidently, favourably influenced in a degree corresponding

with the diminished temperature and restored amount of alkalinity of the circulating blood. I propose in future to confine my thermometrical observations to the variations of the axillary temperature, believing that we shall find in that part of the body the safest and most trustworthy indication of the real condition of the patient. Dr. Woodman has kindly observed the temperature of twenty-one healthy individuals of all ages, and the results, although derived from a limited number of cases, are interesting, and may be valuable in what I may term comparative thermometry. It will be seen that the variations are very great, and not easy of explanation.

Lastly, as to the practicability of the mode of treatment in private practice. Although it looks indeed severe to apply so many square inches of blister plaster simultaneously to an individual already suffering intense agony, and burnt up with inflammatory fever, still a little tact and determination on your part will overcome the scruples of the most timid patient. Supposing the case to be one of uncomplicated—*bonâ fide*—acute articular rheumatism, you can with certainty promise speedy relief to his sufferings, and may, I believe, with equal truth assert that, if not attacked already, his heart, by this bold and decisive treatment, will be shielded from inflammatory action and permanent structural disease. In my own experience I have found the latter argument to be irresistible.

The detection of the lactic acid, or whatever acid it may be, in the discharge from the neighbourhood of the inflamed joint, would be a valuable and conclusive evidence of the correctness of the theory and the treatment. I append the following report from my friend, Mr. Fewtrell, an accomplished analyst, of his examination of the fluid. I trust we may be able eventually to isolate the materies morbi.

"Some attempts were made to determine the presence of lactic acid in the serum from the blisters. Unfortunately the determination of the 'presence of lactic acid is one of the most difficult tasks in analytical animal chemistry,'* and the results of these attempts can hardly be looked upon as conclusive.

The method adopted to separate the acid was the following:—

The serum, which was in all cases faintly alkaline, was at first

* Lehman, *Physiological Chemistry*, vol. i. p. 90. Dr. Day's translation.

treated with three or four times its bulk of alcohol, to separate the albumen. (It should be premised that the albumen of serum does not coagulate, but only gelatinizes on the application of heat.) Alkaline lactates are soluble in alcohol, and therefore would be found in the alcoholic solution filtered from the albumen. This solution was now evaporated almost to dryness, and the residue treated with sulphuric or oxalic acid. The mixture was then shaken up with ether, in which the lactic acid set free would dissolve. The ethereal solution was then removed by means of a pipette, and allowed to evaporate spontaneously. In every case a very small quantity of *acid* residue was obtained: this was mixed with a little water, neutralized with lime, oxide of copper, or oxide of zinc, filtered and evaporated. In no case, however, in consequence of the presence of a small quantity of animal matter, could crystals be procured sufficiently distinct to determine their nature by the microscope."

P.S.—The brief details of the following case, for which I am indebted to Mr. Daly, as occurring in the practice of Mr. Mundie, of Richmond Road, Dalston, will prove, I believe, interesting.

"*June 26th*, 1864.—C. O., aged 18, presented the usual symptoms of acute rheumatic fever; pulse, 124, tongue creamy, skin covered with acid perspiration, urine scanty and high-coloured, the right shoulder, right knee and elbow, hot, swollen, and exquisitely painful. She had had no sleep the previous night. No heart complication. Ordered,

Potassæ Bicarb	ʒiii
Potassæ Nitrat.	ʒji
Syrupis	℥j
Aquæ dest. ad.	℥vj ℥j 4^{tis} horis,

and five grains of Dover's powder at bed-time. Joints to be wrapped in wool.

"*June 27th*.—Rather worse; no sleep; slight delirium; the left ankle now affected in addition to the other joints.

"Rep. mist. alkal.—The joints to be painted with strong Tinct. Iodinii.

"*June 28th*.—No improvement; the right shoulder not quite so painful, but the left knee is now severely inflamed. Other symptoms as before. Was again delirious last night.

"*June 29th*.—No improvement. Was now ordered wide strips

of Empt. Lyttæ around each limb, and above the inflamed joints, and as the urine had already become alkaline, the medicine was discontinued.

"*June 29th.*—There is a free discharge established from the four blistered surfaces. The patient states 'that she feels quite comfortable; that the pain of the blisters while they were applied was great, but that they had cured the pain, and that she would rather endure them over again than have it back.'

"I did not remark the exact number of the pulse, but was struck with the sudden abatement of all the febrile symptoms.

"I gave her no medicine, the urine was still neutral.

"*June 30th.*—Has passed a good night, and feels very much better.

"*July 1st.*—The left wrist is rather painful, and I have ordered another blister to be applied above it.

"From this date the patient rapidly recovered, without any other treatment beyond a little chalybeate medicine.

"There was no heart complication from first to last."

It is evident from the details of this case that the *chemical* production of alkaline urine by the internal administration of alkalies is no proof that the acid materies is *fully* neutralized and eliminated. The alkaline condition of the urine only proves that the alkali absorbed into the circulation has passed off in such quantities by the kidneys as to be able to neutralize and overpower any normal or abnormal acid making its exit in that direction from the body. The tendency of alkalies to run off by the urine is easy of demonstration. "Mr. Brande states that two drachms of carbonate of soda rendered healthy urine alkaline in six minutes, occasioning the precipitation of triple phosphate in a quarter of an hour, and restoring the blue colour to reddened litmus paper." * It is probable that a portion of the acid virus of rheumatic fever lingers at the joints, being detained in the tissues by some powerful force of affinity, and while inducing acute inflammatory action, eludes the antagonizing effect of the alkaline remedies introduced into the stomach. Another portion free and uncombined with the tissues, very probably becomes neutralized by the alkali, and eliminated by means of the kidneys.

* Pereira's *Mat. Med.*, vol. i. p. 177.

The neutral and *frequently* alkaline condition of the urine resulting from the blister treatment, can only result from so much acid being withdrawn from the blood by the application. The neutrality or alkalinity in this case is a measure, therefore, of the quantity of materies morbi actually evacuated, while the alkalinity from the potash treatment is not necessarily a measure of the amount of acid virus neutralized and expelled, but rather of the quantity of alkaline remedies thrown into the calculation.

CASE I.

Admitted.	Name and Occupation.	Age.	Sex.	Constitution.	Number of Attack.	Character of Attack.	Duration of attack before Admission.
February 23rd	W. S.—Turner	21	Male	Weakly	First	Acute	Six days

February . .	23rd	24th	25th	26th	27th	28th
Pulse . . .	120	120	88	92	100	96
Temp. in Axilla	102°	101°	100°	100°	100°	101°
Temperature and mobility of joints affected. R. W.	—98°—Fixed	—93°—Slight motion	—97°—Slightly improved	—96½°—The same	—96°—More motion	—96°—Free
L. W.					—98°—Slight motion	—97½°—The same
R. E.						
L. E.	—96°—Slight motion	—98°—Still the same	—98½°—Slightly improved	—98°—Good	—96°—Ditto	
R. K.	—100°—Fixed	—96½°—Fixed	—96°—Good	—97°—Good	—96°—Ditto	—99°—Free
L. K.	—99°—Slight motion	—98°—Fixed	—98½°—Good	—96°—Not so good	—99°—Slight motion	—99½°—Rather freer
R. A.	—96°—Fixed	—99°—Fixed	—94°—Good	—89°—Good	—91°—Good	—92°—Free
L. A.	—97°—Fixed	—98°—Fixed	—95°—Good	—94°—Not so good	—96°—Slight motion	—97½° — Rather freer
Blisters applied	Six	—	—	—	One above left wrist	—
Perspiration .	Profuse, Acid	The same	ditto	ditto	ditto	Very slight—Acid
Urine . . .	Scanty, high-coloured, acid	The same	Slightly increased, neutral	Quantity slightly increased, neutral	The same, neutral	Very slight acid
Tongue . .	Creamy	The same	ditto	ditto	Cleaning	Still cleaning
Thirst . . .	Excessive	The same	ditto	ditto	ditto	ditto
Appetite . .	Bad	Still bad	ditto	ditto	Very slightly better	The same
Amount of sleep	He had not slept for four nights	Did not sleep on account of the blisters	Very slight	Four hours	All night	Kept awake by the blister
Bowels, Action of	Regular	Regular	The same	The same	ditto	ditto
Diet	Milk and beef-tea	The same	ditto	ditto	ditto	ditto

CASE I.—*Continued.*

Morbus Cordis at Admission.	Days in the Hospital.	Morbus Cordis at Discharge.	Discharged.
None	36	None	March 30th

29th	March 1st	2nd	3rd	4th	5th
92	84	80	86	96	86
100°	100½°	100°	98°	97½°	99°
—98½°—Free	—96½°—Free	—98°—Free	—97°	—94½°	—96°
—96°—Free but painful	—96½°—The same	—99°—Free	—96°	—96°	—97°
—97°—Free	—98½°—Free	—98°—Free	—98½°	—97°	—96°
—98½°—The same	—98°—Free	—98°—Free	—98°	—96½°	—98°
—94½°—Free	—90°—Free	—97°—Free	—95°	—92°	—94°
—94°—The same	—87½°—Free	—95°—Free	—92°	—90°	—94°
—	—	—	—	—	—
Increased	The same	Ceased	Still Absent	The same	Normal
Quantity, increased, triple phosphates precipitated	Normally acid	Neutral	Neutral.—Phosphates precipitated	Good quantity, neutral	The same
Much cleaner	The same	The same	Almost clean	The same	The same
Less	Still less	ditto	ditto	Normal	Normal
Improving	The same	The same	Feels hungry	Good	Good
All night	Badly	Badly	Six hours	Six hours	All night
Inclined to be constipated	The same	Not open.—Ordered an aperient draught.	Regular	ditto	Regular
ditto	ditto	ditto	ditto	L. P. in addition	ditto

All freely movable, but slightly stiff. The same. Perfectly free from stiffness.

CASE II.

Admitted.	Name and Occupation.	Age.	Sex.	Constitution.	Number of Attack.	Character of Attack.	Duration of attack before Admission.
February 26th	W. M.—Labourer	32	Male	Robust	First	Acute	Six days

February . .	27th	28th	29th	March 1st	2nd	3rd
Pulse . . .	118	90	92	80	73	70
Temp. in Axilla	100°	100°	98°	99°	98°	98°
Temperature and motility of joints affected. R. W.						
Temperature and motility of joints affected. L. W.	—98°—Slight motion	—98°—Moveable but stiff	—96°—The same	—90°—Free	—88°—Perfect	—93½°—The same
Temperature and motility of joints affected. R. K.	—98½°—Slight motion	—97½°—Moveable	—96°—Moveable	—95°—Free	—95°—Perfect	—94°—The same
Temperature and motility of joints affected. L. K.	—100½°—Fixed	—96½°—Moveable without pain	—96°—The same	—95°—Free	—95°—Perfect	—96°—The same
Temperature and motility of joints affected. R. A.	—98°—Slight motion	—97°—Moveable with pain	—96°—Moveable	—93°—Free	—93°—Perfect	—91°—The same
Temperature and motility of joints affected. L. A.	—99°—Slight motion	—92°—Moveable without pain	—96°—The same	—96°—Free	—90°—Perfect	—87½°—The same
Blisters applied	Five	—	—	—	—	—
Perspiration .	Acid, but not profuse	Increased—Slightly acid	The same	ditto	ditto	ditto
Urine . . .	Scanty—Acid	Scanty—neutral	Quantity increased.—Slightly acid	ditto	ditto	Normal—Quantity, colour, and acidity
Tongue . .	Moist and white	The same	ditto	Cleaner	ditto	Almost clean
Thirst . . .	Slight	The same	Rather less	Less	The same	Normal
Appetite . .	Bad	Slightly better	ditto	Better	ditto	Good
Amount of sleep	Two hours	Five hours	Seven hours	Six hours	Seven hours	Six hours
Bowels, Action of	Regular	ditto	ditto			
Diet . . .	Milk and Beef-tea	ditto	ditto		L. Pudding	

CASE II.—*Continued.*

Morbus Cordis at Admission.	Days in the Hospital.	Morbus Cordis at Discharge.	Discharged.
None	18	None	March 15th

4th	5th	
64	72	
98°	97½°	
—86° Perfectly free.	—85° Ditto.	
—96°	—94°	
—94°	—94°	
—91°	—89°	
—88°	—89°	
—	—	
Normal	Normal	
Normal	The same	
The same	ditto	
Normal	ditto	
ditto	ditto	
Six hours	All night	
	Fish	Middle diet on the 9th.

CASE III.

Admitted.	Name and Occupation.	Age.	Sex.	Constitution.	Number of Attack.	Character of Attack.	Duration of attack before Admission.
March 8th	G. S.—Scalemaker	24	Male	Robust	First	Acute	Nine days

Morbus Cordis on Admission.	Days in the Hospital.	Morbus Cordis on Discharge.	Discharged.
Mitral	28	Mitral	April 5th

March . . .	8th	9th	10th	11th	12th	13th	14th	15th	16th	17th	
Pulse . . .	96	92	80	86	86	84	80	76	88	80	
Temp. in Axilla	103°	102°	100°	101°	100°	100°	100°	99°	100°	100°	
Temperature and mobility of joints affected. R. S.	—103°—Slight motion	—102°—Slight motion, without pain	—100°—Moveable without pain								
R. W.	—98°—Moveable with great pain	—98°—Moveable without pain	—98°—Movement free	—95°—Free	—90°—Perfect	—97°—The same	—93°—ditto	—96°—ditto	—92°	—92°	
L. W.				—92°—Slight movement with pain	—98°—Moveable with pain	—96°—Moveable without pain	—94°—Perfect	—95°—ditto	—92°	—92°	
R. K.	—100°—Slight motion	—100°	—97°	—99°	—99°	—99°	—98°—Quite free	—97°—Perfect	—97½°	—98°	
L. K.	—101°—Slight motion	—100°	—98°	—99°	—98½°	—98°	—98°—Slightly stiff	—98°—Better	—98°	—97°	
R. A.	—100°—Slight motion	—94°	—93°	—92½°	—96°	—95½°	—95½°—Quite free	—93°—Perfect	—94½°	—92½°	
L. A.	—98°—Slight motion	—94°	—95°	—94°	—96½°	—96°	—95°—Slightly stiff	—93°—Better	—94½°	—92°	
Blisters applied	Six	—	—	One	—	—	—	—	—	—	
Perspiration .	Excessive, acid	The same	Less	Increased	Less	Much less	The same	Increased	The same	Almost normal	
Urine . . .	Normal quantity, acid	The same—neutral	The same	ditto	ditto	The same.—Very slightly acid	ditto.—Neutral	ditto	ditto	Normal	
Tongue . .	White, moist, and coated	Much cleaner	The same	Rather white again	Cleaner	Slightly white	Cleaner	The same	Much cleaner	Almost clean	
Thirst . . .	Excessive	The same	The same	The same	The same	The same	Rather less	Still less	ditto	ditto	
Appetite . .	Very bad	Slightly better	Better	Good	Good	Good	Very good	Very good	Very good	ditto	
Amount of sleep	He had not slept for three nights	Did not sleep on account of blisters	Six hours	Three hours. Kept awake by pain in left wrist	One hour and a half	Six hours	Eight hours	Six hours	Six hours	Six hours	
Bowels, Action of	Regular	Regular	Regular	Regular	ditto	Confined	Open	Regular	ditto	ditto	
Diet. . . .	Milk, Beef-tea	ditto	ditto	ditto	ditto	ditto	ditto	ditto.—Fish	ditto	ditto	March 18th—L. P.; March 21st—Chop.

Movable, with slight pain. Movement free, without pain. The same, but stiff. Much the same. Ditto. Perfectly free. Free.

CASE III.—*Continued.*

CASE IV.

Admitted.	Name and Occupation.	Age.	Sex.	Constitution.	Number of Attack.	Character of Attack.	Duration of attack previous to Admission.
March 15th.	A. D.—Servant.	17	Female.	Robust.	First.	Acute.	Nine days.

Morbus Cordis on Admission.	Days in the Hospital.	Morbus Cordis on Discharge.	Discharged.
None	18	None	April 2nd.

March . . .	15th	16th	17th	18th	19th	20th	21st	22nd
Pulse . . .	100	100	88	84	92	76	72	60°
Temp. in Axilla	102°	101°	100°	99°	99½°	98½°	98°	98°
Temperature and mobility of Joints affected. R. W.	—99°—Immoveable	—98°—The same	—95°—Moveable without pain	—95½°—The same	—97°—Perfect	—94°—Perfect	—94°	—92°—ditto
L. W.	—98°—Immoveable	—98°—Slightly moveable	—95°—Moveable without pain	—96°—Moveable with pain	—96°—Perfect	—95°—Perfect	—93°	—92°—ditto
R. K.	—99°—Immoveable	—99½°—Slight motion	—95°—Moveable without pain	—96°	—98°	—95°—Perfect	—96°	—94°—ditto
L. K.	—99°—Immoveable	—98°—Slight motion	—97°—Moveable without pain	—96°	—97°	—97°—Perfect	—96°	—94°—ditto
R. A.	—99°—Immoveable	—98°—Slight motion	—94°—Moveable without pain	—94°	—93°	—93½°—Perfect	—89°	—88°—ditto
L. A.	—96°—Immoveable	—96°—Slight motion	—92°—Moveable without pain	—92°	—91°	—93½°—Perfect	—92°	—89°—ditto
				The same.	Quite free.		The same.	
Blisters applied	Six	—	—	—	—	—	—	—
Perspiration .	Excessive	Rather less	The same	The same	Still less	Normal	Normal	ditto
Urine . . .	Scanty, high-coloured, acid	The same—slightly acid	Better colour, quantity increased, neutral	The same, alkaline phosphates, prisms under microscope	Very slightly acid	Normal	ditto	ditto
Tongue . .	White and coated at the edges, red down the centre	The same	Cleaner	Almost clean	Quite clean	The same	ditto	ditto
Thirst . . .	Excessive	The same	The same	Less	Still less	The same	Normal	ditto
Appetite . .	Very bad	Bad	Slightly better	The same	Good	Very good	The same	ditto
Amount of sleep	None	Did not sleep on account of the blisters	None—was in no pain		Four hours	Six hours	Six hours	Did not sleep, was in no pain
Bowels, Action of	Regular	ditto	ditto	ditto	ditto	ditto	ditto	ditto
Diet	Milk, Beef-tea	ditto	ditto	ditto	ditto	ditto	L.P., one egg	Chop

CASE IV.—*Continued.*

CASE V.

Admitted.	Name and Occupation.	Age.	Sex.	Constitution.	Number of Attack.	Character of Attack.	Duration of attack previous to Admission.
April 1st.	A. L.—Servant.	18	Female.	Feeble and delicate.	Second.	Acute.	Ten days.

Morbus Cordis on Admission.	Days in the Hospital.	Morbus Cordis on Discharge.	Discharged.
Mitral murmur	28	None	April 28th.

April . . .	1st	2nd	3rd	4th	5th	6th	7th	8th	
Pulse . . .	96	116	88	84	84	82	83	92	
Temp. in Axilla	102°	102°	101°	100°	99½°	99½°	100°	100°	
Temp. & mobility of Joints affected. L. S.	—102°—Moveable with pain	—102°	—100½°	—100°—The same	—101°—The same	—99½°	—99°—The same	—100°—Free	
R. W.	—98°—Immoveable	—98°	—98°	—98°—The same	—97°—The same	—97°	—96°—The same	—95°—Free	
L. W.	—99°—Immoveable	—99½°	—96½°	—97½°—The same	—96°—The same	—95°	—95°—The same	—95°—Free	
R. E.					—97°—Immoveable	—97°—The same	—96°—Moveable without pain	—98°—Free	
Blisters applied	Three	—	—	—	One	The same	—		
Perspiration .	Very slight	Normal	The same	Increased	Less	The same	Normal	ditto	
Urine . . .	Good colour, scanty and acid	Normal acidity and colour	The same	ditto	ditto	Normal	Normal	ditto	
Tongue . .	Coated, and inclined to be dry down the centre	Moist and creamy	The same, inclined to be dry again	Moist and beginning to clean	Still cleaning	Moist and white	Cleaner and moist	Cleaner	
Thirst . . .	Moderate	Less	ditto	Increased	Less	Still less	Normal	Slightly increased	
Appetite . .	Entirely gone	The same	ditto	Slightly improved	Better	The same	Better	ditto	
Amount of sleep	None	Did not sleep on account of the blisters	None, was in no pain	Slept at times in the night	No sleep on account of blister	No sleep—was in no pain	Slept better	Slept well	
Reaction of saliva . . .	Very acid	Acid	Acid	ditto	ditto	ditto	Neutral	Acid	
Bowels, Action of	Regular	The same	ditto	ditto	ditto	Confined, H. D.	Regular	ditto	
Diet. . . .	Milk and Beef-tea	ditto	ditto	ditto	ditto	ditto	ditto, Egg	ditto	9th Sherry ℥iij 11th Strong broth 14th Fish 22nd Chop
Remarks . .									

Temp. & mobility of Joints affected.: Moveable with pain on account of blister. (L. S., R. W., L. W.); Freely moveable, with slight pain. (R. E.); Moveable without pain (L. S., R. W., L. W., R. E.)

A. L. was allowed to be dressed on April 15th, and to walk about the ward. Being of a weakly constitution, her convalescence was somewhat prolonged; bismuth was given her to allay some irritability of stomach.

The rheumatic attack closed in eight days.

At the period of admission there was a distinct murmur audible at the apex of the heart; and considerable amount of dyspnœa unaccounted for by any marked pulmonary disease. Very probably a fibrinous deposit had taken place on some portion of the valve. By the free discharge of the serum of the blister, the blood resumed its usual alkalinity, the deposit was re-dissolved, and the normal sound at the [illegible]

CASE V.—*Continued.*

CASE VI.

Admitted.	Name and Occupation.	Age.	Sex.	Constitution.	Number of Attack.	Character of Attack.	Duration of attack previous to Admission.
April 1st.	W. A.—Carpenter.	19	Male.	Robust.	First.	Acute.	Six days.

April . . .	1st	2nd	3rd	4th	5th	6th	7th
Pulse . . .	80	80	84	68	72	68	60
Temp. in Axilla	103°	101°	101°	100°	99½°	98°	98°
Temperature and mobility of joints affected. R. S.	—102°—Moveable with great pain	—101°—Moveable with slight pain	—102°—Freely moveable	—99°—The same	—100°—Free	—98°—The same	—98°
R. W.	—100—Immoveable	—97°—Moveable with slight pain	—99°—Freely moveable	—95°—The same	—96°—Slightly stiff	—92°—Free	—90°
L. W.	—100°—Immoveable	—97°—The same	—98°—Moveable with slight pain	—96°—The same	—96°—Free	—92°—Moveable with slight pain	—99°
R. K.	—100°—Immoveable	—96°—The same	—98°—The same	—97°—The same	—96°—Moveable with slight pain	—95°	—94°
L. K.	—100°—Immoveable	—96°—Moveable with slight pain	—98°—The same	—96½°—The same	—95°—Freely moveable	—96°	—94°
R. A.	—98°—Immoveable	—88½°—Immoveable	—95°—Freely moveable	—93½°—Free	—94°—The same	—89°	—84°
L. A.	—99°—Immoveable	—85°—Freely moveable without pain	—94°—The same	—92°—The same	—94°—The same	—86°	—83°
Blisters applied	Seven	—	One	Two			
Perspiration .	Excessive, acid	Less, acid	Slight	The same.—Neutral	Increased	The same—neutral	Normal
Urine . . .	High coloured, acid, rather scanty	Good colour and quantity, acid	High coloured, scanty, acid	The same	Better colour and quantity, neutral	The same	The same
Tongue. . .	White and coated except at top	Beginning to clean at sides	Moist and creamy	Beginning to clean	Much cleaner	Still cleaning	Almost clean
Thirst . . .	Excessive	The same	Less	The same	ditto	Very slight	Normal
Appetite . .	Very bad	The same	The same	The same	Better	Good	Very Good
Amount of sleep	Had not slept for a week	Did not sleep on account of blisters	Six hours	No sleep on account of blisters	None—slight pain	Slept all night	Six hours
Reaction of saliva. . .	Acid	Acid	Acid	ditto	ditto	Acid	Neutral
Bowels, Action of	Regular	Regular	Confined	Regular	Regular	ditto	[illegible]
Diet. . . .	Milk, Beef-tea	ditto	ditto	ditto	ditto	ditto	[illegible], L. P.; Eggs (2)	9th Sherry, 3ij 14th Middle diet

All joints freely moveable without pain.

CASE VI.—*Continued.*

Morbus Cordis on Admission.	Days in the Hospital.	Morbus Cordis on Discharge.	Discharged.
Mitral murmur	16	None.	April 16th.

CASE VII.

Admitted.	Name and Occupation.	Age.	Sex.	Constitution.	Number of Attack.	Character of Attack.	Duration of attack previous to Admission.
April 19th	M. A.—Servant.	20	Female	Robust.	First.	Acute	Three days

April . . .	19th	20th	21st	22nd	23rd	24th
Pulse . . .	112	120	106	92	96	88
Temp. in Axilla	102°	102°	100½°	101°	100°	98½°
Temperature and mobility of joints affected. R. S.	—102°—Moveable with pain	—102°—The same	—100½°—Moveable with slight pain	—101°—Free from pain	—100°—Much freer movement	—98½° Slightly stiff.
L. S.	—102°—Moveable with pain	—102°—The same	—101°—Moveable with slight pain	—101½°—Free from pain	—100°—Much freer movement	—98°
R. E.		—101°—Moveable with pain	—99°—The same	—100°—The same	—99°—Free from pain	—97°
R. W.			—98°—Moveable with great pain	—99°—The same	—99°—Moveable without pain	—97°—The same
R. K.	—100°—Immoveable	—100½°—ditto	—98°—More movement	—99° Painfully free from pain, but slightly stiff.	—99° Much freer movement. No pain.	—98°—Moveable with slight pain
L. K.	—98°—Immoveable	—101½°—ditto	—97°—The same	—100°	—98°	—98° A few minutes
R. A.	—98°—Immoveable	—100°—ditto	—94°—More movement	—94°	—95°	—91½°
L. A.	—99°—Immoveable	—100°—ditto	—94°—The same	—94°	—95°	—91½°
Blisters applied	Six	One	One			
Perspiration .	Excessive	The same, acid	The same	ditto	Less, slightly acid	Still less
Urine . . .	Scanty, high-coloured	The same—turbid and very acid	The same, slightly acid	ditto, clear, neutral	Good colour and quantity, slightly acid	The same
Tongue . .	Coated and furred	The same	ditto	Cleaner	The same	Much cleaner
Thirst . . .	Excessive	The same	ditto	ditto	ditto	ditto
Appetite . .	Very bad	ditto	ditto	Bad	Rather better	Much better
Amount of sleep	Had not slept for three nights	Did not sleep on account of the blisters	Slept one hour	ditto	Did not sleep, was in no pain	Three hours
Reaction of saliva . .	Highly acid	Slightly acid	Acid	The same	ditto	ditto
Bowels, Action of	Regular	Confined	Open	Confined	ditto, H.D., ℥j.	Regular
Diet	Milk, Beef-tea	ditto	ditto	ditto	ditto	ditto

CASE VII.—*Continued.*

Morbus Cordis on Admission.	Days in the Hospital.	Morbus Cordis on Discharge.	Discharged.
None	21	None	May 10th

25th	26th	27th	28th	
84	76	72	72	
98°	98°	97°	99°	
—98°—The same	—98°—ditto	—97° Perfectly free.	—99°—Perfect	
—98°—The same	—98°—ditto	—97½°	—99°—Perfect	
—96°—The same	—96°—ditto	—96½°	—96°—Perfect	
—94½°—The same	—94°—ditto	—94°	—94°—Perfect	
—99° Free movement, without pain.	—95° The same.	—95½° Perfect.	—95°—Perfect	
—96½°	—96°	—95½°	—95°—Perfect	
—88°	—90°	—89°	—89½°—Perfect	
—88°	—91°	—89½°	—91°—Perfect	
ditto	ditto	Very slight	Normal	
ditto	The same	Normal	Normal	
ditto	ditto	Almost clean	Quite clean	
ditto	Less	Slight	Normal	
ditto	Good	Good	Very good	
Four hours	Six hours	Six hours	Five hours	
ditto	ditto	ditto	Neutral	
ditto	ditto	ditto	ditto	
ditto	ditto	ditto, L. P.	ditto	May 2, Fish May 9, Middle diet

CASE VIII.

Admitted.	Name and Occupation.	Age.	Sex.	Constitution.	Number of Attack.	Character of Attack.	Duration of attack previous to Admission.	Morbus Cordis on Admission.	Days in the Hospital.	Morbus Cordis on Discharge.	Discharged.
April 20th	M. B — Married	28	Female	Thin and pale; weakly & highly hysterical	First	Acute	Six days; ill three months previous	None	40	None	May 30th

April . . .	21st	22nd	23rd	24th	25th	26th	27th	28th	29th	30th
Pulse . . .	120	108	100	94	84	84	88	84	88	81
Temp. in Axilla	100½°	100°	100°	98½	98°	97½°	98°	99°	98°	99°
Temperature and mobility of joints affected. R. S.	—100½°—Immoveable	—100°—Moveable with pain, slightly stiff.	—100°—Moveable but stiff.	—98½°—The same	—98°	—97½°	—98°	—99°—The same	—98°—The same.	—99°—ditto
L. S.	—100½°—Immoveable	—99°	—100°	—100°—The same	—98°	—96½°	—96°	—98°—The same	—97°	—99°—ditto
R. E.	—100°—Immoveable	—98°	—99°	—98,—The same	—98°	—94°	—97°	—96°—The same	—98°	—98°—ditto
L. E.	—100°—Immoveable	—99°	—98°	—97½°—The same	—97½°*	—94°	—97°	—98°—The same	—98°	—98°—ditto
R. K.	—99°—Immoveable	—95° —Moveable without pain.	—97° —Moveable without pain or slight stiff.	—96°	—96°	—94°	—95°	—96°	—96°	—96°
L. K.	—100°—Immoveable	—96°	—97°	—96°	—96½°	—94°	—94°	—96°	—96°	—96½°
R. A.	—98°—Immoveable	—88°	—93°	—94°	—90°	—91°	—91°	—93°	—92°	—93°
Blisters applied	Seven	—			One					
Perspiration .	Moderate, acid	Excessive	Less	Excessive	ditto	Less	Excessive	The same	ditto	Slight
Urine . . .	High coloured, scanty	The same, slightly acid	Better colour and quantity, slightly acid	The same	ditto	Normal	ditto	ditto	ditto	Normal
Tongue . .	Moist and slightly coated	The same	The same	ditto	Cleaner	Much clean	ditto	Clean	ditto	ditto
Thirst . . .	Excessive	The same	ditto	Less	ditto	Less	ditto	Increased	The same	Less
Appetite . .	Very bad	The same	ditto	ditto	ditto	Better	ditto	ditto	Good	Good
Amount of sleep	One hour	Did not sleep on account of blisters	Three hours	Did not sleep, was in no pain	Slept a little	ditto	Did not sleep, was in no pain	No sleep	Four hours	Five hours
Reaction of saliva . .	Acid	Acid	ditto	ditto	ditto	ditto	ditto	ditto	ditto	ditto
Bowels, Action of	Confined, H. D., ℥j.	Open	Confined, H. D., ℥j.	Open	Open	Confined, H. D., ℥j.	ditto, H.D., ℥j.	ditto, H.D., ℥j.	ditto, H.D., ℥j.	Open
Diet	Milk and Beef-tea	ditto	ditto	ditto	ditto	ditto, L. P.	ditto	ditto	ditto	ditto
Remarks . .										

Although much immediate benefit was derived in this case, from the treatment, still two relapses occurred —May 9th, in the left wrist (which had not been previously attacked), and again on May 21st, though very slightly. She left the Hospital cured, May 30th.

* 97½ moveable with pain.

CASE VIII.—*Continued.*

CASE IX.

Admitted.	Name and Occupation.	Age.	Sex.	Constitution.	Number of Attack.	Character of Attack.	Duration of attack previous to Admission.
April 26th	H. S.—Labourer	30	Male	Delicate	Second	Acute	Seven days

Morbus Cordis on Admission.	Days in the Hospital.	Morbus Cordis on Discharge.	Discharged.
Direct aortic murmur	20	Direct aortic murmur	May 16th

April . . .	27th	28th	29th	30th	May 1st	2nd	3rd	4th	
Pulse . . .	88	88	92	88	93	96	84	72	
Temp. in Axilla	102°	101°	101½°	101°	101°	100°	99°	99½°	
Temperature and Mobility of Joints affected. R. E.	—100°—Immoveable	—100°—Moveable without pain	—100°—Freely moveable	—100½°	—100°	—100°	—98°		
L. E.	—99°—Moveable with slight pain	—99°—Moveable without pain	—100°—Freely moveable	—101°	—100°	—98°	—98°		
R. W.	—99°—Immoveable	—99°—Moveable with pain	—96°—Freely moveable	—99°	—98°	—99°	—96°		
R. K.	—100°—Immoveable	—99°	—98°—Freely moveable	—97°	—98°	—97°			
L. K.	—100°—Immoveable	—97°	—98°—Freely moveable	—98°	—98°	—96°			
R. A.	—96°—Immoveable	—94½°	—95½°—Freely moveable	—95½°	—95°	—95°			
L. A.	—97°—Immoveable	—95°—Moveable with slight pain	—96°—Freely moveable	—95°	—95°	—94°			
Blisters applied	Seven								
Perspiration .	Excessive, acid	The same	ditto	ditto	Less	Increased	The same	ditto	
Urine . . .	Scanty, high-coloured, slightly acid	The same—neutral	Better colour, quantity increased, alkaline triple phosphates under microscope	The same	Slightly high-coloured, neutral	The same	ditto	Normal	
Tongue . .	Moist and white	The same	Beginning to clean	The same	Cleaner	The same	The same	Much cleaner	
Thirst . . .	Excessive	The same	ditto	ditto	ditto	ditto	ditto	Less	
Appetite . .	Very bad	The same	ditto	ditto	Better	ditto	Better	Much better	
Amount of sleep	None	Did not sleep on account of blisters	Three hours	None, was in no pain	Two hours	Slept now all night	Slept a great deal in the day	Slept well	
Reaction of saliva . . .	Acid	ditto	ditto	ditto	ditto	ditto	ditto	ditto	
Bowels, Action of	Confined, H.D., ʒj.	Open	ditto	Confined, H.D., ʒj.	Confined, H.D., ʒj.	Open freely	ditto	Regular	May 7, Fish, May 11, Light Pudding, May 13, Middle diet and Sherry ʒiij.
Diet. . . .	Milk and Beef-tea	ditto	ditto	ditto	ditto	ditto	ditto	ditto	

CASE IX.—*Continued.*

CASE X.

Admitted.	Name and Occupation.	Age.	Sex.	Constitution.	Number of Attack.	Character of Attack.	Duration of attack previous to Admission.
May 14th	F. C.—Domestic	20	Female	Robust	Second	Acute	Four days

May	14th	15th	16th	17th	18th	19th
Pulse	120	112	116	100	112	96
Temp. in Axilla	102°	102°	102°	100°	100°	100°
Temperature and mobility of Joints affected. R. W.	—100°—Immoveable	—100°—Immoveable from blisters	—99·5° } Free from pain.	—98° } Freely Moveable.	—100° } Same.	—100° } Nearly stiff.
L. W.	—100°—Immoveable	—102°—Immoveable from blisters	—100·5° }	—100° }	—100° }	—99·5° }
R. K.	—96·5°—Moveable with great pain	—94° } Perfectly free from pain except of blisters.	—100° }	—98·5° } Slightly stiff.	—99° } More moveable.	—99° } Same.
L. K.	—97°—Moveable with great pain	—100° }	—91·5° } Ditto and moveable but stiff.	—100° }	—99° }	—100° }
R. A.	—97°—Moveable with pain	—96° }	—97·5° }	—96° }	—90·5° }	—97° }
L. A.	—98°—Moveable with pain	—98° }	—67° }	—97° }	—97° }	—98° }
Blisters applied	Six	Two (dorsum of hand)				
Perspiration	Excessive	ditto, less acid	Less	Normal	ditto	ditto
Urine	Not tested—(Catamenia)		Colour normal and slightly acid	Normal	ditto	ditto
Tongue	Moist and white	ditto	ditto	Cleaning	Cleaner	Cleaning
Thirst	Excessive	ditto	ditto	Less	ditto	Less
Appetite	Fair	Bad	Fair	ditto	ditto	Better
Amount of sleep	None for four days	None	Three hours	Little	ditto	ditto
Bowels, Action of	Confined	ditto	Open	Open	Open	Open
Diet	Milk and Beef-tea	ditto	ditto	ditto, with Light Pudding	ditto	ditto
Reaction of Saliva	Very acid	ditto	Slightly acid	Same	Very acid	Acid
Remarks						

CASE X.—*Continued.*

Morbus Cordis on Admission.	Days in the Hospital.	Morbus Cordis on Discharge.	Discharged.
Direct aortic murmur, probably functional	40	None	June 23rd

20th	21st	22nd	23rd	24th	25th
108	108	120	112	108	100
102°	102°	102°	101°	100°	100°
—102° } The same but stiff.	—99° } The same as last.	—99° } The same as last.	—99½° } Free.	—96° } All freely moveable. No pain.	—96° } Same.
—100°	—98°	—96°	—99½°	—94°	—95°
—100°	—98°	—97°	—96° } All free.	—98°	—96°
—100°	—98°	—96°	—96°	—96°	—96°
—98°	—96°	—94°	—96½°	—98°	—95°
—99°	—96°	—95°	—96°	—96°	—95°
ditto	ditto	ditto	ditto	ditto	ditto
ditto	ditto	ditto	ditto	ditto	ditto
Cleaner	ditto	ditto	ditto	Clean	ditto
ditto	ditto	Thirsty	Less	Less	ditto
ditto	ditto	ditto	Good	Good	ditto
Slept well	ditto	ditto	Six hours	Slept well	ditto
Open	Open	Open	Open	Open	Open
ditto	ditto	ditto	ditto	ditto	ditto
					ditto
Very acid	ditto	Very acid	ditto	Slightly acid	
				Temp. of ward 70°	Temp. of ward 65°

CASE XI.

Admitted.	Name and Occupation.	Age.	Sex.	Constitution.	Number of Attack.	Character of Attack.	Duration of attack previous to Admission.
May 17th	H. A.—Married	28	Female	Weakly	Sixth	Acute	Fourteen days

May	18th	19th	20th	21st	22nd	23rd
Temp. of ward	72°	76°	72°	72°	69°	70°
Pulse	119	124	100	108	120	100
Temp. in Axilla	103½	102°	101°	102°	98°	103°
Temperature and mobility of joints affected. R. W.	—102½—Immoveable	—99°	—100°	—99°	—98°	—98°—Moveable with slight pain
L. W.	—100°—Moveable with pain	—98°	—100°	—98°	—98°	—97°—Moveable with slight pain
R. K.	—99½°—Moveable with great pain	—100°	—99°	—98°	—96°	—98°
L. K.	—99°—Moveable with great pain	—98°	—100°	—100°	—95½°	—98°
R. A.	—96½°—Moveable with great pain	—99°	—98°	—98°	—96°	—98°
L. A.	—96½°—Moveable with great pain	—98°	—98°	—99½°	—95·5°	—98°
		All joints moveable without pain; stood out of bed.	Moveable, but very stiff.	Moveable with pain. Not so moveable.	Moveable.	Freely Moveable.
Blisters applied	Six			One on dorsum of left wrist		
Perspiration	Excessive	The same	The same	The same	Less	Normal
Urine	Neutral—had been treated with alkalies	Not kept	Neutral, thick, and high-coloured	ditto	Faintly acid	Very acid, scanty, high colour
Tongue	Creamy	The same	ditto	ditto	Cleaner	Cleaner
Thirst	Excessive	Less	Excessive	ditto	Less	ditto
Appetite	Very bad	ditto	Slightly better	ditto	More	Improving
Amount of sleep	None	Did not sleep on account of the blisters	Hardly slept	None	Badly	Badly
Reaction of saliva	Acid	Acid	Acid	Acid	Very acid	Acid
Bowels, Action of	Confined	Open	Confined	Open (by purge)	Open	Open
Diet	Milk, Beef-tea	ditto	ditto with L. P.	ditto	ditto	ditto
Remarks		She states that she has now "no rheumatism at all"				

CASE XI.—*Continued.*

Morbus Cordis on Admission.	Days in the Hospital.	Morbus Cordis on Discharge.	Discharged.
Mitral regurgitant	30	Mitral regurgitant	June 16th

May	24th	25th	26th	27th	28th	29th
Temp. of ward	70°	65°	62°	62°	64°	62°
Pulse	120	120	104	80	100	100
Temp. in Axilla	100°	100°	100°	98°	102°	100°
Temperature and mobility of joints affected. R. W.	—98°—Painful	—98°	—98°	—94°—Moveable	—99°—Very painful	—99°
L. W.	—98°—Painful	—100°	—96°	—94°—Moveable	—101½°—Very painful	—99°
R. K.	—93°	—96°	—94°	—95°—Moveable with pain	—97°—Stiff	—96°
L. K.	—93°	—98°	—94°	—95°—Moveable with pain	—98°—Stiff	—96°
R. A.	—94°	—96°	—96°	—94°—Moveable	—96°—Very painful	—92°
L. A.	—96°	—96°	—96°	—96°—Moveable	—97°—Very painful	—92°
	Moveable with pain.	All Moveable.	Moveable.			All moveable though rather painful.
Blisters applied					Four	
Perspiration	Little	ditto	ditto	ditto	Less	ditto
Urine	Acid	Alkaline	Alkaline	Neutral	Acid, thick with urates and scanty	Alkaline
Tongue	Cleaner	Clean	Creamy	Cleaner	Creamy	Cleaning
Thirst	Less	Thirsty	ditto	Thirsty	Ditto	Less
Appetite	Better	ditto	ditto, hungry	Hungry	No appetite	Better
Amount of sleep	Little	Little	Little	Little	Hardly any	Very little
Reaction of saliva	Ditto	Acid	Acid	Acid	Acid	Acid
Bowels, Action of	Open	Confined	Open	Open	Open	Open
Diet	Ditto	do. with L. P.	ditto	ditto with Fish	No Fish	ditto
Remarks						

CASE XI.—*Continued.*

Admitted.	Name and Occupation.	Age.	Sex.	Constitution.	Number of Attack.	Character of Attack.	Duration of attack previous to Admission.
May 17th	H. A.—Married	28	Female	Weakly	Sixth	Acute	Fourteen days

May . . .	30th	31st	June 1st	2nd	3rd	4th
Temp. of ward	62°	62°	61°	60·5°	61°	60°
Pulse . . .	100	80	80	80	100	90
Temp. in Axilla	98°	100°	100°	98°	99°	100°
Temperature and mobility of joints affected. R. W.	—95°	—100°	—99°	—98°	—99°	—99°
L. W.	—95°	—98°	—99°	—99°	—99°	—98°
R. K.	—96°	—98°	—99°	—96°	—95°	—94°
L. K.	—96°	—98°	—96°	—96°	—95°	—94°
R. A.	—92°	—93°	—96°	—88°	—94°	—92°
L. A.	—92°	—95°	—96°	—88°	—94°	—92°
	All movable but stiff.	All movable and less stiff.	Less stiff.	All movable pretty freely.	The same.	More easily moved.
Blisters applied						
Perspiration .	Increased	Less	ditto	Little	ditto	ditto
Urine . . .	Acid	Alkaline	Acid (faintly)	Acid	Acid (faintly)	Alkaline
Tongue . .	Cleaning	ditto	ditto	ditto	ditto	Clean
Thirst . . .	Less	ditto	ditto	Normal	ditto	Normal
Appetite . .	Better	ditto	ditto	ditto	ditto	ditto
Amount of sleep	A little more	ditto	ditto	Fair	ditto	ditto
Reaction of saliva. . .	Acid	ditto	Acid	Acid	ditto	Acid
Bowels, Action of	Confined	Confined	Open	Open	ditto	Confined
Diet . . .	Milk, Beef-tea	ditto with Fish	ditto	ditto	ditto	ditto

CASE XI.—*Continued.*

Morbus Cordis on Admission.	Days in the Hospital.	Morbus Cordis on Discharge.	Discharged.
Mitral regurgitant	30	Mitral regurgitant	June 16th

May . . .	5th	6th	7th
Temp. of ward	65°	67°	
Pulse . . .	100	100	
Temp. in Axilla	99°	98°	
Temperature and mobility of joints affected. R. W.	—99°	—97°	
L. W.	—98°	—96°	
R. K.	—97°	—96°	
L. K.	—96°	—96°	
R. A.	—92°	—94°	
L. A.	—93°	—95°	
	All movable.	All freely movable; no pain.	Sits up daily
Blisters applied			
Perspiration .	ditto	ditto	
Urine . . .	Acid (faintly)	ditto	
Tongue . .	ditto	ditto	
Thirst . . .	ditto	ditto	
Appetite . .	ditto	ditto	
Amount of sleep	ditto	ditto	
Reaction of saliva. . .	ditto	ditto	
Bowels, Action of	Open	Open	
Diet . . .	ditto	ditto (Chop)	

CASE XII.

Admitted.	Name and Occupation.	Age.	Sex.	Constitution.	Number of Attack.	Character of Attack.	Duration of attack before Admission.
May 28th	E. K.—Domestic	18	Female	Well nourished	Fifth	Very acute	Three days

May . . .	28th	29th	30th	31st	June 1st	2nd	3rd
Temp. of ward	62°	62°	62°	62°	61°	60.5°	61°
Pulse . . .	120	112	100	120	100	96	100
Temperature of Mouth .	100°	100°	99°	99°	99°	100°	100°
Joints affected and temperatures. Rt. Ax.	—102°	—101°	—100°	—101°	—101°	—102°	—101°
L. Ax.	—101°	—101°	—100°	—100°	—100°	—102°	—100°
Rt. El.	—99°	—100°	—98°	—100°	—99°	—104°	—98°
L. El.	—100°	—98°	—98°	—100°	—98°	—100°	—99°
R. W.	All painful and moveable.	All moveable with pain.	All moveable but stiff.	R. W. painful	All joints are moveable without pain.	Ditto, but right wrist tender.	—95° (stiff)
L. W.				L. W. painful			
R. K.	—97°	—94°	—94°	—96°	—93°	—98°	
L. K.	—95°	—94°	—94°	—96°	—93°	—98°	—95°
R. A.			R. A. painful				
L. A.			L. A. moveable				
Blisters applied	Six — Two Wrists, two knees, two ankles		One—Right Ankle	Two—wrists			
Perspiration .	Profuse, acid	Less	ditto	ditto	More	Less	ditto
Urine . . .	Very acid	Slightly acid	ditto	Very acid	Acid (less)	Normally acid	ditto
Tongue . . .	Creamy	ditto	ditto	Cleaning	ditto	ditto	ditto
Thirst . . .	Excessive	ditto	Rather less	More	ditto	ditto	ditto
Appetite . . .	Bad	Better	ditto	Less	Poor	Better	ditto
Amount of sleep	None	Little	Little	More	Little	Greater	ditto
Reaction of Saliva . .	Very acid	Acid	ditto	ditto	Acid	ditto	ditto
Bowels, Action of . . .	Open	Confined	ditto	Open	Open	Open	ditto
Diet . . .	Milk and Beef tea	ditto	ditto	ditto	ditto	ditto	ditto

CASE XII.—*Continued.*

Morbus Cordis on Admission.	Days in the Hospital.	Morbus Cordis on Discharge.	Discharged.
Mitral regurgitant	28	Mitral murmur	June 25th

4th	5th	6th	7th	8th	9th	10th	11th
60°	65°	65°	74°	69°	69°	67°	69°
100	100	100	100	90	90	80	90
99°	101°	99°	100°	99°	99°	98°	98°
—100°	—101°	—99°	—100°	—100°	—99°	—99°	—98°
—100°	—101°	—99°	—100°	—99°	—99°	—99°	—98°
—99°	—101°	—99°	—100°	—98°	—99°	—98°	—97°
—99°	—101°	—99°	—100°	L. S. painful.	—99°	—98°	—97°
All joints freely moveable.	Ditto.	R. W. painful	All again moveable.	L. W. painful	All joints are moveable.	Ditto.	Quite free from pain and all moveable.
—96°	—98°	—96°—R. K. painful	—93°	—94°	—96°	—96°	—96°
—96°	—95°	—95°	—96°	Other joints moveable.	—96°	—96°	—96°
		Other joints moveable.					
		Two—R. W. and R. K.		Two — Left Shoulder and wrist			
More	ditto	ditto	ditto	ditto	Less	Rather more	Less
ditto	ditto	ditto	ditto	ditto	Faintly acid	ditto	ditto
ditto	ditto	ditto	ditto	ditto	ditto	ditto	ditto
ditto	ditto	ditto	Less	ditto	ditto	ditto	Less
Less	Better	ditto	ditto	ditto	Better	Good	Very hungry
Fair	ditto	ditto	ditto	ditto	Good	ditto	Good
ditto	ditto	ditto	ditto	ditto	ditto	ditto	Faintly acid
ditto	ditto	ditto	ditto	ditto	Open	ditto	Open
ditto, with Rice Pudding	ditto	ditto	ditto, with two Eggs	ditto	ditto	ditto	ditto, (Fish

CASE XIII.

Admitted.	Name and Occupation.	Age.	Sex.	Constitution.	Number of Attack.	Character of Attack.	Duration of attack previous to Admission.
June 2nd	J. B.—Carpenter	23	Male	Plethoric.	First (doubtful history of one in childhood)	Very acute	Fourteen days

Morbus Cordis on Admission.	Days in the Hospital.	Morbus Cordis on Discharge.	Discharged.
None	16	None	June 18th

Date . . .	June 2nd	3rd	4th	5th	6th	7th	8th	9th
Temperature of Ward . .	61°	62°	62°	64°	64°	70°	68°	67°
Pulse . . .	120	120	86	80	80	80	80	80
Temperature of mouth .	Not taken	103°	100°	100°	99°	99°	99·7°	95°
Joints affected and temperature. R. A.	Not taken	—99·3°	—100·8°	—100°	—101°	—100°	—98°	—99·5°
L. A.	Not taken	—102·5°	—100·8°	—99·6°	—101°	—99·7°	—98·7°	—99·5°
R. E.	Not taken	—100°	—96·4°	—99°	—99·5°	—98·7°	—98°	—99°
L. E.	Not taken	—99°	—98°	—99°	—99·7°	—99·2°	—98°	—98·5°
R. K.	All intensely painful and immoveable.	—96°	—97·6°	—97°	—97°	—98°	—95°	—95°
L. K.		—95°	—98°	—97°	—97°	—98°	—95°	—95°
R. A.		No better than before.	All less painful.	All joints moveable.	All freely moveable	The same; no pain.	Ditto; sat up.	Ditto, and dressed himself.
L. A.								
R. W.								
L. W.								
L. S.								
Blisters applied		Seven — (All affected joints)						
Perspiration .	Profuse and acid	Less	More	ditto	ditto	ditto	Less	ditto
Urine . . .	Very acid	ditto	Alkaline	Faintly acid	Acid (normal)	ditto	Alkaline	Neutral
Tongue . .	Foul	ditto	Cleaning	ditto	ditto	ditto	ditto	Clean
Thirst . . .	Excessive	ditto	Rather less	More	ditto	ditto	Less	ditto
Appetite . .	No appetite	Poor	Better	ditto	ditto	ditto	Very hungry	Good
Amount of sleep	None for four nights	A little from morphia	A little	Slept well	ditto	ditto	ditto	ditto
Reaction of saliva . . .	Very acid	ditto	Alkaline	Faintly acid	Acid	Acid	Acid	Acid (slightly)
Bowels, Action of	Confined	ditto	ditto	ditto	ditto	Open	Open twice	Open
Diet	Milk and Beef-tea	ditto	ditto	ditto	ditto, with Eggs	ditto, with Fish	ditto	ditto

CASE XIII.—*Continued.*

OBSERVATIONS OF TEMPERATURE IN HEALTHY PERSONS, DURING MAY AND JUNE, 1864 (FAHRENHEIT'S THERMOMETER).

No.	Sex.	Age.	Pulse.	Respirations.	Temp. of Apartment.	Time of Day.	Temperature of Mouth.	Temp. of Right Axilla.	Left Axilla.	Right Elbow.	Left Elbow.	Right Knee.	Left Knee.	Cleft of Right Great Toe.	Cleft of Left Great Toe.	Habit of Body.
1	F	9	90	20	62°	9.0 a.m.	97°	96°	96°	93°	93°	91·5°	91·5°	73°	74°	Thin
2	M	12	80	18	62°	9.0 a.m.	97°	96°	96°	94°	94°	93°	93°	74°	75°	Stout
3	M	17	85	20	62°	9.30 a.m.	96°	94°	94°	94°	94°	93°	93°	89°	89°	Thin
4	F	28	80	18	68°	10.0 a.m.	96°	96°	96°	93°	93°	94°	94°	70°	70°	Stout
5	F	10	90	18	63°	10.0 a.m.	96°	95°	93°	91°	88°	92°	92°	72°	72°	Thin
6	F	9	90	20	62°	10.30 a.m.	96°	95°	95°	93°	93°	94°	94°	73°	74°	Do.
7	F	19	80	20	62°	10.0 a.m.	96°	97°	97°	92°	92°	90°	90°	80°	80°	Stout
8	F	5	100	20	62°	9.0 a.m.	96°	96°	96°	94°	94°	94°	94°	72°	72°	Thin
9	M	29	80	18	62°	8.30 a.m.	96°	98°	97°	96°	96°	95°	95°	80°	78°	Stout
10	M	42	80	16	62°	8.0 p.m.	97°	97°	97°	93°	95°	94°	94°	78°	76°	Thin
11	M	4	100	20	62°	10.0 a.m.	97°	97°	97°	96°	96°	94°	94°	80°	80°	Do.
12	M	28	70	16	59°	11.0 p.m.	98°	96°	96·5°	94°	94°	91·5°	91°	87°	87°	Do.
13	F	6	100	20	61°	7.0 p.m.	97°	97·5°	97·5°	95°	95°	95·5°	97°	83°	85°	Do.
14	F	11	80	18	62°	4.0 p.m.	97°	97°	97·5°	95·4°	95·6°	91·5°	91·5°	72°	73°	Do.
15	M	27	80	16	60°	8.0 p.m.	97°	96·5°	96·5°	95°	96·5°	95°	95°	90°	90°	Stout
16	M	19	80	18	63°	7.0 p.m.	97°	96·5°	96·5°	96°	96°	92°	92°	88°	89°	Thin
17	F	19	80	20	65°	9.0 p.m.	96°	99°	99°	96°	96°	94°	94°	92°	92°	Stout
18	M	22	80	24	67°	7.0 p.m.	99°	99°	98·7°	99°	98·5°	96°	96°	94°	94°	Thin
19	M	28	70	16	66°	10.0 p.m.	98°	97·9°	97·8°	95·3°	95·6°	94°	93°	90°	90°	Do.
20	F	44	80	16	69°	7.0 p.m.	96°	98·3°	98°	96·5°	96°	96°	96°	92°	92°	Very stout

SUMMARY.

Parts experimented on.	Mouth	Right Axilla.	Left Axilla.	Right Elbow.	Left Elbow.	Right Knee.	Left Knee.	Right Toes.	Left Toes.
Highest temperature	98°	99°	99°	99°	98·5°	96°	97°	94°	94°
Lowest temperature..	93°	94°	93°	91°	88°	90°	90°	70°	70°
Average of twenty cases	96·4°	96·7°	96·6°	94·5°	94·9°	93·3°	93·3°	81·4°	81·6°

CONCLUSIONS.

1st. That the number of facts is too small to fix any absolute standard of temperature for health; but that,

2nd, The temperature of the two sides of the body is apparently nearly identical; and that,

3rd, In healthy individuals, the temperature of the apartment has but slight influence on that of the blood; and

4th, That (as far as these Tables show) the influence of sex upon temperature is not well marked, being perhaps a trifle in favour of the male sex; and further,

5th, That, taking all the parts together, the average temperature of the body is less in childhood than in adult ages.

NATURE AND ORIGIN OF SYPHILIS,

WITH SOME PRELIMINARY REMARKS ON THE INTRODUCTION OF SYPHILIS INTO EUROPE.

(The Substance of a paper read before the Harveian Society, 1864),

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childhood than in adult ages.

PREFACE.

The loss of service to the army and navy from syphilis alone is enormous, and to such an extent indeed has invaliding from this cause taken place, that the Government have deemed it expedient to appoint a commission for the purpose of investigating the nature and treatment of this disease.

The Profession at large are called upon to assist in this undertaking; and since every member must have daily opportunities of witnessing cases of syphilis, now seems the proper time for each to contribute his experience.

Some of the views advocated in this essay are not generally accepted, some moreover are new, and will therefore probably be received with doubt and distrust. They are however deduced from analogy, and, the author believes, logically,

and are thus far at least he hopes worthy of respect.

Perhaps they may be considered as too theoretical; but proofs, in other diseases not always obtainable, are in this often impossible; nevertheless, since theory is the foundation of practice, a theory not absolutely bad, is better than no theory at all; and it must be admitted that those who proclaim most loudly against theory, have in reality some theory of their own.

3, Warrington Terrace,
Maida Vale.
1865.

INTRODUCTORY REMARKS.

The word 'syphilis' is supposed to have been first used by Fracaster in his poem entitled 'Syphilis sive Morbus Gallicus', 1521, and was probably applied by him to this form of venereal disease κατ' ἐξοχήν, and derived simply from the words συν with, and φιλια love. Mr. Hebert Mayo however thinks the word derived from σιφλος odiosam et invisam faciem habens, and accordingly adopts the spelling 'siphilis.' Swediaur says "The word 'syphilis' appears to me to be derived from the words συς porcus, and φιλια amor, as if we should say 'amor porcinus' swinish love, filthy love, or a disease arising from impure coition." But such definition is too imaginative, and might seem to assign 'illud detestabile crimen inter christianos non nominandum,' as the prime cause of syphilis; an inference not warranted by authority.

The introduction of syphilis into Europe and its propagation at the siege of Naples in 1494 have been generally assigned to the followers of Columbus, and this opinion was imbibed from Astruc's celebrated work 'De Morbis Venereis,' written in 1736. Whilst however we respect the

opinions of those wise in a by-gone generation, we must not forget that many of their arguments are inapplicable at the present time.

Many of Astruc's cotemporaries, as well as previous writers had maintained that in the epidemics of Hippocrates were to be found unmistakable allusions to syphilis. Now, whether these opinions were well founded or not, it is evident that Astruc's arguments against them were invalid. "Quod si remotis præjudiciis consulantur loca ipsa indicata, liquebit inde luce meridianâ clarius, Hippocratem ne somniasse quidem de lue venereâ, sed pestilentiam descripsisse. Morbi nempe, de quibus loquitur, acuti, epidemici, cum febre conjuncti..... cum e contra lues venerea, chronica et sporadica sit, sine febre invadat et solo veneris usu propagetur. Adde morbos illos curatos fuisse vel sponte, quod lui venereæ non convenit, vel saltem methodo, quæ ad luis venereæ curationem plane inefficax esset." ('De Morbis Venereis', cap. 2.)

Now Mr. Carmichael has informed us that in his time syphilis was ushered in by so much fever, that the repeated use of the lancet was found re-

quisite, and Swediaur has remarked that every author who wrote when the disease first made its appearance, has called it pestilence or pestilential disease; and when we remember that in less than two years it had spread over France, Scotland, Germany, and Hungary, we are incapable of designating it by any other name. We know, moreover, that syphilis will get well under a variety of treatments, and may do so under no treatment at all; besides Astruc was in error in supposing that the 'epidemics' treated of epidemic diseases alone, and that those to which no treatment was appended got well spontaneously. "The Books of Epidemics," (says Dr. Adams, the learned translator of Hippocrates) "can be viewed in no other light than as an adversaria or memorandum book of isolated facts and detached observations, in which the lineaments of a particular disease are seldom to be recognised, and in which there is a general omission of any mention of treatment."

From the following passage in the letter of Peter Martyr to Arius Lusitanus, Greek professor of Salamanca in 1488, I conclude that the 'syphilis sive Morbus Gallius' of Fracaster existed

in Europe previous to the generally supposed æra of its introduction, and that it was then considered a species of leprosy. "In peculiarem te nostræ tempestatis morbum, qui appellatione Hispanâ Bubarum dicitur (ab Italis *Morbus gallicus;* medicorum *Elephantiam* alii, alii aliter appellant), incidisse præcipitem libero ad me scribis pede. Lugubri autem elogo calamitatem, ærumnasque gemis tuas; *articulorum impedimentum, internodiorum hebetudinem, juncturarum omnium dolores* intensos esse proclamas; *ulcerum et oris fœditatem* superaddis."

In the 'Philosophical Transactions,' 1731-2, Mr. W. Becket has stated that local venereal affections of a contagious nature had been known in Europe long before the year 1500, while under the vague name of leprosy a state of disease prevailed which, in many of its features, corresponded with lues; and that the former was likewise believed to be communicable through intercourse of the sexes; and Mr. Becket has expressed his belief that syphilis may have lurked amongst the diseases grouped together as leprous, its connexion with the recognized local venereal affections being

overlooked. Moreover, we find it stated by Mr. Bacot that Peter Martyr, physician to the King of Spain in 1488, was at Barcelona when Columbus made his appearance there after his first voyage, but that he does not say a word about the importation of this disease in any of his writings, neither does Columbus, nor his son Ferdinand, who wrote the history of his father's life, in which he gives a description of all the diseases which affected the Spanish adventurers up to 1495 (Mayo 'on Syphilis').

But the above views are objected to because, it is said, no author previous to the year 1500 has described *all the symptoms* of syphilis which we now recognise. There are however, I think, valid reasons for such omission.

It is well known that with the march of armies into foreign countries aggravated outbreaks of syphilis frequently occur, we cannot therefore deny the possibility of such an occurence at the siege of Naples; moreover it is probable that in such an outbreak the different symptoms might follow each other in such rapid succession that their connexion, previously overlooked, could not

fail to be recognised; and under any circumstances, it is no more remarkable that such recognition should have then first taken place, than that the distinction between scarlet fever and measles should not have been recognised in this country until between two and three centuries ago.

Further, a distinguished writer, who however inclines to the opinion that the disease originated at the siege of Naples, makes these pertinent remarks. "We now meet in hospital and private practice with all the symptoms of syphilis which have been described by the writers of the sixteenth century; nay, we are more complete than our forefathers, as may be learnt from their works; for it is only by degrees and by successive authors, that loss of hair, ulcers of the tonsils, affections of the bones and of the testes, were mentioned. *These manifestations of syphilis either did not appear at once, or their relation with the syphilitic poison was only gradually discovered*" (De Meric's 'Lettsomian Lectures', 1858). If, then, these remarks be applicable to the writers of the sixteenth century, how much more applicable must they be to those of an earlier date.

NATURE AND ORIGIN OF SYPHILIS.

Neither chemistry nor the microscope have yet revealed the true nature of syphilis; we must infer however that there exists a bonâ fide syphilitic virus, that it is a non-volatile animal poison, capable of reproduction through contagion, and of multiplying itself under favourable circumstances, *ad infinitum*.

Writers of the sixteenth century have described the infection as being conveyed, like the plague, from one person to another, but such mode of communication no longer exists, and I think we must conclude with Dr. Farr, that the morbific principle of some diseases, including that of syphilis, is fixed.

But it is impossible to trace syphilis invariably to infectious sources, I would refer therefore some obscure cases to spontaneous origin. Different authors assign a spontaneous origin to different zymotic diseases; unite these opinions, and the

spontaneous origin of *all* zymotic diseases is admitted. Riecke says "all contagia, under certain circumstances, have a primary origin; and even syphilis may be primarily produced. This is a fundamental principle." ('Trans. Epidem. Soc. Sanitar. Review.' No. iv).

We must not be led away by the doctrine that syphilis is preeminently a punishment for man's sins, direct from heaven. The disease first arose no doubt like other diseases, from natural causes, spontaneously; and since man is organized as he ever was, so, it is reasonable to conclude, may it arise now.

Mr. Guthrie, Dr. Fergusson, Sir George Balingall, and Mr. Holmes Coote, men of eminence and having large opportunities for observation, have all expressed their belief that syphilis can be generated by filth and abuse of coition.

My own creed upon the matter is this—that by excessive sexual intercourse, coupled with uncleanly habits, possibly from this latter cause alone, a poison is generated, capable of producing a sore upon the part in contact; this is chancre, the character of which is determined by the amount

and intensity of poison present, by constitutional peculiarities, and by the existing state of health of the recipient.

The following case has however been quoted by Mr. Acton as conclusive evidence against the opinion that syphilis can be produced by excessive sexual intercourse.

A girl under the care of M. Rossignol, suffered from inflammation of the vagina, in consequence of having had connexion with forty-seven men in twenty four hours, and yet no specific disease followed.

Now in this case it is reasonable to infer that an early treatment would be sought, which would put a stop to those processes by which we should expect the poison to be generated. Besides it is neither said nor supposed that abuse of coition will give rise to the disease in every case, but that it may do so in some.

I think it must be conceded that the degree of morbid action set up in any part, will in general be proportioned to the amount and virulence of the poison which produces it; and that excessive action will be more easily excited, *cæteris*

paribus, in an irritable constitution, than in one of an opposite character. But excessive action is a barrier to absorption, and consequently preventive of constitutional infection. Now I incline to the opinion that induration of a chancre is constitutional reaction in the local sore, which takes place here, for the same reason that the eruption of measles, scarlet fever or of small-pox sometimes occurs in the seat of injury, after an operation, and from which facts Professor Aitken has deduced the following argument "that the local determination of erysipelas and of other allied diseases, after operation, is no proof of their local origin or local nature."

Abundant facts, I think, prove that hard and soft chancre are the offspring of the same virus; as however this is a much disputed point, and the solution of it of great practical interest, it will be necessary to go carefully through the arguments on either side of the question.

Ricord says "The chancre with a soft base of syphilitic subjects is transmitted either as a simple or as an indurated chancre. Finally, it seems probable that the form under which it is reproduced depends on the nature of its origin, that is to say, on the chancre which gives birth to it." (Maunder's 'Translation of Ricord').

Dr. Clere, one of Ricord's pupils, considers the simple chancre only a modification of the infecting chancre; it is, he says, the result of the inoculation from an infecting chancre upon a subject already affected by constitutional syphilis. Each of these chancres transmits itself singly as a distinct pathological species. (Ib).

In other words, Dr. Clere believes that the soft chancre is the result of the inoculation of the hard upon a previously infected individual, and that it retains this modified character under all circumstances; whereas Ricord believes that it is transmitted as a hard chancre to a previously healthy individual. At the same time, he considers the soft chancre here spoken of, as analogous only in appearance to the simple chancre, so that, in order to escape from the dilemma in which he was involved by his dogma that "simple chancre is never followed by constitutional symptoms," Ricord has described as a different species of sore that, which had always been considered synony-

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mous with simple chancre, viz. "chancre with a soft base."

Professor Aitken says "Mr. Lee and Rollet have shown that the infecting sore is not only incapable of auto-inoculation, but is not inoculable upon a person who has been contaminated by syphilis." (Aitken's "Pract. Med." 1863).

Let us see if the results of syphilization bear out this statement. Professor Aitken thus describes the process.

1. Matter is taken from a sore, *an indurated one by preference.*

2. *A patient suffering with secondary syphilis is inoculated.*

3. From the pustule, which forms in about three days, fresh inoculations are made.

4. Every third or fourth day continue so to inoculate, always taking matter from the last pustule, so long as it continues to give any result.

5. When it ceases to give any result, new matter is to be sought for from another *primary indurated ulcer*, and continuous inoculations to be made as before on the sides of the person's body,

and so on until no further inoculations will succeed.

It appears then that not only is the indurated sore inoculable upon another syphilitic patient, but is also capable of auto-inoculation; and Ricord, Marston, and others have shown, that although inoculation from a hard chancre upon a syphilitic patient may produce a chancre with a soft base, yet the result of inoculation with matter from this sore upon a previously healthy individual will be an indurated chancre, which may be followed by constitutional symptoms; proving thereby that this soft sore is a truly infecting chancre.

Professor Aitken thinks that the *modus operandi* of syphilization may be explained conjointly by lapse of time, and by continuous suppurations, affording a drain or source of depuration to the system; if however the syphilitic poison were eliminated from the system in this way, surely we should expect, not that the inoculations would at last fail, but that the indurated chancre would be reproduced in all its pristine vigour.

Now Marston, Seaton, and Simon have shown a

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constant relation to exist between the number of the sufficient cicatrices and the degree of protection afforded by vaccination (Aitken's Pract. Med.) and Boeck holds syphilization to be analogous to vaccination, and not to be merely a local process, acting by derivation or reparative suppuration; and since it matters not from what sore the inoculations are made, it follows that soft chancre does infect the constitution.

Dr. Hennen frequently saw men in hospital at the same time infected by the same woman, some of whom had one kind of ulcer, some another, and some both; now all the men must have been infected by the same kind of sore, viz, soft chancre, for hard chancre is rarely seen in women; and since such is the fact I would repeat the question, put I think by Mr. Holmes Coote, if hard and soft chancre are not produced by the same virus where do the hard chancres in men come from?

There is nothing remarkable in the fact that chancre contracted by a previously infected individual, should put on an appearance different from what would occur in a healthy person, for it must be borne in mind that induration is the last stage

of chancre; in the case referred to, it stops short of this stage, as the eruption of variola stops short of the pustular stage in one partially protected by a previous attack, or by vaccination, nevertheless, from such a case might arise every variety of small-pox.

In describing chancre I have rejected the term 'primary syphilis,' for I agree with the late Mr. Herbert Mayo, that local symptoms are not necessary at all in syphilitic contagion; and that the poison may be directly absorbed, without producing any sensible local disturbance at the point where it finds entrance. The possibility of such an occurence is rendered evident by a case of vaccination reported by Mr. R. O. Clark, in Med. Gaz. 1850. Vol. xi. N. S. In this case the cow-pox vesicle appeared in a part different from that into which matter had been inserted, and proved quite protective.

In describing constitutional syphilis I reject also the terms 'secondary and tertiary,' as inappropriate; for the manifestations of syphilis are not necessarily evolved in any definite order; and tertiaries, so called are nothing more than the

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sequelæ of syphilis, as Dr. Wilks has shown. For if the syphilitic poison were present at this stage, we might reasonably expect the same results from contact with the matter of a tertiary as with that of a so called secondary sore; yet all observers have agreed that tertiaries are not contagious.

The virus, then, being absorbed, with or without the intervention of a local sore, produces certain consecutive phenomena, the character of which is modified by the same circumstances which modify the character of chancre.

According to Ricord, the first sign of constitutional infection is induration of the chancre, which is invariably followed by constitutional symptoms; by which I understand Ricord to mean that induration of a chancre is a constitutional symptom, never existing alone, but always followed by other constitutional symptoms.

Now it is evident that induration of a chancre is by no means the necessary first sign of constitutional infection, for in women, the common subjects of constitutional syphilis, induration does not occur at all; not always in men; and is often preceded by other constitutional symptoms.

Daily experience also disproves Ricord's other dogma, viz. that induration of a chancre is invariably followed by constitutional symptoms. The poison of other diseases, as of small-pox, for instance, is sometimes exhausted in a single pustule; and when we reflect that induration of a chancre is the result of constitutional reaction, we may easily conceive that the syphilitic poison may also be exhausted at a single point.

Ricord has stated his belief that there can be no infecting chancre without an indurated multiple symptomatic bubo which possesses no tendency to undergo specific inflammation, and Cullerier believes that the whole diagnosis of chancre does not consist in the local state; and that when induration is absent in a doubtful chancre, he looks for the indispensable induration in the corresponding glands.

In answer to such views I start with the supposition that absorption of the syphilitic poison may take place either by the lymphatics or by the blood-vessels; if by the former I should anticipate bubo, if by the latter, none; but in an unimpressible constitution absorption by the lymphatics

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might produce no effect, whilst on the other hand in an irritable constitution, bubo, like enlarged cervical glands, might be the result of a tainted blood.

But the character of bubo I believe depends, like all the manifestations of syphilis, upon contingent circumstances, but principally upon constitutional peculiarities; and this applies with equal force to buboes symptomatic or sympathetic.

Every practitioner must have seen patients in whom bubo had been produced by the slightest cause, whilst in others no amount of irritation would produce the like effect.

The following cases demonstrate my views.

Case I.

In 1852 a gentleman was affected with *hard chancre; neither bubo nor other symptoms followed.* In 1860 the same gentleman contracted *soft chancre,* which was followed by *sore throat, indurated tubercles on the tongue, a squamous eruption* on the head and limbs, *and erythema palmare,—no bubo.*

Case II.

L—— S——, a German, aged 26, presented himself at the Roy. Gen. Dispensary in Sept. last, suffering from chancre which he stated commenced as a pimple ten days or a fortnight ago; that he had scratched off the head and the scab which from time to time formed, and by so doing was afraid he had produced mortification.

On examination I found a large *indurated chancre* on the glans penis, covered with a black scab, and the surrounding parts in an intense state of inflammation, but the inguinal glands were unaffected.

On the 7th of Dec. following the patient returned, suffering from syphilitic lichen on face, chest, and back, sore throat and enlarged post-cervical glands. No bubo existed, nor ever had existed.

Swediaur was of opinion that in foul coition the virus is sometimes absorbed by the lymphatic vessels, and directly causes buboes; that at other times it seems to pass, immediately after impure coition, into the body, and then produces syphilitic affections in the throat, the skin, and even in

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the bones, without producing any sensible effect in the parts to which it was at first applied, and that, without leaving the smallest trace on the surface of the body. "This, he adds, is what often gives rise to grave errors, into which the physicians often fall, as well as the patient, by supposing the present syphilitic symptoms are owing to some old venereal disease badly cured."—(Syphilis, vol. 1).

With these views of Swediaur I entirely concur, but I hold moreover that objective symptoms are not necessary at all in any stage of syphilis. The virus being absorbed without the intervention of a local sore, and without the production of bubo, may either be eliminated at once, or deposited in some internal organ. In the one case there will be an end of the matter, in the other a syphilitic cachexia may be produced, and remain unrelieved because unrecognised.

The exordium then of syphilis may be either chancre, bubo, or any other lesion.

I have stated my belief that the character of constitutional symptoms is modified bp the same circumstances which modify the character of

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chancre, and I think I am borne out in this opinion by the following authorities.

Mr. Acton has stated that he has never yet met with any single instance in which after uncomplicated indurated sore, the constitutional disease has extended deeper than the skin or mucous membrane; and Ricord always held that the course of constitutional syphilis had nothing to do with the size, progress, and complications of the indurated sore which precedes it. Everything, he says, depends on temperament, constitution, or state of health of the patient. Now, however different these opinions may at first sight appear, I believe that, in reality, they amount to the same thing. For although it may be true that the character of constitutional symptoms does not depend on that of chancre, yet they are both dependent on the same circumstances, or as Mr. Paget puts it "the character of the constitutional manifestations depends, like that of chancre, on the peculiar character of the blood."

Bassereau says, "Chancre is, as it were, the touch-stone of the constitution. By the action it exercises on the tissues, we are enabled to foresee

by what immediate or distant consecutive symptoms it may be followed. When benign, it will announce constitutional symptoms of little gravity; when malignant it will, on the contrary, allow us to foresee that the patient will be affected with consecutive symptoms of a serious nature so that we can put down as a law the following propositions. Benign indurated chancres are followed by benign syphilitic eruptions and affections of the various tissues, without any tendency to suppuration: indurated phagedænic chancres are followed by malignant syphilitic pustules, and later by ulcerated affections of the skin, suppurating exostosis, necrosis, and caries." ('Traité des Affect. de la Peau Symptomatiques de la Syph.')

It must not be supposed, however, that a patient with benign chancre would necessarily communicate the same benign disease to another. This would equally depend upon the constitutional peculiarities of the recipient, as we might, *à priori*, be led to expect.

Ricord followed Hunter in promulgating the doctrine that the matter of a constitutional sore is

not contagious; and, not long ago, many men of well merited reputation subscribed to this opinion. These eminent men were however misled by the fact that artificial innoculation of individuals with the pus of a constitutional sore, produced no results. De Meric practised inoculation forty or fifty times with such pus without any effect, and Faye obtained the same results by ordinary inoculation, but produced an effect by scraping, bathing, and packing up the tissues with the matter.

It has been, I believe, well ascertained that the matter of cancer, introduced into the skin upon a lancet, will not produce the disease; but Mr. Herbert Mayo, Dr. Watson, and others have reported cases of cancer of the penis contracted in the natural way from wives having the disease in the uterus, the same form of cancer existing in man and wife. It is proved therefore that inoculation artificial, and inoculation physiological, are not equivalent processes; and of the contagious nature of constitutional syphilitic sores the proofs have become so overwhelming, that most syphilographers of the present day acknowledge the

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fact; but as yet there is no such almost unanimous opinion regarding the contagious nature of the natural secretions of tainted persons.

From a tainted blood we might reasonably expect tainted secretions, both morbid and natural; and since it has been proved that some in fact are so, it seems difficult to adduce a plausible reason for excepting any. It has been proved over and over again that the nurse-child will be infected through the milk of a tainted nurse; in the New Syd. Soc. Year Book 1859, are reported two cases under Bamberger, in which syphilis followed immediately on, or rather was blended with variola, the pustules containing both the specific poisons; to which case the editor appends these remarks "according to this, it seems undeniable that if a healthy child were inoculated with vaccine matter from another labouring under constitutional syphilis, the latter might also be communicated as well as the vaccine infection."

It is a matter of daily occurrence for the wives of tainted men to escape contamination until pregnancy occurs, and for the ovum to be tainted, whilst the woman escapes altogether; and Dr. De

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Meric has related cases of cancer in women, communicated by men labouring under constitutional syphilis, but having sound organs of generation. Mr. Erasmus Wilson has moreover shown by cases under his own observation, that not only can infection be communicated by the natural secretions of men having no existing manifestations of syphilis, but that without the production of a local sore in the recipient. I have seen, I am sure, several such cases, which it would have been a forced interpretation of nature to construe in any other way. These are the cases, I believe which Mr. Hunt has grouped together in his work on 'Specific Eruptions,' under the head of 'Hereditary Syphilis, appearing for the first time in middle age. I cannot however imagine it probable that an individual should pass through all the phases of life to middle age, without hereditary syphilis breaking out, if it was to appear at all.

It is said that hard chancre is never contracted a second time, and thence it is inferred that by the first a diathesis is produced, which remains for life. Now we must bear in mind that by hard chancre the dualists here mean infecting chancre,

and by then referring to case 1, previously quoted we shall see the falsity of this statement.

If by the term 'syphilitic diathesis,' is meant a tendency to the occasional breaking out of syphilis without any apparent cause, or whenever the body is excited or disturbed, then I say that facts prove that such tendency is limited; and were it even a fact that chancre contracted by a once infected individual did not take on induration, it would be no more proof that the syphilitic poison still existed in the blood, than that the cow-pox, or variola poisons remained active and uneliminated, because a second vaccination or a second inoculation proved abortive.

The natural course of a typical case of syphilis appears to be this: a chancre with a soft base is contracted, the syphilitic poison is absorbed into the blood, the chancre becomes indurated, other manifestations follow, the secretory and excretory organs flag through want of a healthy stimulus, the blood becomes surcharged with escrementitious matters, and thus to the sypilitic is superadded a general cachexia, which is I presume the so called tertiaries, and which may re-

main after the former is eradicated. Whilst however these two states coexist, the secretions will be contagious, and chancres then contracted will not take on induration.

Diday has published an elaborate paper on second attacks of syphilis, of which he remarks "although these facts appear new, they would long since have been well known had not practitioners allowed themselves to be blinded by doctrines which though true in most are not absolutely so in all cases." With these remarks I entirely coucur, believing that had this not been the case so many false dogmata respecting syphilis could not have been disseminated.

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ON

MELANOSIS OF THE LUNGS,

AND

OTHER LUNG DISEASES ARISING FROM THE INHALATION OF DUST.

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childhood than in adult ages.

ON

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THE INHALATION OF DUST.

THE subject of this paper has occupied my attention before, but as I am induced by the results of some recent researches to modify my opinion on certain material points, I take it up once more.

Melanosis of the lungs and its principal symptom during life, black expectoration, has been occasionally treated in weekly and monthly journals, but it has not yet found its proper place in the handbooks of medical science. It is well worth while to investigate how far it can be considered a disease *per se*, and by what means endangered persons may be protected.

Melanosis of the lungs means black lung disease; and as the blackness of the lung-tissue is a most essential part of the pathological exhibition after death, we may as well retain this name, whatever may be our opinion on the nature of this blackness. In the same way we may speak of red lung disease, erythronosis, and blue lung disease, glaukonosis.

The class of people who are subject to melanosis are those who work in an atmosphere contaminated with dust, such as coal-miners and miners in general, knife-grinders,

needle-pointers, quarrymen, stonecutters, millers, and besides it has been found sometimes in aged people who had no trade.

I have had occasionally patients under my care who had a peculiar black expectoration. I have examined specimens of black lung, and seen many in different museums, and, for those who take an interest in the subject, I may state that they will find the most in Edinburgh, where there are eight in University College; sixteen in the College of Surgeons; in almost every museum of the London General Hospitals are specimens, the most in Guy's—namely, six. On the Continent their number is not so large; in Paris I found only two; there are a few in the Berlin-Charité-Museum, and in Vienna and Munich.

I first give the literature. Scotch physicians have paid great attention to the subject. Pearson already, in 1813, wrote on black infiltration of the lungs and bronchial glands by coal-dust, but not before 1831 more numerous and more ably written papers on the miners' disease were published. Dr. Gregory, in the *Edinburgh Medical and Surgical Journal* (No. 109) exposed his views on the black infiltration of the lungs, resembling melanosis, which he had no doubt was produced by coal-dust. He had the lungs subjected to distillation, and found the same result as with coal-dust. Thompson and Simpson had the same views, and published many cases six years later. One specimen is now at Guy's. The patient, Leishmann, was sixty years engaged in coal mines, and suffered for five years after he left off work from asthma and black expectoration. Once the sputa were for two months white. The lungs contained cavities of walnut size, and black fluid. Of another case, Hall, it is mentioned that shortly before death he expectorated as much as fifteen ounces of black fluid per diem, and that he had no hectic fever. Had not worked for three years.

Of seven other cases of black lungs observed by Thompson one was that of a blacksmith. In all cases the disease was slow in its progress, and the symptoms trifling

in the beginning, only a little dyspnœa with bronchitis; and it was especially remarked that the black expectoration remained long after they had given up their occupation.

Dr. Graham, Professor of Chemistry in Edinburgh at this time, examined different specimens of black lungs, and gave as his opinion that the colour was caused by lamp-black. Dr. Marshall published cases in the *Lancet*, 1836, and was of a similar opinion.

In 1845, Dr. Makellar wrote in the *Edinburgh Monthly Journal* on black phthisis or induration induced by carbonaceous accumulation in the lungs of coal-miners.

He states that there are two classes of workmen in coal-mines, those who are stone-miners, and work by blasting, and those who are holers or hewers. The first are much more attacked by the disease and die sooner. Of all those who had to cut a certain tunnel through a rock, and who were strong and young men, not one reached the age of thirty-five. He is strongly opposed to the doctrine that the lungs secrete the black matter, but thinks that the way in which the miners work explains that the evil is to be found in the small bronchial tubes. They lie on their side, have hardly breathing space, and must make up for it by deep inspirations. First they are able to expectorate whatever comes into the lungs, but after a time the bronchi are not able to produce secretion sufficient to bring the coal-dust away; and when they become dry, irritation sets in, and soon cavities are formed. Makellar always found cavities and no tubercles. Even young men of tuberculous parents died of coal-miners' disease without tubercles, so that he suggests that these diseases may exclude each other. Makellar thinks there are three anatomical stages—one, where the black matter is in the bronchi and tissue; the second, where small cavities are found; a third, where the cavities are large and occupying even a whole lung. What he mentions about the physical examination is not worth relating.

A case which came under my notice at Edinburgh, was

under Dr. Begbie's care. Dr. B., who published it in the *Monthly Edinb. Journ.*, July, 1856, treated it as infiltration of the lung with carbonaceous matter, black expectoration, in a farm labourer. The patient had never anything to do with coal-mines or soot. He had phthisis, and the left lung was principally affected. He had black sputa. The post-mortem showed the left lung infiltrated with a black fluid; it contained a large cavity and several smaller ones, only very few tubercles. It is to be observed that the patient, although a farm labourer, was during the last years of life obliged to work the greater part of the year in or near a mill, and to breathe an air charged with dust.

Louch, who gives a vivid description of the mode of life and work of the coal-miner, thinks, as well as Dr. W. T. Cox, that the blackness of the tissue is not generated in the lungs, but purely of extraneous origin.—"Mines of Cornwall," *Brit. and For. Med. Chir. Review*, 1860.

The knife-grinders' lung disease has been described by John Charles Hall of Sheffield (*Brit. Med. Journ.*, 1857). Sheffield, which owes its prosperity to its numerous factories of hardware, supplies the market with knives and forks, razors, files, scissors, pins, needles, &c. These useful implements are manufactured by dry or wet grinding. Forks and needles belong to the first class; razors, knives, and scissors are first dry—afterwards wet-ground. Those workmen who have only to do dry grinding are much more subject to lung disease than the others, and they rarely live after thirty; razor and scissors-makers follow next. Owing to the steel grit entering the lungs, these get diseased, but since better ventilation by fans has been carried on, the state of the workmen's health has improved.

The symptoms and course of the disease are very like that of coal-miners' disease. The workmen suffer first from indigestion, and lose their healthy colour, which becomes dusky. Soon a dry cough and asthma begins to trouble them, afterwards that peculiar black expectoration supervenes. In addition to black pigment, the sputa contain particles of siliceous matter and steel-dust, especially shortly after work. Since needles are partly made by machinery, needle-pointers suffer less. At the post-mortem, Hall and others found the lungs black, the bronchi dilated, cavities rarely, and their walls covered with a smooth membrane. Pleurisy and pneumonia were sometimes present, tuberculous disease and emphysema occasionally.

Dr. Peacock and Moldenhauer found a remarkable amount of siliceous matter by the distillation of a part of a razor-grinder's lung.—*Brit. and For. Med. Rev.*, 1860.

Dr. Greenhow found in a grinder's lung a *few* apparently crystalline bodies embedded in the tissue besides the black deposit.—*Trans. of the Path. Soc. of London*, 1865.

At the present time most of the medical men in England and Scotland connected with mines with whom I have had conversation about the matter, do not believe the black deposit in the lungs of coal-miners to be anything but coal-dust.

In recently published handbooks on lung diseases, such as Walsh's, or on medicine, such as Aitken's or Tanner's, I find only a short space bestowed upon the subject of melanosis.

French authors have paid some attention to it. To begin with Bichât (Traité d'Anatomie Descriptive, t. iv., p. 22, 1819), he thought the black found in the small bronchi was contained in small glands projected into them. Breschet (Considérations sur une Altération Organique, Appellée Dégénerescence Noire, Mélanose, &c., Paris, 1821), thought the origin of the black deposit in different parts of the body to be extravasated blood. Trousseau and Leblanc ("Récherches Anatomiques et Pathologiques," Archives de Médécine, t. 17, 1828), although they only examined the black deposit in horses, must be mentioned. They thought that melanosis consists in blood corpuscles deposited in the tissues, and in the deposited mass pigment went astray

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which was originally destined for the choroides, the skin, &c. M. Foy, a chemical analyst, found the black deposit near the kidney of a horse containing thirty-one per cent. coal-like matter (principe éminément carboné). Andral believed the black matter to originate in a transformation of the blood. (Anatomic Patholog., t. 1, p. 458, 1839). Cazenave the same (t. 19, p. 343).

Guillot was one of the French authors who paid great attention to the subject in question, and, especially, to chemical and microscopical examination of the diseased lungs. He washed the black parts of lungs with muriatic or sulphuric acid, and boiled them as well, and always had a black mass left, which was unchanged by acid chlor. or boiling in concentrated solution of caustic potash. He prevailed upon Melsens and Dumas to assist him in his examinations. Melsens made it first his object to isolate the black mass; he dissolved the albuminous substances by acids, and the oleaginous matter by alkalis. When he had the black mass as pure as possible he found it had the character of coal, it glimmered on platina without a flame. Alkalis at a high temperature had no effect. Caustic potash dissolved it by destroying it. Boiling sulphuric acid seemed to have no effect; after long boiling and settling there was an almost clear fluid over a black deposit. Concentrated boiling nitric acid dissolved the mass after a considerable time. Muriatic acid had no effect. All this led Guillot to suppose that the black matter was for the most part coal, especially as he sometimes found it had a metallic appearance.

As for anatomical microscopical researches, Guillot says the black mass exists only sparingly. When examined, the larger particles are found to be composed of many smaller ones; they may be compressed between glass, so that they are not wider than the 200th part of a millimétre, as irregular as the large masses. These molecules are as dark under the microscope as seen with the naked eye. They sometimes fill the lungs to a large extent, sometimes only partly, but visibly. It certainly

may be seen by the microscope that the black colour does not depend upon blood extravasation or pneumonia. The black matter when getting deposited to a greater extent, obliterates the smallest veins and arteries, and compresses the smallest ends of the air tubes. At last parts of the lungs get so much infiltrated that they are hard when cut, like pasteboard which had been in water, and sink, when submerged in it.

Guillot often found the black matter and tuberculosis in the same lungs. He thought it particularly worthy of notice that both had their seat in the upper part of the lungs. The tubercles seemed to become harmless when the black matter surrounded them. It effected the obliteration of the small bloodvessels which nourished the tubercle. The walls of tuberculous cavities often contained a great deal of that black matter, and cicatrices of the lungs became black by it.

The symptoms are described in thirteen cases:—Cough, often for many years, mostly dry, and worse in winter time. Expectoration as in bronchitis, often black, often sunk in the vessel. Hæmoptysis supervened, but mostly near the end of the disease (hæmoptysis senilis). Auscultation and percussion are not much taken note of. The sound was often dull in the infra-clavicular and supra-spinal region; râles, dry or moist, were often bronchophonia, rarely found.

Cruveilhier (Anatomie Pathologique du Corps Humain, liv. xiii.) described a case of melanotic lung in a female who died of puerperal fever. He found the lungs black, and the left upper to be softened, and a cavity whose walls were black as coal. He compared the colour to that of blood-pigment altered by acids, and the softness to that of gastromalacia. [The specimen may be seen in the Musée Dupuytrén.] In 1862 some valuable cases were published by Maurice (*Gaz. Med.*, 1862); Villaret, Kuborn, Crocq (*Press Med. Belge*, 1862), who considered the black deposit as nothing but real coal. Monneret (l'Union, 1863,) found the lungs of a brassfounder black. Valleix,

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who has published a work on internal diseases (second edition, 1866), has a very short note on melanosis. He admitted two kinds of melanosis—first, one where, in consequence of a peculiar alteration of the cells of connecting tissue, black matter accumulating without being expectorated; the second is the miners' disease, said not to be connected anyhow with the first.

As regards German writers on the subject, Haller made an observation (Orpuscula Pathologica Obs. xvii.) on black striped sputa of adult men—he had them himself. Reisseisen, in a prize essay, 1808, wrote on the black masses in bronchial glands, which he thought was brought there by lymphatic vessels, and not further divulged in the organism. Heusinger, on pigment and coal production, &c., Eisenach, 1823, comes to the following conclusions:—

1. All pigment in the body is carbonaceous.
2. Abnormal pigment is like the natural.
3. Abnormal pigment is a transformation of the colouring matter of the blood.
4. It has some connection with the formation of fat.
5. Pigment is the atrabile mass of old.
6. It shows the prevailing venosity of the system.

Brockmann has written on the metallurgic diseases in the Harz Mountains, Osterode, 1851. He considers the black matter to be pigment, and relies on examinations which Vogel and Frerichs were prevailed upon by him to make, but have not been published elsewhere. Vogel found the black matter more in the parenchyma than in the bronchi. The highest state of the disease found at the post-mortem was when the whole lungs formed a black mass. Cavities were very rare. The specific gravity of the parts not abnormal. Accidentally miliary tubercles were found; four times scirrhous tumours, and sometimes concretions.

Fluid in the pericardium or thoracic cavity were not so very rare.

As for chemical examination, it proved the existence of

two pigments—one vegetable, one organic. The first did resist very much the action of acids, the last dissolved in chloric or nitric acid. One hundred parts contained 72·95 carbon, 4·75 hydrogen, 3·89 nitrogen, 18·41 oxygen. The ashes (12·48 per cent.) were composed of 10·6 per cent. siliceous matter, 1·88 per cent. sulphate of lime. By other analyses iron and phosphates were found.

As for symptoms, Brockmann, in addition to those mentioned by English writers, considers the dusky hue of the face, and the yellow sclerotica worthy of attention. He did not find the colliquative symptoms of phthisis in cases of pneumo-melanosis; the disease often halts for a longer time than tuberculosis. He recommends change of occupation, tonics, expectorants, and remedies which act on the liver.

Virchow's researches on pigment are well known. He describes in his works all the pigments of different colours—yellow, yellow-red, brick-red, brown, brown-red, and black; granular or diffused, free granules or pigment in cells, and crystallinic pigments. They are transformed from hæmatin, which may have transudated from the blood-corpuscles and diffused into other parts, and afterwards, by another process, formed into granules and crystals. But, as well, blood-corpuscles may stick together and unite their hæmatin, which then is transformed into granules and pigment in a similar manner. Micro-chemical examination proved the pigment granules to resist much the stronger agents.

A strong solution of caustic potass was one of the most effective agents. It acted the soonest on the diffuse yellow pigment, very little, or not at all, on black granules. Concentrated acids changed the colour in this order—brown, green, blue, violet, rose, yellow. The chemical analysis showed that the lung pigment was the most carbonaceous of the colouring agents. This was the order—hæmatin, cholepyrrin, eye pigment, lung pigment.

Virchow considers lung tubercles to favour the produc-

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tion of pigment, as in children with tuberculous diseases the lungs get dark.

Pigment may be deposited in large masses in the lungs, as Virchow found in an old pauper (*Wiener Wochenschrift*, March, 1856). It then may be found in all variations of form, as granules, round, edged crystals, which may be confounded with vegetable coal. Virchow suggests that pigment is very nearly related to bilifulvin, which crystallizes in yellow or yellow-reddish needles, both being generated out of hæmatin. In 1864, however, Virchow, relying on more recent researches, admitted that the black deposit in melanotic lungs was real coal, and the crystals as well; that even part of the lung pigment was of extraneous origin.

A rare case of black lung, complicated with tuberculosis, Barthelmes narrates in his "Dessertatio Inauguralis" (Nuremberg, 1855). The patient, a miller, had blackish or grey pelleted sputa. They consisted of mucus, pus, and pigment granules; no elastic fibres were found. At the post-mortem there were cavities as large as walnuts, filled with grey-blackish matter. The walls were covered with this matter; the tissue underneath partly of slate-grey colour, partly quite black. In the fluid pressed out of the lower lobes of the lungs numerous pigment granules were found not dissoluble by water, alcohol, ether, diluted acids. The author in question does not differ from Virchow's opinion (in 1855), but suggests that the cause of the production of so much pigment in old people may be found in fatty degeneration of the capillaries. This leads to the escape of pigment into the circulation and congregating of it in the tissue.

Rokitansky admitted Virchow's conclusions on pigment, but this was in his edition of 1859. I have not seen a later one.

In 1860 Traube (*Deutsche Klinike*, 49, 50) throws the weight of an important case into the scale of those who considered the blackness of the lungs caused by coal. A man whose business was to pack charcoal in baskets was under

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Traube's care, and had black expectoration. In this Traube found the same charcoal particles whose appearance differed from pigment. And as the patient died of hydrops, the post-mortem was made and the lungs found black, and the charcoal particles in the alveoles of the lungs. This patient had a dusky-coloured skin during life; and in a very recent case the coal particles were even found by Traube in the tissue.

Forster (*Handb. d. pec. Path.*, 1863), and Friedreich (*Virch. Arch.*, 1864), hold as yet up the theory of no real coal entering from without.

Hartung, from Austria, published a case, 1865, in *Schmidt's Jahrb.*, of a man whom he had considered, a few years before death, as suffering from Addison's disease; although the chemical examination proved the black matter to be coal, yet the author thought this was secreted from the blood.

I have had twice occasion to examine coal-miners' lungs sent to me by Drs. Goodsir and Whitley, one specimen only five days after death. I found the black colour produced by a black granular mass, which could be divided by pressure into very minute granules, having sharp or blunt edges, but always very irregular. On this mass nitric or sulphuric acid acted as little as it did on pulverized coal. The only way to solve the part which was soluble was by boiling it for a continued time in a strong solution of caustic potash, but then part was left undissolved, which was not different from coal. The tissue of the lungs contained the most of the black deposit, but it was not missed in any other part. (See specimen on next page.)

The literature pretty well demonstrates that on the nature of the black deposit there have been different opinions. The earlier observers did not know much about the formation of pigment, which is better known through Virchow's researches and discoveries; they had no doubt that the black matter in the coal-miners' lungs was of extraneous origin and real coal. They often found the whole lungs of the miners intensely black, and were naturally led

to think this owing to the inhalation of coal-dust. When it was found that coal-dust and black pigment could hardly be distinguished by chemical and microscopical examinations, many thought it more natural to consider the black deposit of internal origin, especially as in some cases the patient had had nothing to do with coal-mines. But in recent times it has been clearly proved that dust-particles, which can only have entered the lungs from without, such as silica or indigo, or tobacco, or iron ochre, are deposited in the tissue of the lungs, not only in the bronchi, and we may suppose, on that account, the same to be the case with coal-dust.

There is another great difference between former times and now—viz., that the black lung disease in miners is

much rarer now than it was. The mines, especially in Scotland, were badly or not at all ventilated thirty years ago, and it is very gratifying here to state, that it was chiefly owing to the exertions and complaints of the medical men whose works I mentioned above that this was changed, and an Act of Parliament passed by which certain regulations were enforced. I recently visited some mines—for instance, those near Nottingham, and found the disease in question hardly known.

As it is not yet proved that the blackness of a coal-miner's lung is caused by coal-dust exclusively, we may examine the opinions of those who think so, and of those who believe that it is caused more or less by pigment. It is stated by the first that coal-dust must accumulate in the lungs of the miners, that as the air is charged with coal particles, and they are obliged to breathe long and deep, the sharp-edged particles must find their way into the tissue. The coal particles are found in the bronchial glands, being brought there by the lymphatic vessels in the same way as in the case of Dr. Hoppe and Pohl, in Greiss-wald, where a patient had his abscesses dressed with coal-powder, and this was afterwards found in the lymphatic vessels and glands. The expectoration of the miners out of work is often quite black, containing the same black matter as found in oil-soot.

On the other hand, it is stated that it is unlikely that coal particles get into the ends of the bronchial ramifications, as these are not continued in straight but in much broken lines, and as the ciliated epithelial cells of the lung remove all the dust particles very quick, and all foreign bodies are driven from the lungs by coughing. I may as well add that the action of the elastic fibres of the smaller bronchi and air vesicles is very powerful, as demonstrated by asthma, where they are in morbid contraction. Further, it seems strange that coal particles are not found in the blood, whereas pigment circulates with it, so Frerichs, for instance, found in ague (Frerichs on melanæmia *Zeitschr fur Klin. Medicin.*, 1855, Band vi. Heft. v., p. 321.) Tigri sul

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pigmento nella mitza, nel fegato e nel sangue.—*Gaz. Med. Tosc.*, 1855, No. 31, p. 2557.

There is further the specific gravity, which mostly has been found more in accordance with the supposition of an organic matter being present in the lungs. Brockmann invariably found that the black lungs did not sink. I found so in two specimens. Guillot found the lungs sinking in fluid, but the specimens he examined were tuberculous lungs. This certainly might be soon cleared up by medical men engaged in coal-mines.

But there is a third thing probable, that the coal particles are found in miners' lungs, and the blackness yet in some manner owing to pigment. The presence of the coal-dust is a reason of augmentation of the pigment, as it leads to congestion. In the spleen congestion leads to blood extravasation, and the blood is transformed into melanotic matter. This then circulates in the blood passing to the liver, where Frerich observed it in the smaller capillaries microscopically, and even with the simple lens in the larger capillary vessels. This melanotic matter, if present in small amount in the blood, gives the skin of the patient an ashy hue, but if it accumulates in larger patches it is the cause of discolouring it to a remarkable extent. The same has been observed in coal-miners' disease.

In the lungs congestion always leads to pigment formation. It is not necessary that there should be extravasation as in the spleen, which has not the elasticity of the respiratory organs; in that case we might have hæmoptysis, or at least sputa tinged with blood, and this has not been observed in the cases above mentioned (except Guillot's). But the pulmonary capillaries become loaded with blood, the hæmatin becomes intra-capillary free and forms the black matter. It is even quite possible that the pigment when accumulating forms obstonitious as the accumulated bile pigment forms in rare cases in the kidneys.*

* Frerich's "Diseases of the Liver," p. 102. The bile pigment is pre-eminently distinct in the straight tubules of the pyramids, the calibre of which becomes blocked up with

Besides, it might be asked by those who think the blackness to a great degree owing to pigment, how the lungs of stone-masons, quarry-men, knife-grinders, and others, show the same black colour, if it is not pigment?

There are some cases mentioned in medical literature, such as Begbie's and Barthelmes', where it is really difficult to suppose otherwise than that pigment caused the blackness, as the inhaled dust was mill-dust, which is not black. There have been others, such as Cruveilhier's, where the patient, a female, most likely had nothing to do with coal.

At any rate, however much we may be satisfied that coal-miners' lungs are coloured black by coal, we cannot deny that in other trades, where dust is inhaled and the lungs are affected and get black, this may possibly be caused by pigment.

Supposing we had to follow the course of single coal particles, I should think it to be as follows:—They first get into the larger bronchi, and later into the smaller. Here they find the epithelial cells, which they enter and fill, as proved by Traube (so far as regards charcoal particles), later yet they get into the thin walls of the air-vesicles, through the walls which are now at parts unprotected by epithelial cells, afterwards into the intervening tissue, and as fresh particles follow, they accumulate here, as Virchow found, whereas they are sooner eliminated from the other parts; at last they get into the elastic trabicular, which resist the most. That they lie in the tissue for years, which seemed to me before very unlikely, I have no doubt is a fact; they find their way back in the same manner, and are expectorated long after the person has given up his occupation; they then colour the sputum black (as in the cases of Leishman and Hall).

hard coal-like masses. It might be imagined that such a deposit would greatly interfere with the secreting function of the kidneys, and observation proves that it really does so. This coal-like, hard, brittle mass is like the material of black gall-stones, either dissolves in caustic potash slowly and incompletely, or is quite insoluble.

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The accumulation of the particles leads at last to the formation of cavities sometimes of enormous size; but in general this is rare. The specimens in the museums are the most exquisite. At the present time they must be even rarer, as the ventilation is better. Bronchiectasia may be confounded with them, the more as the walls in both cases are covered with a black smooth membrane; this, therefore, must be carefully removed.

The progress of the morbid changes depends upon circumstances. Especially, I have to mention that there are different classes of miners, and that some are more endangered than others. There are those who blast the rock by mining powder when new galleries are made. There are the holers or hewers, who work with a pickaxe lying on the side or sitting doubled up. The third class are the fillers or putters, who have easier work and move about, especially where horses are used. The first are most in danger, the last the least.

Another difference exists as to the holidays. Even now the miners work in some Scotch mines ten days, and then have three holidays, and have to work for nine or ten hours a day. I was told in Basford, near Nottingham, that they have at present two or three holidays per week. In the Harz mines they worked till lately eight hours per day, or five days of the week, now they have mostly three free days.

The miners in metallurgic mines have not exactly to do with coals, but they nevertheless inhale soot from the oil-lamps. Soot being smoother than coal particles, may possibly rarer cause cavities. During the last ten years the disease has been observed in the mines between Glasgow and Edinburgh, in some of Belgium, near Bochum, in Westphalia (after a communication of Dr. Klosterman), in the brown coal-mines near Halle, in the Gruneberg mines (S. Casper, *Wochensch*, Bd. x., H. 2) in the Harz mountain, where there are only metallurgic mines.

Of other trades, the blacksmiths come next. I had several under my care: one, a foreman in an engine-factory, had a remarkable black expectoration for a time, which

he got rid of by taking a holiday and using expectorants besides. Traube had a similar case in the Berlin Charité, a man Ferbitz, who, I think, died there. I had some others whose cases I did not take particular notice of at the time. Their lungs may be expected to be black should they spit black when not engaged in their business. I found in the Registrar-General's report, published in the London morning papers of June 6, 1866, the death mentioned of a blacksmith (forty-seven years) of melanosis of the lungs (six months).

In aged people the lungs have been found black after death (Guillot, Virchow); but I do not know a reliable case where these had black expectoration during life. In their case we may reasonably suppose that pigment is the cause of the blackness, when they had nothing to do with coal during life.

Chimney-sweepers, metal-workers, coal-burners, china-scourers, china-workers, millers, brass-founders, are occasionally mentioned as having black expectoration. I had a tincase-maker (23) lately at the City Dispensary, who spat black, and by inquiring I found that he worked near a charcoal fire, by which the irons they use were heated, and the workshop was full of dust. He had asthma. By the physical examination I found normal vesicular breathing present everywhere; slight dry and moist râles in the lower lobes. Spirometric capacity, 2950 cub. cent. (height, 168 cent.; circumference, 75; mobility, 4½); it should have been 3300 cub. cent.

A large class of sufferers from dust inhalations are knife-grinders and needle-pointers. In their case it has been proved that stone grit or silica enters the lungs. Marshall Hall had a great many cases in Sheffield. Dr. Greenhow found microscopically only a few siliceous particles in the tissue of a razor-grinder; but Dr. Peacock and others extracted a remarkable amount of silica from the lungs by incision and distillation. The change in the lung tissue had this similarity with coal-miners' lung, that there were dense bands pervading the tissue, the colour black, but

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not so intensive, but how it could be even so without the pigment augmented to an abnormal extent, I cannot see.

The danger to the lungs in different trades where dust is inhaled must be the greater the more the pulverized matter is like stone or silica; consequently those miners who blast suffer the most, because the pulverized rock enters their lungs, which already contain coal-dust in more or less masses.

Indigo-dust has been found in the lungs of indigo workmen (Friedreich), and tobacco of tobacco manufacturers; but the most remarkable case is that observed by Professor Zenker, of Erlangen, where iron ochre was found in the lungs of a young woman (31) who was engaged in paper colouring. He calls it siderosis. The whole lungs had a colour like red brick, and the iron ochre particles were seen even by the simple lens. The epithelial cells were filled with such particles, and the intra-lobular tissue contained them in great number. The bronchial glands were coloured red as well (*Tagebl. d. Naturforscherversf*, 1866). This case has been made by Zenker the subject of a most elaborate paper, wherein the whole matter is treated with great clearness and thought.

The diseases caused by inhalation of Scheele's green by artificial flower-makers, which caused such painful sensation a few years ago, belong also to the class of inhalation diseases, as the noxious matter is first introduced into the lungs; but there is this difference, that the noxious matter being a strong poison it soon affects the whole constitution. I hope that this disease belongs to the past. Melanotic cancer has nothing to do with the subject which engages our attention, as it has nothing in common with it but the colour, which is caused by pigment, or more likely coal deposited into its tissue; otherwise it belongs to that large family of tumours, which are only the symptoms of a certain blood dyscrasia, leading invariably to a fatal end.

There has been a controversy as to the melanotic and tuberculous process excluding each other. Brockmann observed that miners, even of phthisical parents, suffered

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from miners' disease without tubercles, and when he found tubercles he considered them only as accidental. The fact is, that both diseases have their seat in the upper lobes of the lungs, and that they meet there sometimes. In some cases, as Guillot observed, especially in aged people, excessive pigment formation puts a stop to the progress of tuberculous disease by the pigment obliterating the small capillaries which feed the tubercles. Tuberculosis often favours the formation of pigment, as the lungs of consumptive patients are mostly found very black.

If a coal-miner, whose lungs are more or less pervaded by coal particles, is attacked by tuberculosis, I should think that he must sooner succumb to the new disease, which finds the lungs already weakened and in abnormal condition.

The most constant lung disease found in combination with coal-miners' black lungs is emphysema; in knife-grinders I suppose it is less frequent, and of the other diseases caused by dust inhalation there are not a sufficient number of cases known. It is quite easy to understand that the bronchitis of which they suffer for years leads to emphysema.

Pneumonia (mostly interstitial) I suppose to be the more frequent the heavier the dust is which was inhaled. It is comparatively rare with coal-miners; I only know of one case, communicated to me by Dr. Biefel, where the sputa (*casts*) proved the pneumonia during life. They had a black colour, were fibrinous, and had a shape in conformity with the bronchial ramifications.

Pleuritic exudation is not so rare in melanotic patients, and the black particles in the fluid, which formerly were considered to be pigment, we should now hold to be real coal.

At present this seems to me the right standing point—that we should not separate the different diseases caused by inhalation of dust particles. Recent observations have demonstrated that dust enters all parts of the lungs when inhaled for months and years, and that they are the cause of a disease which is very similar in its symptoms, although

some difference exists, based upon the nature of the noxious matter. Melanosis caused by the inhalation of oil-soot may be the mildest form of the inhalation diseases; it may as a disease *per se* rarely now lead to death, but it does so certainly. Some inhalation diseases I may have overlooked, and not named; I am sure there will soon be some more mentioned in medical literature. Some I have mentioned will not be many more times observed. At least I trust that they will soon prohibit paper-colouring by iron ochre in Germany.

SYMPTOMS OF MELANOSIS AND SIMILAR INHALATION DISEASES.

The symptoms of these diseases are trifling in the beginning, so that they mostly are overlooked by the patient. Slight indigestion, uneasiness of the chest, may in most cases exist for many years before they complain; gradually, however, dyspnœa troubles them more, and in the later stages the dyspnœa is of very alarming nature. It is in general so constant, that you always hear mentioned the miners' asthma, the grinders' asthma, &c. A slight cough with some mucus expectoration is early present, but occasionally the colour of the sputum becomes black, and in the more serious cases it has that remarkable appearance of black ink, and is sometimes expectorated in considerable quantities when cavities are formed. Microscopically we find the coal particles which are inhaled, or whatever other dust may be the noxious matter. Blood has been exceedingly rarely observed, and elastic tissue only in cases where tuberculosis was present as well. The fibrinous ramificated sputa (bronchial casts) we might expect to find under favourable circumstances by close observation. Fever is in general not present—on the contrary, the pulse is usually slow and weak; it is on account of supervening inflammation that heat and frequency of the pulse show themselves.

A dusky hue of the skin has been frequently observed (recently by Traube), and mental depression, hypochondric mood, is rarely absent.

The physical examination has not found, as yet, the amount of attention it ought to have. Undoubtedly it is not in accordance with the importance of the disease. The percussion found is usually rather louder and more extended than in the normal condition; slight râles, dry and moist, are found at different places, but the breathing in general of the vesicular type.

All this is changed by complications with pleuritis, pneumonia, &c. If the ictus cordis is essentially diminished is not yet known. The spirometric experiment shows the capacity of the lungs reduced.

The prognosis depends partly on the nature of the inhaled noxious matter, partly on the circumstances of life in which the patient is.

As for diagnosis, I mention that the disease might be confounded with Addison's disease on account of the colour of the skin.

The treatment has to be divided into preventive and curative.

As for coal-miners, the principal thing is ventilation. This may be done by fans, funnels, as on board ship, by exhaust-pumps and bellows, and by fires. The last are the best, and I found them in the best ventilated mines; they are in Durham and Nottinghamshire, only there is a considerable difference in the results. In some mines, where the air was good in the mains, the remoter galleries participated less in the beneficial effect of ventilation, and the air contained less oxygen and more sulphuretted hydrogen. I am quite sure that in many places the fires are too small—for instance, in Derbyshire. It is also important that the double-doors and deal partitions should be placed judiciously. Workshops should as well be ventilated; knife-grinders should have ventilating fans. It is further important that the operatives in all these trades should have sufficient holidays. In some cases a mechanical contrivance may be invented to keep the dust from the lungs.

If a patient applies for advice, and we find out the nature of his disease, we must counsel him to leave off his

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noxious occupation at once; by this he will be more benefited than by anything else. Although I have not had much occasion to try remedies, I should think that expectorants will do good mostly, and a tonic *regimen* will certainly do no harm. Complications of the lung diseases, with inflammation or congestion in the abdominal organs, have to be treated according to the present state of science.

Change of air and habits or other circumstances of his whole life may sometimes save the patient.

In order to further our knowledge of the disease and the treatment thereof, it would be desirable to have numerous cases and histories from medical men attending coal-miners, needle-pointers, &c. A better light might be shed on much that is doubtful if they put down their observations regularly, following up more important cases from the commencement to the end, not omitting the post-mortem. The physical examination of the lungs, that of the sputa and urine, ought not to be neglected, and all intercurrent diseases, especially pneumonia, taken note of. By this it might, for instance, at the post-mortem be accounted for why parts of the lungs show an abnormal specific gravity, the case-book relating several attacks of inflammation. It ought to be stated, also, if the liver and spleen have contained black deposit in excess, in accordance with the hypochondric propensities observed during life.

The tissue of the lungs might be more minutely examined by the microscope, in order to find out if the melanotic matter is more present in the tissue or in the mucous membrane, and the solubility of this matter might be tested thoroughly by concentrated solutions of caustic potash. The examinations for iron by hydrochloric, and silica by hydrofluoric acid, &c., in an interesting specimen, would be gladly undertaken by competent authorities.

All other particulars, as ventilation, number of holidays, mode of life, ought to be specified in the cases.

In conclusion, I once more draw the attention of the reader to the state and condition of the British miner,

who is instrumental in bringing to day the yearly amount of 98,000,000 tons of coal, which constitute a considerable part of the wealth of this kingdom, but who lives a life full of care and bare of joy, and born to a cruel fate, dies at last a cruel death. Not able, in most cases, to think for himself, drudging along his dreary path of existence, he wants commiserating friends to take up his cause. Wherever medical men are in a position to befriend him, to ameliorate his condition in general, I wish and hope they may do so by all means. And those who profess to take an interest in all matters of hygiene and public health, I wish may visit the mines and miners, to look after the ventilation of the first, and the mode of life of the latter, and consider in what better way they may be protected from disease.

OCCURRENCE

OF THE

MALIGNANT PUSTULE

IN ENGLAND.

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childhood than in adult ages.

MALIGNANT PUSTULE.

In France, Germany, Russia, Lapland, Sweden, Italy, and other parts of Europe, under the characteristic name of Malignant Pustule, a disease has long been familiarly known and described, which proves fatal every year to a large number of persons.

Beginning as a minute vesicle, which is seated always on some uncovered part, its special character is to excite a peculiar form of gangrenous inflammation, which, spreading rapidly from the point first affected to the neighbouring tissues, gives rise to local changes of very uncommon aspect, and finally destroys life by general infection.

A disease calculated, by so much that is striking, to arrest attention, has, naturally, been made an object of inquiry by many eminent observers.

Among other distinguished men, Vallisneri, Solander, Pallas, Fournier, Thomassin, Chabert, Kausch, Malacarne, Linnæus,* Glanström, Enaux and Chaussier, Leuret, Delpech, Rayer, Bourgeois, Salmon and Maunory, Hoffmann, and Heusinger, may be specially

* Linnæus, who was himself attacked by the disease, but happily recovered, was the first to give authentic evidence of the existence of malignant pustule in Lapland.

mentioned as having each contributed something to its history.*

The following important points appear to be established by the investigations of these and other writers:—

1. That the malignant pustule in man is identical

* *Fallicneri.* Lettere spettanti alla storia medica é naturale. Padova (1713). Also, Nuova idea del mal contagioso de buoi. (1714.) *Solander, D. Chr.* Furia infernalis. Nov. Act. Upsal. Tom. i, p. 113. (1773.) *Pallas, P. F.* Vergleichnung einiger in Schweden, Russland, und Siberien, und den daran grenzenden Wüsteneien bemerkten tödlichen Krankheiten, die man füglich unter den Namen, Brandbeulen, zusammenfassen kann. Neue nordische Beitr. B. 1, p. 113. *Fournier.* Observations et experiences sur les Charbons malins. Dijon: 1769. *Thomassin.* Dissertation sur le Charbon malin de la Bourgogne, ou de la pustule maligne. Dijon: 1780. *Chabert.* Description et traitement du Charbon. Paris: 1780. *Kausch.* Die in Königreich Preussen, und besonders in Herzogthum Warschau endemische, schwarze, Blatter. Hufeland's Journal. B. xxxiii, c. p. 38, d. p. 49. 1811. *Molinarus.* Del Carbonchio de Buoi e della febbre carbonchiosa nel Bestiamie e negli uomini. Bassano: 1797. *Linnæus.* Amanitates Academicæ. Vol. iii, p. 322. *Glumetrüm.* Dissertatio de pustula livida. Regiomonti: 1824. *Enaux et Chaussier.* Methode de traiter les morsures des animaux enragés, et de la vipère, suivi d'un précis sur la pustule maligne. Dijon: 1785. *Bayer.* Traité des Maladies de la Peau. Article, Pustule Maligne. *Bourgeois.* Memoire sur la Pustule Maligne. (*Archives Générales de la Médecine.* 4me series, t. 1, p. 172.) *Salmon et Maunory.* Memoire sur l'inoculation de la pustule maligne. (*Gazette Médicale*, 1837.) P. 184. *Hoffmann.* Der Milzbrand oder contagiöse Karfunkel der Menschen. Stuttgart: 1827. *Heusinger.* Die Milzbrand-Krankheiten der Thiere und des Menschen. Erlangen: 1850. Some of these authorities I have studied in the original. For my knowledge of the rest I am indebted to Heusinger's elaborate and comprehensive treatise. The three works whose titles are subjoined, and which stand among the first in Heusinger's catalogue, also deserve special mention, as showing how far back the records of this malady go, and at what an early period the disease in man was identified with that in the animal. *Tossi a Serra.* De anthracce seu carbunculo tractatus. Venet.: 1576. *Chr. Perez de Herrera.* De carbunculis animadversiones. Pintiæ: 1604. *Troilo.* Lancetta di Pestilenza commune ai bruti e di contagio mortale, dell' uomo. Venezia: 1633. Fol.

with, and derived from, the eminently contagious disease which, under the name of "charbon" (*Germanicé*, "milzbrand", spleen-gangrene) or (in sheep) "sang", has prevailed from time immemorial in various continental countries, in oxen, sheep, horses, and other animals.*

2. That the disease may be communicated to man from the animal in the following ways:—

a. By direct inoculation, as in the case of butchers, farriers, skinners, herdsmen, drovers, and others, in whom accidental inoculation with it appears to be an event of no uncommon occurrence in the countries where "charbon" is most rife.

b. By means of the skin, or simply by the hair of diseased beasts; modes of communication of which many decisive examples are on record. Also, through contact with the bones, the hoofs, and horns, and the fat and tallow of animals dead of "charbon."

c. By eating the flesh of animals killed while affected with it, as also by using the milk and butter of infected cows.†

* Indications of the occurrence of this epizootic extend back to a remote antiquity. Not to mention the murrain described in the ninth chapter of Exodus, by which Pharaoh's cattle, horses, asses, and sheep, were destroyed, and which by most writers is thought to be identical with "charbon" or "milzbrand," Heusinger considers it almost certain that the disease described in the first book of the *Iliad* (l. 43—52), that referred to by Ovid in his seventh *Metamorphosis* (l. 523—660), various epizootics mentioned by Livy and Dionysius Halicarnassus, and lastly that delineated by Virgil in the first and third *Georgics* (l. 464—470) respectively, were of the same nature.

† A remarkable example of the communication of the disease by the milk of an infected cow was related by Chisholm in his account of the epidemic which occurred in Barbadoes in 1796. The malady was rife on the plantation of Mr. Cummin, and carried off more than fifty head of cattle, beside a considerable number of negroes who

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d. And, lastly, by insects which have been in contact with the bodies or carcases of diseased cattle; a mode of communication obviously difficult to demonstrate, but in proof of which numerous cases—some, apparently, entirely free from ambiguity—are recorded.

3. That in the countries where "charbon" prevails, concurrently with the cases of malignant pustule which are the observed result of direct inoculation, other cases occur in which the vehicle of the poison cannot be identified.

4. That these cases have, in common with the rest, this significant peculiarity: that the disease is always seated *on some part of the person which is habitually uncovered.**

had partaken of their flesh. While the epidemic was at its height, one of Mr. Cummin's children, a little girl three years old, took one morning for breakfast so much milk that scarcely any was left for the rest. Unfortunately, this milk was furnished by a cow which at the time was suffering from the murrain. Four days afterwards, the child was seized with all the symptoms of the prevailing malady, including malignant carbuncles identical with those exhibited by the negroes who had eaten the diseased meat. Her life was saved with difficulty; and a deep scar on her left arm remained to mark the nature of her illness. (Chisholm, on Lues Bovina Intertropica, *Edinburgh Medical and Surgical Journal*, vol. vi, p. 36.) It is remarked by more than one writer, as a curious fact, that, in milch cows, the secretion of milk often continues for a considerable time after the onset of the malady.

* The few exceptions to this rule which do occur only add to its significance. Such, for instance, is the interesting case lately recorded in the *Lancet*, by Mr. Harper of Holbeach, in which a man who was tending diseased sheep inoculated the prepuce with his soiled hands. Many instances of this particular accident are recorded by foreign writers. Heusinger relates a case of malignant pustule in the instep, but it occurred in a boy who always went barefoot. In the epidemics which have occurred in the West Indies, when the disease attacked the blacks, who were, indeed, its chief victims, the pustule appeared in the most various parts of the body. I need scarcely add that these men habitually work in a state of almost complete nudity.

5. That in animals, and in oxen especially, the action of the specific poison by which the malady is caused is even more virulent than in man; as shown, in the first place, by a more speedy death; and, in the next, by the more rapid spread of gangrene, and by the extrication on a large scale, while the animal is yet living, of fœtid gases in the tissues of the part affected.

6. That the contagious property is possessed in the highest degree by the lymph of the characteristic vesicles; and, next to this, by a peculiar exudation (the so-called "humor anthracicus") which occurs in the cellular tissue of the affected part, in that of various parenchymatous organs, and sometimes, also, in the serous cavities of the chest and abdomen.*

7. That the malignant pustule, when contracted by man, may be communicated by contagion to other men, or back to the animal by inoculation.

It would be out of place here to give, in detail, the evidence on which these conclusions are founded. I may, however, state that the identity of the malignant pustule

* Greve believes the virulence of this exudation or carbuncle juice to be much greater while it is yet warm, and immediately after the death of the animal. On this point, he makes the following remarkable statement:—

"Ich sah eine grosse Menge am Milzbrand abgestandener Kühe und Ochsen von Abdeckern abledern, ohne übler Folgen für diese; aber sie lederten die Cadaver *erhitzt* ab und ihre Hände und Arme *waren ohne Verwundungen*. Sobald sie mit verwundeten Händen die *noch warmen* Cadaver behandelten, trugen sie allemal die gefährdrohendsten Carbunkeln davon. *Furchterlich wirkte das noch warme, gelbe, jauchige, und stinkige wasser in der Bauchhole des krepirten Vieher*. Alle Hunde die davon soffeckten *krepirten fast auf der stelle*. Ich sprützte ein paar Tropfen dieser warmen Jauch in das Auge einer Taube, und 3 Stunden nachher war sie todt, ebenso eine Ente welcher ich ungefähr einen Theelöffel davon in den Halse erguss. (Greve, *Erfahrungen und Beobachtungen*, i, s. 48.)

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with the "charbon" of cattle—already, perhaps, sufficiently established by the countless cases of accidental direct communication, has lately received its crowning proof, in the reinoculation of the disease, with all its specific characters (including the power of indefinite propagation by the same process) from man back to the animal. (*Gazette Médicale*, 1857, p. 684, Salmon and Maunory.)

Some of the facts which show that the virus may be conveyed by the hair of beasts are very striking.

Trousseau, for example, relates that in two factories for working up horsehair imported from Buenos Ayres, and in which only six or eight hands were employed, twenty persons died in the course of ten years from malignant pustule. This distinguished teacher had himself the charge of three cases from the same establishments, in which life was only saved by severe cauterisation. (*Gazette Médicale*, Fevrier, 1847, No. 4.)

Rayer states that in the course of three years, while he was attached to the Hospital of St. Louis, he had to treat eight cases of malignant pustule; and adds that all eight came from an establishment in the immediate neighbourhood for the manufacture of Russian hair. (*Traité des Maladies de la Peau.* Article, Pustule Maligne.)

I think it is the same writer who records the still more remarkable case of three persons who were all attacked by the disease after cleaning some hair that had for many years served as the stuffing of an easy chair.

Two other facts may be mentioned here, in addition to these, which tend to show that this virus, like the other contagious poisons, when once in the dried

state, may retain its powers for indefinite periods of time.

It is stated by Gerlach that some straw on which, three years before, some beasts dead of "charbon" had been flayed, on being brought into a shippen, infected with the same disease the sheep that were folded in it.*

In Caspar's *Wochenschrift*, Nicolai gives the history of a tanner who died of malignant pustule of the face. After full three months, the daughter of this man; and then her brother died of malignant pustule also. (Caspar's *Wochenschrift*, 1833, p. 268.)

The propagation of the disease by flies which have previously been in contact with animals affected with charbon appears to be equally well established. As this, however, is a point to which I shall have to return, I will not dwell further on it here.

Whatever the way in which the pustule may have been contracted, one thing appears certain, and that is, that in man, in the immense majority of cases, it is at the onset local only; the general poisoning which ensues being due to the after diffusion of the morbid changes and products engendered in the part first affected.†

This capital point in its pathology may be inferred not only from the order in which the morbid phenomena succeed one another, but still more clearly from the de-

* Gerlach, Die Blutseuche der Schafe in Rücksicht der Ursachen. *Magazin f. Thierheilk.* B. xi und xii. See Heusinger, p. 62.

† I say "in the immense majority of cases," because in some few instances in which the disease is caused by the ingestion of infected flesh or milk, the poison becomes absorbed at once into the blood, and leads to a general infection which precedes any local mischief.

cisive fact that the early destruction of the diseased part by caustic not only often prevents the development of the constitutional disorder, but in many cases issues in perfect and immediate cure.*

The history is, in short, that of a specific animal virus, which, implanted by inoculation in a given part, sets up there a series of malignant zymotic changes, which are propagated thence to the whole system.

From this summary it will be seen that this remarkable disease has not only been closely studied by a great number of continental naturalists and physicians; but that their published observations upon it amount to a considerable body of medical literature.† This being the case, it is certainly a very curious fact, whatever the explanation, that the profession in England are almost entirely silent on the subject.

Among systematic writers, Dr. Craigie, in his *Practice of Physic*, Mr. Druitt, in his *Vade Mecum*, and Dr. Copland, in his *Medical Dictionary*, are, as far as I have been able to ascertain, the only English authors who have treated of the disease at all. All three speak of it as being all but unknown in England; and all three professedly derive their account of it from the French.‡ In the long list of writers on malignant pustule which

* See for evidence of this Bourgeois's able paper in the *Archives Générales de la Médecine* before referred to. The testimony of all the best observers is unanimous as to this point.

† Heusinger quotes more than four hundred authors who have treated, either of malignant pustule or of the corresponding disease in cattle, or of both.

‡ I do not mention Chelius's *System of Surgery*, because that may be said to be only a German book in an English dress. It contains, however, a brief but clear account of malignant pustule, with some notes added by the translator.

are appended by two of these authors to their respective articles on it, no English name appears.

With the exception of two cases of which Mr. Lawrence gave an account in a clinical lecture published some twenty years ago; and of a valuable series since related by Mr. Harvey Ludlow, there is, I believe, no description of the disease, drawn from actual observation, by any British practitioner.*

From this one of two things is clear; either that a

* Mr. Ludlow's paper, which appeared, in September 1852, in the *Medical Times and Gazette*, under the title of Carbuncular Inflammation of the Lips and other parts of the Face, and of whose existence I was not aware at the date of the present communication, does not appear to me to have received the attention it deserves. The paper opens with the following passage:—

"The disease which forms the subject of consideration in the following pages belongs to a class whose diffusion has been pretty steadily increasing in this country during the last five years. Before that period, it appears to have occurred quite sporadically, and to have been amenable to ordinary treatment. Hence, our medical literature offers but *few* original observations on the subject, the knowledge we possess of it being derived chiefly from continental authorities. Charbon and malignant pustule, indeed—diseases with which French surgeons are so familiar—present broad features of similarity to the affection which the accompanying cases are designed to illustrate; and although some trifling differences exist between them, yet the resemblance of their distinctive characters is evidently so close as to compel us to include them in the same class, and to place them in the same pathological light."

Although Mr. Ludlow hesitates actually to identify the disease he describes with the true malignant pustule, it is plain, from this passage, that he had a strong conviction of the close analogy between them. In the concluding part of his paper, he sums up his views as to the causes of the malady in the following words:—

"From a consideration of all the cases which are recorded in the journals, or have occurred during the last two years at the hospital (St. Bartholomew's), I think the disease may be attributed to three main causes. 1. The direct inoculation of a poison, animal or vegetable. 2. The inspiration of air tainted with such poisons. And 3. Feeding on unhealthy food."

The cases reported by Mr. Ludlow, to the number of six, are all characteristic examples of malignant pustule.

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malady which is unlike any other, and which, in all respects, is one of the most remarkable to which man is liable, has hitherto escaped general recognition here; or that, as Mr. Druitt and Dr. Copland suppose, malignant pustule (except, perhaps, as a thing of extremest rarity) is never met with in England. This last alternative, if true, would be very difficult to explain, inasmuch as the epizootic from which malignant pustule is derived, so far from being unknown here, has, from a very remote period, caused every year a large mortality in English live stock.*

The "joint murrain," "black quarter," or "quarter evil," and the "blood" (the name by which the malady is known in the sheep), are the same diseases as the "charbon," "quartier," and "sang" of the French, and the "milzbrand" of the German writers.

That a disease which is known to be communicable to man should prevail in this country, and yet never be communicated to him, would be a strange, if not an unaccountable thing.

* The epizootic described by Matthew Paris as having been so fatal to cattle in England in 1250, was, probably, an epizootic of the disease in question. He relates that dogs and ravens which fed on the carcases of the infected cattle rapidly died in consequence, and the panic among men was so great that for the time the use of beef was given up. The following is the verbatim account:—

"Ejusdemque anni curriculo, post multa mensium caumata, tempore adveniente autumnali, facta est tanta pestifera armentorum mortalitas pluribus locis in Angliâ, præcipué autem in Northfolc et in Marisco, et partibus Australibus, quantam nullus se meminit previdisse. In quâ peste hoc evenit mirabile, quod de pecorum mortuorum cadaveribus, etiam canes et corvi qui vescebantur, illicò intumuerunt et infecti obierunt. Unde nullus erat hominum qui carnes bovum comedere auderet, ne fortè ipse essent de morticinis memoratis." (*Historia Major* Matthæi Paris. Editore, Willielmo Watts, S.T.D. Londini: 1648. P 847.)

The fact, I believe, is not so. If my own experience may be trusted, the only reason why malignant pustule has been so rarely noticed by English writers is that, except by one or two observers, it has hitherto been confounded with other maladies which offer some points of analogy with it.

In the month of October 1856, I saw a case which presented all its characteristics in the highest degree, and which ended fatally on the seventh day. Since then I have been informed of twenty-three other instances of it. Of these twenty-three, two were seen by myself, and six others by intimate friends who have kindly favoured me with their notes.

That so many cases should have come, within so short a period, to the knowledge of a single practitioner, shows, at any rate, that it is high time we should all take serious note of the presence of this disease among us, and prepare ourselves to deal with its terrible emergencies.

As the malady is generally readily curable by decisive measures in its early stage, but is almost as generally incurable if this stage be allowed to pass without them —as the alternatives of death or recovery, therefore, depend on its early recognition—I have thought it a duty to bring the particulars of these cases (so far as I possess them) before the profession, in order that the attention of medical men may be directed to the subject.*

* In the Twenty-first Annual Report of the Registrar-General, in a table of the causes of death registered in England in each of the nine years from 1850 to 1858 inclusive, the following are the numbers set down to carbuncle: 154, 161, 233, 253, 300, 355, 233, 250, 246. As there is good reason for believing that these numbers may be taken to represent, approximatively at least, the proportion of cases of malignant pustule in each year, they would seem to indicate that the

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Case 1. On Oct. 21st, 1856, I was summoned by Dr. Robertson, of Terrell Street, in this city, to see a patient whom he had visited for the first time the day before, and whose case had put on a strange and formidable aspect.

The subject was a married man, rather more than thirty years old, who had for some years been employed as compositor in the office of the *Bristol Times*, and who, at the time of his seizure, was in good health. The disease under which he was now labouring had begun six days before, in the form of a pimple surmounted by a small vesicle, and seated on the upper lip. His attention was first called to this pimple by the severe itching it occasioned, and which annoyed him very much by interfering with his work. In his attempts to relieve this sensation by scratching the part, the vesicle was soon broken; a circumstance which led the patient himself to

disease is on the increase. It is obvious, however, that these statistics cover too small a period to allow of any general inference being founded upon them. Much greater fluctuations are observed in other zymotic diseases in virtue of the common variations to which the whole group are subject. Unfortunately, no data exist from which the most distant approximation can be made as to the concurrent prevalence of the epizootic from which the malignant pustule is derived. The scientific study of veterinary medicine is too recent in this country to render the necessary records possible. We have already seen that there are good grounds for believing that joint murrain has prevailed in England from a very remote age. If there be some doubt whether in England generally malignant pustule has increased of late years, there seems to be none that in London it has greatly done so. In the Registrar-General's Report of the Health of London in 1858, the following passage occurs:—"The deaths from carbuncle were 61; fewer than in 1856, but ten times as many as the deaths from the disease in the earlier years. This troublesome plague of boils has been prevalent for some time." I shall hereafter give some reasons which render it probable that the flesh of diseased beasts is sent to great towns more largely now than formerly. (See the Report referred to, pages xl and 206.)

form a very definite theory of his case. The printing office had lately been supplied with a fount of new type, and the notion was that the hand, soiled with the new metal, had, in its frequent contact with the broken surface, poisoned the lip.

The same notion, under some other form, occurred in most of the other cases. The fact is worth noting, as showing that the nature and succession of the morbid changes involuntarily suggest the idea of a poisonous inoculation, even to non-professional persons.

In the course of the day, the swelling and hardness gradually extended; and on the day following, they were so considerable as to cause much disfigurement. It is important to remark, however, that apart from the local discomfort, the patient did not at that time feel ill, but continued to work as before. The malady was still in what the continental writers call the local stage.

On the third day, it had began to spread widely over the face, and the patient was unable to leave the house. From this stage, it passed rapidly to that in which I first saw it, three days afterwards. The aspect of the disease was then very striking, and was unlike anything I had ever seen before. The lips were, at least, four times their natural thickness; of a deep violet, approaching to black; and as hard as brawn. This state of things extended to the whole circumference of the mouth, from the nose to the chin. The closure of the mouth being imperfect, saliva was constantly drivelling from it. On the space between the upper lip and the nose there were three or four small vesicles, containing a little reddish yellow serum. The temperature of the part was considerably below the normal standard. The rest of the face, the forehead, and throat, were also

childhood than in adult ages.

much swelled, and presented very exactly the appearance which these parts have in bad cases of erysipelas. Passing from the mouth to the cheeks, the deep violet of the former gradually shaded away into a dusky red, and the scirrhous hardness gave place to a puffy swelling. The nose participated but little in the morbid change. The enormous prominence of the mouth, its hard and rigid state, and its almost black colour, caused a peculiar and hideous disfigurement, which was in the highest degree characteristic. The general symptoms bespoke rapidly failing powers. The pulse was more than 140 in the minute, and so feeble that it could scarcely be counted. The breathing was rapid; the belly tympanitic; and the body was bathed in a colliquative sweat. The breath exhaled a peculiar and disgusting fœtor, which, to my own sense of smell at least, was entirely new. The mind remained perfectly clear. A deep incision was made through the upper lip and carried into the cheek. The incised tissues were so hard that they creaked under the knife. But little blood flowed from the wound, the local circulation having, apparently, very nearly ceased. There was no trace of pus, but a serous exudation oozed freely from the part. Stimulants were ordered in liberal doses.

On leaving the patient at eleven o'clock at night, I appointed to see him again early in the morning; but he died in the course of the night. Decomposition set in very early, and advanced with unusual rapidity in the dead body.*

* Virchow and many other writers lay great stress on this as one of the characters of malignant pustule. In the animal this tendency to putrescence is manifested even before death by the extrication of stinking gases in the affected part. Virchow also states

The rapid way in which life was destroyed by a disease that in its origin appeared so trivial; the peculiar manner in which the deadly influence of the disease was extended from the minute point in which it first appeared; and, lastly, the hideous and very uncommon aspect of the local morbid change, made a deep impression on all who saw the patient. In my own mind, it excited much speculation as to what might be the possible cause of so horrible a death. It was not, however, until I saw a second case, that I identified the malady as the malignant pustule of the French pathologists.

Case II. On the 18th March, 1859, Mr. Exley, the principal of one of the leading schools of this town, called on me to ask me to visit one of his pupils, in consultation with the late Mr. Wilson of Clifton. From the description which Mr. Exley gave me, I at once recognised the disease as the same which had proved fatal to the compositor whose case has just been related.

The subject was a fine young man seventeen years old. Five days before the date of my visit, his attention was first drawn to a small pimple on his upper lip by the uncontrollable itching it occasioned. On examining the spot narrowly the same evening, he observed that the centre of the pimple was occupied by a small vesicle. This vesicle he punctured with a penknife, and a little serum issued from it. On the following morning, the lip, in a circumscribed spot, was swelled and discoloured. There was, at that time, no general disorder

that, as the disease advances, colourless corpuscles abound in the blood; and he makes the still more remarkable assertion, that numerous vibriones may be seen in that fluid immediately on its withdrawal from the vein of the infected man or animal.

of any kind. He dined at the usual hour with the rest of the school, ate heartily, and was in good spirits. In the course of the next day, three or four small vesicles made their appearance in the space between the nose and upper lip. As the swelling had increased, and the part looked inflamed, it was thought prudent that the patient should keep his bed. It was not, however, until the day following that it was considered necessary to send for Mr. Wilson. The whole mouth now was much swelled and of a purple colour, and the lips were hard and tense. From that time the march of the disease was very rapid.

When I saw the patient two days afterwards, it was in appearance, and in almost every other respect, precisely what I had witnessed in the former case. I have never seen two cases of any other disease so absolutely alike. There was the same erysipelatous swelling of the forehead and face; the same enormous thickening, and black and hardened condition of the lips and mouth; giving rise, by the inordinate prominence of this feature —as if by some monstrous exaggeration of the negro type—to the same hideous and characteristic disfigurement. On the space between the upper lip and nose, there was the same crop of three or four small flat vesicles containing a straw-coloured lymph. Saliva was constantly drivelling from the mouth, and the breath had the same peculiar fœtor. The only difference I could detect was, that in this young man, the mouth and lips were, as yet, hot, and that extending from the ramus of the jaw, down the neck on either side, were several dark red streaks, marking the course of inflamed lymphatics; a circumstance which might have existed, but was not noted in the former case.

The pulse was 120 in the minute; the inspirations were forty-four. Rapid breathing was in both cases a leading feature of the disturbance. The belly was tympanitic. The patient had ceased to take much note of things about him; but when he was aroused, the mind seemed to be tolerably clear.

On making a deep incision into the upper lip, no pus issued; but there was a considerable flow of blood, of which as much as eight ounces were lost. The immediate result was a marked diminution of the local turgescence, and a palpable weakening of the pulse. This was at two o'clock in the afternoon. When the patient was seen again, four hours later, he was much worse. The mouth and lips were now cold; the pulse was 140; the inspirations were 64. When questioned, his answers were rational; but when he was left alone the mind wandered. The body was bathed in sweat.

From this time, he sank rapidly, and he died soon after daybreak the next morning, about sixteen hours after I first saw him. Thirty-six hours afterwards, the decomposition of the dead body was already far advanced.

At the time of his death, this young gentleman bore on his left leg the remains of a large boil, which had appeared about a fortnight before. This boil had followed exactly the common course of such things, and had led to none of the peculiar and deadly changes in surrounding textures and in the system at large, which followed the pustule, or, to speak more correctly, the vesicle on the lip.*

* Bourgeois has very justly remarked that "the malignant vesicle" would be the fitter name for the disease, since one of its most special characteristics is, in all cases, the absence of true pus—at any rate, in the first stage.

childhood than in adult ages.

Case III. On Sept. 11th, 1861, I was asked to meet Mr. H. Grace of Kingswood in consultation on a case which proved to be one of malignant pustule. The subject of it, a clerk in a provision warehouse in Bristol, was a powerful, robust man, about 30 years old, who had always enjoyed good health.

Six days before the date of my visit, while he was in the act of combing his moustache, the comb stuck in a tender part. On withdrawing it, he found that the teeth of the comb had punctured a small vesicle, giving issue to a little yellowish-looking fluid. This accident was the first intimation he had of the existence of the disease which was so soon to prove fatal to him. The vesicle was situated on the upper border of the moustache, immediately below the left nostril. A slight depression and a small dried pellicle still marked its former place when I first saw the patient.

Immediately after the puncture, the part became the seat of a hot, stinging sensation, which lasted all day, and annoyed him very much, and which he described as being very peculiar. There was no itching strictly so-called.

In the course of the day, the lip began to swell, and towards night became very painful. In the night, the pain was so severe that he could not sleep, and he got up more than once to bathe the lip in the hope of relief.

The next day, the swelling had somewhat increased, and the part had begun to look angry. The uneasiness was so great that he found some difficulty in getting through with his work. On both days, however, he walked to and fro to the warehouse (a distance of rather more than two miles each way) and took his usual food.

On September 7th, the pain had much abated; but

the swelling and discoloration had increased; the disfigurement was considerable; and, for the first time, he did not leave the house. Apart from the state of the lip, he did not, however, feel very ill; and, up to that time, neither he nor his friends had the slightest idea that the malady was at all serious.

In the night of the 7th, that is to say, on the third day from the discovery of the vesicle, he was seized with severe stitch in the right side, and great difficulty of breathing. On the following morning, Mr. Grace saw him for the first time.

The whole of the upper lip was then much swelled hard, and discoloured; the appearances being such as to lead Mr. Grace to suppose that the case was one of carbuncle. The pulse was somewhat frequent and the breathing difficult. The pain in the right side was very acute, and the physical signs of pleurisy were present.

In the course of the day, a new crop of vesicles, to the number of five or six, made their appearance, chiefly on the right half of the lip.

From this time the disease did not make much progress locally, until September 10th, when the swelling rapidly extended to the whole of the face.

When I saw the patient on the day following, the state of things was in the highest degree characteristic. The lips were more than three times their natural thickness, as hard as brawn, cold, and of a deep livid red, verging in parts into purple and black. The mouth projected at least two inches beyond the rest of the face, giving rise to the same hideous and characteristic disfigurement noticed in the two former cases. The lips, from swelling and loss of muscular power, were imperfectly closed, and a viscid saliva constantly drivelled from between

them. The rest of the face had exactly the aspect which it presents in severe forms of erysipelas; the hardness, so extreme in the mouth, shading away gradually into swelling of a softer character. The eyelids were bloated and puffy, and the eyes permanently closed. Above the eyebrows there was no diffuse swelling, but four or five broad, dark red streaks, marking the course of inflamed lymphatics, traversed the forehead from the face upwards, and were lost in the hair. Scattered over the upper lip—chiefly in the space between the lip and the nose—were several small, thin scabs, occupying the former seat of so many vesicles. The case was, in all its details, precisely what I had witnessed in the two other cases in which I had been before consulted. The pulse ranged from 132 to 140; the inspirations numbered 44 in the minute. The body was covered with a profuse, clammy sweat, and the vital powers were sinking from hour to hour. The breath had a very peculiar and repulsive odour, which I recognised at once as identical with what I had smelt in the two former cases. The pain in the right side had nearly ceased, but there was severe stitch in the left, and the patient complained of great difficulty of breathing. He was not in a state to admit of a complete examination; but I ascertained that air penetrated the lower half of the right lung very imperfectly. An obscure rubbing sound was audible over a small space on the left side, below the precordial region. As in the two former cases, I had no opportunity of examining the urine. The mind was quite clear; and the patient took freely and willingly strong beef-tea, brandy, and eggs, and other stimulants.

A stick of potassa fusa was held firmly on the upper lip at four different points where vesicles had existed,

until the tissues were destroyed to a considerable depth. A long, deep furrow was produced on the lower lip by the same means. There was a slight oozing of serum from all these parts, but no single drop of blood appeared. The circulation in them had apparently entirely ceased.

The patient continued to sink rapidly and died on the 12th of September; twenty-six hours after my visit, and eight days from the first discovery of the vesicle.

The inflamed lymphatics, the double pleurisy, and the rapid and terrible death, all occurring as the consequence of an affection which, a few days before, was nothing more than a vesicle so minute and insignificant as even to be discovered by accident, are circumstances which sufficiently mark the nature of the disease, and are of deep import in relation to its pathology. If I do not misinterpret the phenomena, they testify at once to an inoculation by a malignant poison, and to the intensely virulent nature of the morbific agent.

A circumstance deserves to be mentioned in connection with this case as bearing on its possible origin. About a week after the death of this young man, I was informed by his friends that he himself had a settled conviction that the pustule was caused by the use of a new pomatum which he had bought about a week before his illness, and had rubbed very freely into his moustache. As tallow-chandlers and soap-boilers have long been known to be frequent sufferers from malignant pustule in the countries where the corresponding epizootic is rife, it is quite possible that this view might be the true one.* As

* Es ist eine alte Beobachtung (writes Heusinger) dass Seifensieder und Lichterzieher oft am Milzbrand-Karbunkel erkrankten, wenn sie Talg von am Milzbrand krepirten Thieren erhalten. So

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the patient was employed in a provision warehouse, it is equally possible, however, that he may have become infected in the exercise of his calling.

For the particulars of the next case, I am indebted to my friend, Mr. Green, senior surgeon to the Bristol Royal Infirmary. The facts are related in his own words.

Case iv. On May 4th, 1854, I was sent for to see Master E., who was said to be suffering from swelled face. He was a tall, delicate youth, 17 years old, and had been for some months out of health, having come to Bristol for change of air.

I found the entire right side of the face much swollen. The lips, in particular, were very large and projecting and of a purple hue. On the margin of the upper lip, there was a small pimple covered with a scab. The parts were very hard, especially immediately around the pimple. The right eye was closed by the swelling. The pulse was quick, and the surface hot; the tongue brown and moist.

The disease had begun three days before with a small vesicle on the upper lip, which the patient had broken by scratching. The day before I saw him, the swelling,

erzählt denn auch Hildebrand einen merkwürdigen Fall; zwei Schäferweiber erkrankten dadurch, dass ihnen beim Ausbraten des Talgs von an der Blutseuche krepirten Schafen dieses Fett in das Gesicht spritzte. Aehnliches berichtet Wagner. Als man den gewonnenen Talg (von einer milzbrandkranken Kuh) ausgebraten hatte, wurden die Grieben dazu benutzt zwei Schweine, zwei Hunde, und eine Katze damit zu laben, drei Thiere starben bald nacher, und zwar die Katze unter herum Wälzen auf kühlem Rasen. (P. 400, u. s.) If these statements can be relied on, the temperature to which tallow is raised in being melted would appear to have no power to destroy the virus. I have ascertained that in making certain varieties of pomatum, and particularly those in which trotter oil is used, the ingredients are mixed at a comparatively low heat.

which was before confined to the lip, had extended to the face; and as it went on increasing, the friends decided on having medical aid. From the aspect of the face, as well as of the patient himself, I looked upon the case as something different from ordinary inflammation.

On the day following, the disease had made great progress. The swelling had extended, and the affected parts, especially in the neighbourhood of the original pimple, were very dark in colour, and much indurated. The prostration was great.

At this visit, the real nature of the disease first occurred to my mind. I remembered once having seen a similar case in the wards of La Charité in Paris, which was made the subject of some clinical remarks by Roux, and I at once recognised the malady as the "pustule maligne" of Delpech and the French writers.

I told the friends the serious nature of the case, and recommended a consultation, which they wished deferred until the morrow, when the patient's father was expected. As the danger to life did not then appear to be great, I consented to this arrangement.

I made a deep incision through the indurated part, which was evidently losing its vitality, as very little blood flowed in consequence. Tincture of muriate of iron was applied to the wound. I saw the patient late at night, and found his condition but little altered.

About 4 A.M., he became very much worse, and at 8 A.M., I was sent for to see him. The entire face was then of a livid colour, approaching to black; the pulse was hardly perceptible; the body was bathed in sweat. It was evident to all that he was fast sinking; and he

died at about 11 o'clock, five days after the first appearance of the vesicle.

The general treatment consisted chiefly in the liberal administration of good beef-tea, brandy, and ammonia.

Case v. The notes of this case were kindly given to me by my friend Mr. Humpage of Cotham, who attended the patient.

"Mrs. S., aged about 40, married, the mother of three children, and of what is called the leucophlegmatic temperament, had complained for several days of a pimple on the chin, which, becoming troublesome, was seen by a surgeon three days before I was first called to her.

"I first saw her on Oct. 12th, 1855, in the evening, and found the following state of things:—On the *chin* a puffy tumour, with a livid spot on its apex; great surrounding swelling and infiltration of the cellular tissue of a hard and unyielding character, difficult deglutition, and much constitutional disturbance, indicated by a very low and rapid pulse, and general exhaustion.

"On the following morning, finding all the symptoms much aggravated, I advised a consultation with my friend Mr. Green. We agreed the case was one of the most imminent danger. A free incision was made through the parts; but they cut like brawn, *dry and solid*. The patient was directed to take brandy freely; but she rapidly sank, as if poisoned, about twelve hours after the incision, and in about thirty hours from the time of my first seeing her."

I have been informed by the husband of this person that for the first three days there was no general illness; nothing, in fact, to lead him to suppose that the malady from which his wife was suffering was any other than a common boil. It began as a minute vesicle,

which the patient punctured with a needle on the day following that of its first appearance, and it was her own impression that in this operation she had poisoned the flesh. The vesicle was attended by intense itching when it first appeared.

In some notes of the same case communicated to me by Mr. Green, it is mentioned that when the incision was made, nothing but a little serum slightly tinged with blood oozed from the wound.

Case vi. For the knowledge of this case I am also indebted to Mr. Green, in whose words, for the most part, it is related.

On June 18th, 1858, late in the evening, I was sent for to see Miss S., living about seven miles from Bristol. Her father, who drove in for me, told me that a few days before a pimple appeared on the lip, followed by enormous swelling, discoloration, and stony hardness. She was, he said, frightfully disfigured. His account left me little doubt as to the nature of the disease I was to find; and I told him that I feared his daughter was suffering from malignant pustule, an uncommon and most dangerous form of disease.

I found the left half of the face principally affected. It was swollen through its entire extent; the lips were greatly enlarged, indurated, and everted. The skin was of a dark, livid colour. There was a small pimple covered by a thin, hard, dry crust on the left side of the upper lip, which was indurated to the extent of about an inch above its margin. The lower lip on the same side was in a state of slough. Sloughing had also begun at the angle, and was extending backwards into the mouth, under the skin, which had not yet lost its vitality. The eyelids were closed; but the swelling

there being œdematous, allowed the eye to be examined. This organ was found to be uninjured. The pulse was 120 in the minute; the tongue was foul. There was, however, no delirium or loss of consciousness, and no particular complaint of weakness or depression. The swelling and colour of the face, and the large projecting lips, caused great disfigurement, and removed all doubt from my mind as to this poor young lady's fate.

The disease had first appeared three days before, in the form of a small vesicle, which itched very much, and which the patient herself punctured with a needle the same night. This operation, as in most of the other cases, was followed by great temporary relief to the pruritus.

This young lady had spent the greater part of the day in the hay-field, and while there was, as she believed, bitten by a fly. It was in the seat of the bite that the vesicle afterwards appeared. The next day, the face began to swell and change colour; and from that time the disease progressed rapidly, until it had attained the stage in which I now saw it. The right side of the face did not participate in the swelling, but was of a sallow and yellowish tinge. On the second day of illness, the part in which the pimple first appeared having become black, Dr. Vaughan of Keynsham, who was in attendance, made an incision into it. Poultices had been applied to the face, and quinine and iron given internally.

A strong solution of chloride of zinc was now applied to the sloughing surface, and, in place of the quinine, dilute nitromuriatic acid was given every three hours. Wine and strong beef-tea were freely exhibited.

On the following day, there was little change, except that the sloughing had considerably extended.

On June 20th, soon after daybreak, she became rapidly worse. The pulse could hardly be felt; the extremities were cold; she was unable to swallow; and the entire cheek seemed about to sphacelate. She died at noon of the same day, five days after the first appearance of the vesicle, which, in its origin, had seemed so trivial.

This young lady had been somewhat out of health for some months prior to the fatal attack.

Case vii. For the particulars of the next case, I am indebted to Mr. Bartrum of Bath, and Mr. Hinton of Hinton, who was nearly related to the patient.

The subject of it, W. H. W., was a fine, well-grown, and athletic young man, 19 years of age, who, up to the date of his attack, had enjoyed uninterrupted health.

On October 7th, 1859, he returned from Clifton to his home near Bath, with a painful and swelled lip. The disease had begun the day before in the form of a small vesicle seated on the left half of the upper lip. Whether the itching and hot stinging sensation which usually mark the onset of the malady were present is not said.

On his reaching home, the appearance of the lip led his friends to suppose that a boil was about to form in it. He complained a little of pain in the back, and seemed slightly feverish; but, beyond this, did not feel ill.

On the 8th, the swelling had increased; but, with the exception of a general dingy appearance, there was no local discoloration. On the nights of the 8th and 9th, the tension and pain of the lip were so great as to prevent sleep.

On the evening of the 10th, he took a slight sedative, had a good night, and never after suffered from pain.

Up to this time, nothing had occurred to awaken the minds of the patient or his friends to the terrible nature of the attack, which they still supposed was nothing more than a painful boil.

On the 10th, the swelling extended to the neighbouring parts; the inner surface of the upper lip became livid, almost black, "but without any defined boundary, as though a large carbuncle was forming on the inner surface."

On the 11th, the parts were freely and very deeply incised (from within), with much relief to the symptoms. The cut surfaces presented streaks of dingy yellow, interspersed with dark, livid, bloody, sodden tissue. The blood was thick and treacly. There was no pus.

On the 12th, the swelling occupied the whole face below the eyebrows. The incisions were repeated in several parts that felt brawny, and appeared to give much relief. The pulse had gradually become more rapid, ranging from 140 to 160 in a minute.

The mind remained perfectly clear until about four hours before death, which occurred at midnight on the 14th, eight days after the first appearance of the vesicle. In the second period of the disease, several new vesicles made their appearance in the neighbourhood of the first. Beef-tea, wine, and other nutriment, were given liberally throughout. The patient was unable to assign any cause for his attack.

For the following brief, but clear and graphic, account of the next two cases, I am indebted to my friend Dr. S. H. Steel of Abergavenny. They are extremely interesting, as examples of the disease originating in the hand.

Case VIII. "While paying my usual visit at an iron-

work, four miles from my house, I was requested to see Mary John, the daughter of an innkeeper, a tall, healthy, well-developed girl, aged 19. She stated that two days before, a red spot, attended by pain and itching, had appeared on the back of her right hand. The redness had extended, and was now very painful.

"I found on the back of her hand a rather irregular, livid spot, half an inch in diameter, surrounded by an erysipelatous blush; deep near the centre, and gradually shading off till it ceased half way up the forearm. The hand and arm were swollen, but not greatly so. The pulse was small and frequent; the tongue was slightly coated and moist; the bowels were confined. She complained of great depression. The treatment ordered was a large warm fomentation to the hand and arm, and an aperient, followed by a stimulating mixture.

"The next morning, I received a message that she was much worse. I saw her at 11 A.M. The livid spot had spread over the whole of the back of the hand and wrist. The swelling of these parts had rather subsided; but the whole arm was œdematous, and the erythema extended to the axilla and side of the chest. The pulse was very frequent and feeble; the tongue was still moist. She was sensible, and answered readily in a feeble voice, but was evidently moribund from prostration. I made two or three free incisions into the livid and adjacent œdematous parts. No blood, but only a little colourless serum, exuded, and no pain was felt. The appearance of the part was very peculiar. The lividity was less deep than that of ordinary gangrene, and shaded off into a dusky erythema, the œdema being greater as it receded from the central disease. The patient died at 2 P.M.

childhood than in adult ages.

"I was convinced, from the whole aspect of the case, that it was one of some form of animal poisoning, and I made careful inquiries, especially whether any glandered horse had lately been in the inn stable; but I was unable to discover any clue to the cause of the disease."

Case IX. "On January 2nd, 1854, I was sent for to see Morgan Jones, a labourer, aged 34, living about four miles from Abergavenny. He told me that five days before a red, irritable spot had appeared on the back of his right hand, which was chapped in several places from cold. The redness and pain had gradually increased; but he had paid little attention to it till the day before, when he felt very weak, and was unable to go to work. I found the back of the hand livid, and the arm red and œdematous, presenting an appearance precisely similar to that observed in Mary John's case. An incision through the livid part let out only a little serum. The pulse was small and frequent; the tongue was brown and furred, and had been so for a day or two. The man was perfectly sensible. An energetic stimulant treatment was adopted, but the case was evidently hopeless. It terminated fatally the following day. There was no history of animal infection that I could trace. The patient had been employed in tending sheep; hurdling them, and supplying them with cut turnips; but I could not ascertain that the sheep were unhealthy.*

"I was much perplexed by these two cases. I had no doubt of their animal origin; but they did not answer to

* It is worthy of remark that in both these cases the disease was seated on the back of the hand. This is the usual seat of malignant pustule in the hand. It is obvious that, from the greater thinness of the skin, this part is more exposed to an effective inoculation.

the description of glanders, to which I was at first inclined to refer them.

"Some time afterwards, I was asked by my father's farm-bailiff to look at two lambs which were diseased, and likely to die of some strange complaint. The hinder extremities of both were greatly swollen, and inside the thighs, where the wool is scanty, the skin exhibited the *same livid aspect that I had observed in my two patients, and upon cutting into it, the same discharge of serum only took place.*

"I had no doubt that I had before me an identical or very closely allied disease. I did not, however, recognise it as malignant pustule, till I heard you relate your cases of that malady. The pustule, which is described as the point of departure of the disease, either did not exist in my cases, or, more probably, was overlooked."

This history, brief as it is, is a very pregnant one. It brings into striking relief a point on which I have not before touched, but which is very important; I refer to the perfect identity of the local morbid changes in the malignant pustule of man, and the corresponding disease of the animal. I need scarcely say to those who are acquainted with the subject, that these two lambs were suffering from the disease familiarly known to veterinarians under the name of "blood," and identical in nature and origin with the "quarter evil" in cattle. Both lambs died in the course of the day in which Dr. Steel first saw them.

In addition to the cases already related, I have obtained, as I have before said, some particulars of no fewer than fifteen others, which have occurred, for the most part, within the last few years in various parts of the country. It may be mentioned, as a remarkable

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fact, that in all fifteen—as in seven of the nine just detailed—the disease began in the face, and in the greater number, either in the lip, or in the immediate neighbourhood of the mouth.

In all, save one, in which life was apparently saved by early resort to cauterisation and free incisions, the malady ended fatally. In all, save this same one, its seemingly trivial nature in its early stage betrayed the patient into the fatal error of wasting in mere temporising the only period in which curative measures are of any certain avail.

Of the whole series there was only one in which the disease was actually traced to contact with a diseased animal. In its bearing on the question of cause, the history of that case is not unimportant.

A pointer belonging to a gentleman who was out partridge shooting, fastened upon the carcase of a sheep which lay dead in a field, and took possession of one of its legs. The morsel was so savoury that the dog would not give it up, and his owner was obliged to wrest it with his own hand from the animal's mouth. Immediately afterwards, this gentleman, unthinking of danger, mechanically put his hand to a part of his face where there was a scratch. On the following day, a malignant pustule made its appearance on the very spot to which the tainted hand had been carried. The disease of which the sheep had died was not ascertained. The dog received no harm.

The circumstances of three other cases are also worth mentioning. One of the subjects was a bullock-jobber, who at the time of his attack was carrying on large dealings in cattle; and another was a sheep-farmer living on the borders of Dartmoor, who owned and tended very

large flocks. Although in these two the actual source of the disease was not made out, nor indeed inquired into, there is no improbability in the supposition that the pustule might have arisen from contact with cattle or sheep affected with quarter evil or blood. It is not irrelevant to observe that both these cases occurred in hot summer weather. I may add that the subjects of both were more than fifty years old.

In a third case, the pustule was undoubtedly the result of the bite of a fly. The patient—as in the similar case already related—was a young lady who was attacked by the insect while she was walking in her garden on a hot summer's evening. The itching, heat, and burning of the first stage succeeded immediately to the bite, and in the course of a few hours the characteristic vesicle made its appearance in the exact seat of the puncture. The case was the most rapidly fatal that I have yet heard of.

As I have never had an opportunity of observing this malady on the continent, where its characters are well known and universally recognised, it may perhaps be expected that I should state the grounds on which I have been led to identify the foregoing cases with it.

To those who have once seen a case of this kind, and are also acquainted with the literature of malignant pustule, these grounds must be sufficiently obvious.

Foremost among them stands the seat of the malady in the subjects whose histories have here been given. It can scarcely fail to strike every one as, in all ways, a deeply significant fact that in the whole series the parts attacked were the only parts of the body which in this

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country are habitually uncovered. Had the face been the only part to suffer, the case had been less striking. In that event, it might have been argued with some plausibility, however erroneously, that the course and chief characters of the disease had their root in some structural peculiarity. But the fact that in the only two in which the pustule did not appear in the face, it appeared in the hands, and in the hands, too, of working people, getting their living by manual labour, not only excludes this idea, but renders the meaning of the whole history difficult to misinterpret. We have already seen what stress the continental writers lay upon this characteristic as suggestive of inoculation from without. But whatever its import may be, as a part of the natural history of malignant pustule, it has not only obtained universal recognition, but has been put in the foremost rank by all the best observers.

"*Immer erscheint der (milzbrand) Karbunkel an unbedeckten Stellen.*"—"Malignant pustule always appears on uncovered parts"—is the universal remark of the German writers.

"It is never seen but in the face, neck, and hands; in parts, finally, which are habitually uncovered, and which lie open to the impression of an external agent" —is the pointed expression of Enaux and Chaussier.

Speaking of the different points which malignant pustule may attack, Bourgeois says:—"These points are, in the immense majority of cases, seated on those parts which are habitually uncovered, and which, in consequence of this, may easily be put into relation with the numerous vehicles of this malignant virus."

In another passage he adds:—"The application of the charbon virus to the skin being indispensable to the

development of malignant pustule, it is readily conceived why the uncovered parts of the body should be its almost exclusive seat; thus, the face, the neck, the hands, the arms, and the legs, are almost the only parts on which it appears. When by chance it developes itself on other parts, we may be sure that the poison has been carried there directly by the fingers or other agents impregnated with it."

In one form or another, these statements are echoed by every foreign writer of any eminence who has treated of the malady. But if the foregoing cases agree with malignant pustule in a peculiarity so significant as that here defined, their agreement with it in all that regards the course and character of the morbid changes is not less striking. The more, in fact, we enter into detail in pursuing our comparison between the two things, the more perfect their identity becomes. To one of two alternatives, indeed, this comparison necessarily drives us. Either the cases which have been described in this paper are identical with the specific disease which Chaussier, Bourgeois, and others, have described under the name of malignant pustule, or it is not possible to convey a knowledge of a disease, striking beyond most others, by description at all.

The phenomena which these cases exhibited, from their first minute beginning to their terrible and unexpected end, were, in every particular, identical with those which, in farriers and others who have the charge of cattle in continental countries, have been seen, in numberless instances, to proceed from the accidental but direct inoculation of the "charbon" virus.

The commencement of the disease in an affection resembling the bite of a gnat, and, at first sight, not at

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all more serious, in outward seeming—the importunate itching or the equally characteristic stinging and burning of the early stage—the formation, within a few hours of the well known vesicle—the hardening, blackening, and death (the "mummification," as the French and Germans express it) of the textures immediately around it—(hardening so extreme and death so entire that in more than one instance the knife of the surgeon creaked in the flesh, inflicted no pain, and gave issue to no blood)—the diffuse and erysipelatous swelling of the wider area—the crop of secondary vesicles—the chains of inflamed lymphatics—the peculiar fœtor of the breath—and, lastly, death amid all the indications of septic poisoning—were incidents common to them all. In the one or two cases, indeed, in which some of these circumstances fail, I have especial reasons for believing that their absence from the record is simply due to their not having been noted.

Taken in their whole succession, it may be safely affirmed that these are incidents which are diagnostic of malignant pustule, and belong to no other malady. Its characters in its advanced stage are, in fact, so marked and distinctive that to confound it with any other disease would seem to be well nigh as impossible as it would be to do the same with small pox or glanders.

Striking as are the positive signs, the negative signs are scarcely less so. Among these, especially noteworthy for a malady so rapid and severe, are the absence or slightness of pain, and still more so, the entire absence of common suppuration. In not one of the whole series of cases was there any visible trace of pus. These things are important, not only because they are well known characteristics of malignant pustule, but be-

cause they have no doubt a fundamental relation, as such, to the peculiar mode of action of the specific poison.

If any doubt still remained on the subject, it should be dispelled by the fact that my friend Mr. Green, the experienced senior surgeon of the Bristol Royal Infirmary, at once recognised the disease of which his three patients died, as the same with the malignant pustule which he had formerly seen in Paris.

By those who refuse to admit the force of these considerations, it is no doubt *possible* to take another view of such a history. It might, for instance, be argued that these cases have nothing specific in them at all; but are simply cases of pyæmia originating in some erysipelatous local change, however arising. And such an argument would not be altogether without support. Most practitioners must have seen at some time or other, examples of pyæmia, issuing in rapidly fatal general infection which originated in some trivial injury without the presence or intervention of any virulent agent. In such an event, personal predisposition, and what passes by the name of epidemic constitution (whatever that may mean) might one or both be supposed to play a part. The most common seat of the affection, and the comparative youth of the greater number of the subjects, might also be regarded as having each a hand in the result.

It is well known from what slight as well as various causes the lips swell to a degree that is observed in no other part, and how especially strong this tendency is in early life. In these two conditions, an explanation more or less plausible might be found of some of the peculiarities which most challenged attention in the cases before us. As a matter of fact, it is known to me that

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the view here put forward in this hypothetical form is the view actually entertained of these cases by more than one eminent observer, who has had many similar ones to treat. After having myself given it the fullest consideration, I am not the less convinced that it is not the true one.

This much, at any rate, is certain; that the two facts on which those who take this view chiefly rely—the seat of the affection in the face and its preference for early manhood—so far from being in their favour, must be read the other way. For these very two are among the best known of the characteristics of malignant pustule itself.

"*La face est, on peut dire, le siége de la prédilection de la pustule maligne*"—"the face is the favourite seat of malignant pustule"—says Bourgeois; a remark which is strikingly illustrated by the records of the disease, and which, I may add, is especially true of those cases in which it occurs in persons who are not by their calling exposed to direct inoculation. In pushing the analysis further, it will be found that, in the great majority of these cases, the disease was seated in the lip or in the near neighbourhood of it.

Its greater frequency in early manhood (although, as the foregoing instances show, it is by no means confined to this period of life) has not only been often remarked, but various writers have taxed their ingenuity to account for the fact.*

* Much more precise data than any now existing would be required to show what the fact really implies. Heusinger believes that it is simply a matter of more frequent exposure. In his chapter on the influence of age, the following passage occurs:—

"In Beziehung auf der Menschen meint Erdmann, Kinder würden

To occur mostly in the face, and to attack chiefly persons who are comparatively young,* are marks which, so far, therefore, from indicating, as some suppose, a non-specific origin, of themselves constitute a strong presumption in favour of the identity of the cases which present them with the malignant pustule. The course of the disease and the character of the morbid changes are all that remain to be taken into account, and we have already seen how perfectly and minutely identical in all the most striking of their very striking peculiarities were the foregoing cases with the disease which is derived from the "charbon" of cattle.†

nicht befallen. Regnier sah den Milzbrand nicht in frühesten, und im höchsten Alter. Glanström sagt, selten litten Kinder und Greise. Ich glaube das rührt nur daher, dass sich das mittlere Alter im Allgemeinen am haufigsten der Ansteckung aussetzt, und es scheint mir eben nicht dass das Alter einen Unterschied in der Anlage begründe, denn ohne viel zu suchen bieten sich gleich Beispiele von höchsten und jüngsten Alter dar."

That adults are much more exposed to the chances of inoculation than children is obvious enough. May not the greater frequency of the disease in adolescence than in elderly persons be due to the greater delicacy of the skin in young persons?

* It is not a little remarkable that, except in times of great epidemics, the "charbon" scarcely ever attacks any but comparatively young cattle. "Le charbon," says Chabert, "n'attaque guère que les jeunes animaux." (P. 154.) The same observation has been made universally of the quarter evil here. Yearlings and two-year olds are, as a rule, the chief sufferers. In man and in beast alike, therefore, adolescence—if I may use such a word in common—would appear to be the period of greatest liability. The greater delicacy of the skin in young cattle may also possibly come into play here. But that would not explain why it is that young calves so generally escape. It is not impossible that, as in so many other contagious diseases, there is a certain period of life in which the specific liability is much greater than at others. As the disease is readily propagated by inoculation, it might be determined by experiment how far the greater liability of adolescent cattle depends on constitutional causes.

† In this discussion, I have altogether left out of account the perfect resemblance of the morbid changes in these patients to those which occur in the animal; a resemblance so strikingly brought out in my

Assuming the question of diagnosis to be settled, the next that arises is, in what way did the persons whose cases have been related become inoculated with the "charbon" virus?

Here, I regret to say, as regards the majority at least, facts altogether fail me. In the greater number, the specific nature of the disease was not recognised, and the possibility even of its having been derived from diseased cattle did not once enter the mind of the observer. With the exception of some five or six cases already specially referred to, nothing came to light to indicate in any way the origin of the disorder.

As in regard to this point I have nothing but conjecture to offer, I will be as brief as may be. In the absence of direct information, two principal modes occur to me, in which some of the subjects of the foregoing cases may have received this contagion. One is by eating the flesh of animals slaughtered while affected with quarter evil or blood; the other by being inoculated by insects which have previously been in contact with animals or the carcases of animals affected with this disease. All that I know of the former mode of communication is that the material conditions for it are not wanting among us.

friend Dr. Steele's narrative. The early and entire death of the inoculated part, and the blackness, dryness, and insensibility of the immediately surrounding tissues in both, constitute a series of relations which is, in all ways, of very great interest. In any future cases, it might be well to put the identity of the two diseases to a still further test by inoculating some one or more of the animals subject to "charbon" with morbid products from the infected man. Virchow states that of these products the serum of the characteristic vesicles is the most virulent. In the French experiments, however, this serum always failed. On the whole, blood from the spleen appears to convey the poison the most surely. To ensure success, a young animal should be chosen, and more than one should be inoculated.

That the flesh of oxen and sheep so affected is not an uncommon article in English markets, I have been assured by persons who have been themselves parties to the traffic. The information I have received leaves no doubt, in fact, that nearly the whole of such flesh is disposed of as food. The testimony of the many graziers and butchers I have consulted is unanimous as to this point.

In cases in which the malady is far advanced, the diseased quarter is rejected, and the other three only are sent to market. But where it is in an earlier stage, the whole carcase is often sold.

In these last I am told that a peculiar method is adopted to obliterate the marks left by the morbid change. Wherever the meat looks black or discoloured, it is dipped into boiling water, and its surface is then rapidly seared with a red hot iron. The effect of this is to cause a superficial whiteness, which in a great degree masks the mass of putrescence beneath. My authority for this statement is a grazier, who assured me that he had himself often witnessed the process.

To such a height, indeed, has immorality of this kind risen that a class of butchers has sprung up whose chief trade lies in the purchase, and sale for food, of cattle and other live stock affected with this and other diseases. In this matter of unsound meat, the inhabitants of large towns are the chief sufferers. Although too many farmers have no scruple in selling to others the flesh of diseased cattle, instinct has given them a wholesome dread of its possible effect on their own persons. But the infected carcase which cannot be disposed of to neighbours is readily sold to the unsuspecting inhabitants of the great city which lies some miles away.

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The development of railways has opened new facilities for this sort of traffic, not only by offering greater secrecy for it, but by vastly enlarging, through increased rapidity of transit, the area from which such unwholesome supplies are sent.

It is well worth considering whether the increase which has certainly taken place of late years in the number of cases of malignant pustule in London and other large cities may not be in great part due to this circumstance.*

* These remarks were written more than three years ago. The following extract from Dr. Letheby's Quarterly Report on the health of the city of London, which appeared in the *Times* on the day following that on which this paper was read, will show how well founded they were. The confirmation of what I had suggested as to the effect of railways is especially striking:—

"The markets and slaughter-houses have been duly inspected, and the officers have seized 39,315 lbs. of meat and 765 head of game and poultry as unfit for human food. It consisted of 171 sheep, 14 calves, 43 pigs, 271 *quarters* of beef, and 235 joints of meat; 32,098 lbs. were diseased, 4147 lbs. were putrid, and the rest was from animals that had died from natural causes. In the course of the quarter, five persons have been convicted, at the sessions of the Central Criminal Court, for sending diseased and unwholesome meat into the city markets, and sentenced each to six months imprisonment. Their names are—Thomas Stevenson, of Millstone Lane, *Leicester*; John Jarvis, Towcester, Northamptonshire; Daniel Cotton, Belgrave Gate, *Leicester*; George Hill, Mansfield Street, *Leicester*; and George Warrens, Belgrave Street, *Leicester*. Four out of five of these persons were from Leicester, where it is to be feared the practice of sending diseased meat to the London markets is very common; and in every instance the persons were butchers, and therefore must have known the illegality of the practice."

The following extract from the next subsequent report from the same distinguished hand shows that the evil still continues. Speaking of the sanitary action of one week only, Dr. Letheby says:—

"The markets and slaughter-houses have been duly inspected, and the officers have seized 4525 lbs. of meat and 73 head of game and poultry as unfit for human food. It consisted of 16 sheep, 10 pigs, 32 *quarters* of beef, and about 50 joints of meat. *Three-fourths of it was from diseased animals*; and I recommend that in five cases the matter be submitted to the solicitor for further investigation.

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That every year, in most large cities, a considerable number of persons may be found who have eaten the flesh of animals affected with quarter evil or blood may be considered as all but certain.

The inspectors inform me that much of the diseased meat of Newgate Market finds its way to the *sausage makers* of Cow-cross. Last week the inspectors seized the carcases of a diseased sheep and a pig which were being carried to a sausage maker in that locality. The sheep had died from rot; and the pig was covered with small abscesses like boils, many of which had burst through the skin and the rest were still full of matter. Both of these animals were in a shockingly diseased state, and but for the interference of the inspectors would have been converted into *sausages*. I have also to state that the slaughter-houses of Cow Cross, which are just outside the city, are a source of great anxiety to the inspectors, from the circumstance that diseased animals are frequently slaughtered there, and brought into the city markets. Last week there were two such instances. Two diseased bullocks had been killed in the slaughter-house of a Mr. Crosse, and then carried to Newgate Market, where they were seized by the inspectors. In like manner, at Whitechapel, it is a common practice with some of the butchers who are outside the city boundaries to traffic in diseased meat; and the city butchers and salesmen *complain that they have not the same chance for the disposal of inferior meat that their neighbours have, and that the rigorous supervision of the city is unjust to them.* Only last week, the carcases of several bullocks, about a dozen or so, that had died on shipboard, were sold in Whitechapel. Meat of this description is disposed of to the poor at night, when it passes for wholesome meat, and realises from a penny to five farthings a pound."

What is here stated in regard to *sausages* has a special importance, not only because of the obvious facilities which they offer for the disposal of unsound meat, but because, from the mode in which they are cooked, the temperature to which they are raised in being prepared for table, must often be insufficient to destroy the powers of zymotic poisons. Under these circumstances, any rudimentary entozoa that may happen to be present survive the operation; and for the same reason, I am led to believe that sausages are often the source of disease in men by the introduction of tapeworm and other parasites.

So much for the London commissariat. The following extract from the *Western Daily Press* of Oct. 3rd will show that the evil is by no means confined to the metropolis:—

"Diseased Meat in Bristol. Yesterday at the Council House, before the sitting magistrates, Messrs. J. Poole and W. Naish, John

On the other hand, I have ascertained, by careful and repeated experiments, that the temperature to which meat is generally subjected in the operations of roasting and baking, in no wise, except perhaps at the exposed surfaces, impairs the powers of animal poisons.*

Suppose now that a person eating such infected meat roasted or baked, has a chap or abrasion on the lip, and we have at once all the material conditions that would

Cann, jun., was summoned for having in his possession and offering for sale a quantity of unwholesome meat, unfit for human food. Mr. Heaven, clerk to the Local Board of Health, appeared in support of the information, and said it was brought under the 126th clause of the Nuisances Removal Act, which prescribed a fine not exceeding £10. He further said that in the present case it was not one bad piece that was complained of, and which might have been accidental, but several pieces, both of mutton and beef, and also of lamb; and he, therefore, should press for a severe penalty being inflicted. Mr. Yates, inspector of nuisances, said on September 20th he visited the defendant's board in the St. Nicholas Market, and there saw the whole of the fore half of a sheep in a dreadful state. It was in a basket, put a little aside, and the defendant told him it had just been left there by some one. He also saw some beef in a bad condition, covered over with a cloth. Afterwards he saw a poor woman at the board, with a piece of this beef in her hand, about to purchase it. On further looking about, he found a loin and a leg of lamb, both bad. He seized the meat; and on taking it before the magistrates on the Monday morning, they ordered it to be destroyed. Defendant said he bought the meat as being good, and owing to his defective sight, he did not know but that it was so. Mr. Yates, however, said anyone could have known it was bad by feeling it. The magistrates said they thought the case was clearly proved; and they fined the defendant 20s. and costs, or, in default of payment, one month's imprisonment. They also wished it to go forth that all cases of that sort which came before them would be punished."

It seems probable, from the account, that some of the meat here referred to was taken from animals that had died of quarter evil. It is worthy of remark that the meat would probably have been undiscovered had it not been for the increased vigilance of the police in regard to these matters, excited by the panic as to small-pox in the Wiltshire flocks.

* These experiments will form the subject of another communication.

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seem to be required for an effective inoculation. Seeing how common such abrasions are, it is by no means improbable that now and then all these conditions may be found together. On the whole, however, I incline to the supposition that in the case of persons whose calling does not bring them into direct contact with the virus, the inoculation is generally effected by flies.

In two of the cases mentioned in this paper, there seemed to be direct evidence of the fact. In these two, the disease undoubtedly followed the bite of a fly and occurred in the seat of the puncture.

Great numbers of similar cases are on record,* and the fact that these insects intervene largely in the propagation of the disease is now generally admitted.†

* The following paragraph which occurred in the *Times* on Nov. 11th, 1858, evidently relates to a case of this kind:—

"Extraordinary Death. Madame Moet, the celebrated proprietor of the champagne vineyards, whose daughter was married the other day, has just met with her death in a most extraordinary manner. She was gathering flowers in her garden, when she felt herself bitten by a fly. She thought nothing of the slight puncture; but in the evening her face began to swell, and a few days afterwards she died in intense agony. It is supposed that the fly must have fed upon putrid flesh."

A few months later, an exactly similar account was given in the *Times* of the death of the wife of our ambassador at Brussels.

† I may cite, in confirmation of this, a paragraph which appeared in the Paris correspondence of the *Times* on Sept. 26th last:—

"Cases have lately been very frequently cited in the French papers of persons becoming extremely ill, and even dying, in consequence of the stings of venomous flies, the said venomous quality being contracted by the insect from putrid substances on which it has settled. Near Soissons, a shepherd lately died in four days in consequence of one of these bites or stings. He took no heed of the first inflammatory symptoms, and when he applied to the doctor it was too late. Two other persons *in the same neighbourhood* were similarly attacked, the symptoms being great swelling and inflammation; but fatal results were not anticipated. Some of the French

Some writers are even of opinion that the human subject is inoculated by them in the great majority of cases; an opinion that would go far to explain the well known greater frequency of the disease in hot and dry summers, and in countries where insect life is active and teeming.

It would go far to explain, for instance, the much greater frequency of the malignant pustule in Burgundy than in England and the north of France, as, also, its greater frequency in Siberia and Lapland, where insects of the mosquito tribe are the great pest of the traveller.

In Lapland, indeed, before the identity of malignant pustule with the "charbon" of animals had been finally established, the popular belief was universal that the former was caused by a peculiar insect, which suddenly descended from the air and as suddenly disappeared.*

Such consistency had this view acquired in the middle of the last century, that the illustrious Linnæus, on the strength of information received from Solander, even went so far as to admit this hypothetical creature into his systematic zoology under the significant name of "furia infernalis." (*Amenitates Academicæ*, vol. iii, p. 322.)

provincial newspapers have published strong recommendations to all persons who may be stung by suspicious flies or insects, to resort at once to a medical man, who alone is able to judge how far the apparently trifling injury may be serious."

* The following paragraph, which was published in the *Times* in the autumn of 1860, shows that this is still the popular belief in the north of Europe:—

"VENOMOUS FLIES. More than four hundred persons have lost their lives in the south of Russia, and in the province of Kiew, from the sting of a venomous fly, which has come from Asia. It made its appearance in the same country about sixty or seventy years ago."

Virchow, who has made malignant pustule the subject of special investigation, and who fully admits the agency of flies in its propagation, makes the following remark:—"Most commonly insects with piercing probosces effect the inoculation, such as gadflies (bremse); *but flies which make no wound, may, also, implant the poison on the skin by their soiled wings and feet.*" (*Handbuch der Speciellen Pathologie und Therapie.* Article, Milzbrand—Karbunkel.)

Bourgeois expresses himself to the same effect:—"The different parts of animals (he says) are not the only vehicles of the virulent principle. Certain insects, after having sucked the putrid juices of dead or sick animals, and then settled on the persons of men, may communicate the infection. I have frequently met with cases of 'charbon' in persons *living near tanners and fellmongers.* I have also seen, in one case, the disease caused by the puncture of a gadfly which came out of a fleece of wool."*

As the bite of those flies to which malignant pustule may be often traced is generally perfectly harmless; as these flies are endowed with no venomous powers of their own, and, finally, as the pustule to which they now and then give rise is perfectly identical with that which springs from direct inoculation, the inference seems very sure that the only part they play in the propagation of

* In the same passage, he adduces some other modes of infection which deserve mention. After relating the fact given in the text, he adds:—

"In another case, I saw it communicated by a splinter detached from a piece of wood taken from a shippen. In some cases, it is enough to touch the garments of persons belonging to the callings previously referred to (tanners, shepherds, farriers, etc.), or to hold relations with them, although they themselves may remain unharmed."

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the disease is in conveying the specific virus from the infected animal to man.

That they should be frequent carriers of this virus would seem to follow necessarily from their gastronomic habits. Wherever there is a bullock or sheep, dying or dead of this contagion, especially in summer or autumn, flies of several kinds may be seen in swarms attacking the diseased part, and feasting on the stinking profluvia which often issue from the anus, mouth, and nostrils, of the diseased animal.*

When the animal is flayed, they show the same fondness for the carcase, also, and (in virtue of the instinct which gives them a peculiar relish for stinking things) especially, it would appear, for that part of it which is most affected.

The only link needed to complete this chain of relations is found in the fact, of which Heusinger quotes many examples, that butchers, farriers, and others, have

* In regard to this point, Hintermayer, in a very interesting account of a remarkable epidemic of quarter evil, which raged in the summer and autumn of 1846, among the deer of the park of Dutt-stein, makes, from his own observation, the following important statement:—

"Als wesentlich habe ich hier noch zu bemerken, dass die Bremsen, und zwar (a) die grosse Rind-bremse (*Tabanus bovinus*), (b) die Regen-bremse (*Tabanus pluvialis*), und (c) die Blind-fliege (*Tabanus coecutiens*), welche im verflossene Sommer in unzähliger Menge vorhanden waren, wohl mit Recht als die theilweisen Träger des Contagiums anzusehen sind, und daher einere grössere Ausdehnung der Seuche verursachten. Diese setzten sich gewöhnlich zu *Tausenden*, auf die Cadaver der gefallenen Thiere, saugten die aus Maul, Nase, und After kommenden Profluvien ein, verliessen sodann die Leichen, begaben sich sofort auf gesunde Stücke, stachen ihren von Contagium Saugrüssel in die Oberfläche der Haut ein, und inoculirten auf solche Weise das Seuchengift." (Kreutzer, *Central Archiv*, b. iii, p. 457.)

It will be seen that Hintermayer ascribes to flies the chief part in the propagation of the disease among animals also.

been bitten by flies which a moment before were seen to be so occupied, and have had malignant pustule in consequence.

I once thought that the usual situation of the pustule was almost decisive in favour of its being communicated by direct contact with tainted meat. It is certainly a very remarkable fact that in twenty of the twenty-four cases referred to in this paper, the disease began in the lip, or in the near neighbourhood of the lip: of the organ —that is to say, that seizes the food. But the fact tells, in reality, almost as much in favour of one mode as of the other. In the first place, the skin of that part being thin and delicate, is more easily pierced than the skin of other parts of the face.* In the next place, it is, from various causes, much oftener denuded of its cuticle; and for this reason (as indeed from its greater natural tenuity, also) more open to the accidental absorption of foreign matters. And, lastly, particles of sugar and other things attractive to flies are apt to collect about the edge of the mouth, so as to make it a favourite spot for their attack.

If it be objected to these considerations that they are too speculative, I would reply that we may, at any rate, draw this practical inference from them: not to think

* I have already referred to the part which delicacy of skin probably plays in predisposing to the disease. But, as in other contagious diseases, other and less appreciable conditions no doubt intervene. Vincenzo Malacarne, in speaking of the disease in men says:—

"Fra i quali passa gran differenza nella suscettibilità del morbo, vedendosi fra i compagni del lavoro nel macello de Buoi infetti, nella scorticatura, nelle medicature, per cui tutti sono di sangue, di sanie ugualmente aspersi, ed imbrattati, eppure certuni contraggono il carbonchio, ed altri ne vanno esenti." (Vincenzo Malacarne, *Op. cit.*)

the more lightly of a suspicious looking boil because it was known to originate in the bite of a fly.*

In considering the origin of any individual case, it is, I need scarcely add, important not to lose sight of the many other ways in which this poison may find access to our bodies. In our daily life, we come so incessantly into contact with animal products which are known vehicles of it, that it is not surprising that among the numerous persons who die of malignant pustule every year in England, the disease should often come in, like so many other contagions, through paths which it is impossible to trace.

This paper would be incomplete were it to conclude without a word on treatment. As, with one exception,

* This is not the only human disease in whose propagation flies play an important part. The Egyptian ophthalmia and the frambœsia, or yaws (another malady indigenous to Africa), will occur to the reader as familiar illustrations. Alibert's observations on the frambœsia will bear quoting in connection with this point:—

"La contagion du Pian (Frambœsia, *Æsplicé* Yaws) est à ce qu'on assure, singulièrement facilitée par une espèce de mouches que l'on nomme 'Mouches Frambœsia,' et qui sont très abondantes dans les pays chauds; les mouches se reposent à tous les instans sur les horribles pustules qui previennent de la maladie, et elles vont inoculer le virus aux individus sains, qu'elles piquent jusqu'au sang. Est-ce aussi par cette voie qu'elle a pû se transmettre aux animaux domestiques, comme on prétend l'avoir observé? Löeffler assure qu'il y a des endroits en Amérique, où la loi défend aux malades attaqués du Pian de sortir, et qui leur interdit même tout accès dans les hôpitaux. On trouve en effet que cette précaution a considerablement diminué la propagation de la maladie." (Alibert's *Maladies de la Peau*, p. 164.)

Curiously enough, in all these cases, the flies themselves do not seem to suffer at all from the poisons which exert such a virulent effect on the higher organisms. In helping to perpetuate these specific contagions, they perform a function which may be compared to that which Mr. Darwin, in that wonderful piece of natural history poetry, "The Fertilisation of Orchids," assigns to other winged insects in the propagation of that peculiar tribe of plants.

all the cases of which I have any knowledge ended fatally, it will be readily understood that I have nothing of my own to offer in the way of cure. Unfortunately, there is too much reason to suppose that, in some of the number, the measures intended for relief were worse than futile, and only hastened death. This was certainly the case with the incisions made in two of the instances which fell under my own eye, and with the leeches that were applied in some others. This uniformly fatal issue is the more mortifying because, in its first period, the disease seems to be in a great degree under the control of remedies.

Rayer, who has had great experience of it, says, in reference to the disease during this period, "its progress may very certainly be arrested by the use of caustics." Nothing can be more positive or unqualified than this statement. The testimony of all the best continental observers is to the same effect.

In Bourgeois's valuable paper, and in Enaux and Chaussier's monograph, numerous cases are given in illustration, which seem to leave no doubt of the fact. Of the various caustics in use the evidence appears to preponderate in favour of the potassa fusa. It is right, however, to state that Chaussier, and one or two other writers of equal eminence, prefer nitric acid or the chloride of antimony. For information as to this and other practical points, I think it best, however, to refer to the original authorities.

From all this it is evident, as I remarked at the outset, that everything hangs on the recognition of the disease in its first stage. In that stage I have myself never seen it. As the subject is comparatively new to the profession in England, and as the point is one of such vital

importance, I shall not, perhaps, do amiss in inserting here one or two descriptions of the malady as it presents itself at its onset.

Anthracion with Diffuse Gangrene. "This variety begins with a considerable degree of pruritus, which is succeeded by the appearance of a red spot like a flea-bite. The vesicle, of the size of a millet-seed at first, soon acquires larger dimensions, and if not ruptured by the patient bursts spontaneously. Twenty-four or thirty-six hours after the attack, a small, hard, and circumscribed nucleus, having the form and size of a lentil, is perceptible under and around the seat of the vesicle. In the circumference of this, a soft, but still resisting, swelling, of a reddish or livid colour, covered by and bye with secondary sero-sanguinolent vesicles, at first isolated, but speedily becoming confluent, is developed. The central point, now of a brownish hue, extremely hard and very insensible, becomes gangrenous. The inflammation extends to a considerable distance; the neighbouring skin is red and shining; the subcutaneous cellular tissue is puffy, tense, and, to appearance, emphysematous. The diseased part is benumbed, without proper sensation, and the gangrene advances with rapidity." (Rayer, *Treatise on Diseases of the Skin*, Second English Edition, p. 559.)

Virchow's account runs thus:—"In the first stage, on looking narrowly at the affected part, you generally discover a small red spot, sometimes with a blackish point in the middle. This spot becomes gradually more irritable, and itches greatly. The patient scratches it; it becomes more and more red, swells up, and forms a small papula; the parent nucleus (*den Mutter-knoten*) —the 'maltka' of the Russians. Most commonly, a

childhood than in adult ages.

vesicle then makes its appearance, which soon attains the size of a millet seed, and contains, at first, a transparent bright yellow fluid, which, however, very early becomes reddish or bluish.

"This is the characteristic malignant pustule, which is usually single, rarely multiple, and which, in most cases, is too soon destroyed by scratching to admit of our carefully studying its development. Underneath the vesicle may be seen the bluish red surface of the nucleus, seated in the substance of the skin, and which continues to extend both in depth and circumference.

"The excoriated surface *readily dries up, and becomes, as it were, mummified*, showing that generally here already the circulation is much enfeebled; while in the neighbourhood, new vesicles spring up, which run the same course. Soon the part loses its vitality, so that it may be pierced with needles without the patient's becoming aware of it."*

The seeming insignificance of the affection in its first origin; the urgent pruritus; the development of a

* Virchow, *Op. cit.* The characteristics of the early stage come out in still stronger relief in the terse phraseology of the Latin tongue. The following description is taken from an account of malignant pustule by Hunnius:—

"Loco, ubi carbunculus se formaturus est, tumor parvus, aucto calore præditus, ictui culicis similis oritur, paulo post in eo vesicula magnitudinis grani milli evolvitur, vel vesicula hoc statim ab initio eczemati similis, tumore non progresso, formatur. Eruptionem comitantur pruritus et formicatio cutis, quibus ægrotus ad scabendum impellitur, ita ut vesicula sæpe mature destruatur. Pruritus in dolorem pungentem ardentemque commutatur, dum epidermis, si vesicula integra manet, secretione lehorosâ paulatim magis à cute elevatur, ita ut vesicula in initio pellucida, postea subflava, subrubra, ex cæruleo nigricans plerumque altero die jam ad magnitudinem pisi accrescat. Ambitus intumescit et pevpe vesiculam cohærem ex cæruleo rubrum manifestat, qui color tumoris peripheriam versus pallidum transit."

peculiar vesicle; and the early death, hardening, darkening, and insensibility of the immediate substratum; are the leading features of this history. Even in this early phase it has marked peculiarities, which, if things happened always as they are described in books, ought to lead to the recognition of the disease.

From the nature of the case, the practitioner who has to act upon it will, however, always find himself in a trying dilemma. The affection only admits of cure when, to the uninformed, its aspect is trivial, and it can only be cured by a process which leaves a mark. But to make an abiding scar on the face, say of a fair young lady, for the treatment of what, at the worst, appeared to be no more than a common boil, is a proceeding that would be likely to inflict (at any rate, in the eye of the parties most interested) a scar quite as abiding on the reputation of the practitioner who made it. But the responsibility, great as it is, cannot be got over by attempting to evade it. The alternatives on both sides are painful enough, and can only be fitly dealt with by the decision which is the prerogative of sure knowledge. What is most needed among ourselves is the diffusion of information on the whole subject; and I would venture to suggest that the New Sydenham Society might do a good service by giving abstracts from the best essays upon it, and by adding to the series of plates it is now publishing some figures of malignant pustule in its various, and especially in its early stages.

There is one other topic on which I must needs touch for a moment before I bring these remarks to a close. Even those who may hesitate to adopt to the full the theory put forward in this paper of the cases related in it, will admit that in the view here taken of their origin

there is enough of probability, at any rate, to show the pressing need of some fresh organisation to prevent the revolting traffic in diseased meat which now prevails. From the details given under this head, it is clear that the measures at present employed for this object signally fail of their purpose.

If we would look at the matter from a more general point of view, the occasion would justify a still larger design. We have had scientific commissions not a few, to inquire into the sanitary condition of men. Might it not be worth while to inquire into the sanitary condition of the animals from whose substance men repair the waste of their own? The result would be, I doubt not, to disclose, as in the case of men, an amount of preventible disease, of which few have, at present, the remotest idea. In this way, and as a money speculation merely, few things, I suspect, would pay the country so well. But we are all, more or less, interested in such an inquiry in a way that touches us more nearly than money ever can.*

By the same mysterious law by which we convert the flesh of animals into our own, we often become the heirs of their maladies, and may even be involved with them in a common death.

The number of deaths annually occurring that are actually recognised as thus arising is by no means inconsiderable. A more perfect knowledge would, doubtless, add many to their number which are never thus regarded in present classifications. Here, for instance,

* There is a French work whose title shows that our neighbours are more alive to considerations of this kind than we are. I refer to Professor Delafond's *Police Sanitaire des Animaux Domestiques*. I have been unable to obtain a sight of the work itself.

under the head of malignant pustule—if the views put forward in this paper be true—some considerable proportion of three or four hundred annual deaths must, at once, be so set down, which have hitherto been registered under names conveying no suspicion whatever of an animal origin. It is impossible, in fact, to look much into this subject without seeing that this is one of the avenues through which disease and death may enter which is not sufficiently kept before the physician's mind.*

The interest which a comprehensive inquiry into the diseases of animals would have for medical science generally can scarcely be overrated. What has already been done in tracing the dissemination of a few species of entozoa and other parasites is an earnest of what might be expected from investigation in this and other fields.

In the great field of the epidemic and contagious disorders by which the animals that minister to man are afflicted, a rich harvest yet remains to be gathered. It is enough to look over the outline of these disorders,

* The following statement, which appeared in the *Times* while I was in the act of sending these notes to press, offers a startling commentary upon them:—

"The Royal Dublin Society met on Saturday evening to hear a lecture from Professor Gamgee, on Disease and Mortality among Cattle. When he had concluded, Mr. Gauley, salesmaster, made an extraordinary statement. He said that unless some means were devised to give the farmer some compensation for diseased cattle, it was impossible to prevent him from selling them, or the butcher from killing and selling them. Unless some society were formed to have diseased meat paid for, it would be killed and eaten. There was no use in mincing the matter he said, every one of the salesmen sold diseased cattle. The farmer could not otherwise pay his rent. The disease is so prevalent that he could not live were he to submit his cattle to destruction." (*Times*, Wednesday, Dec. 17, 1862.)

vaguely, even as (for the most part) it is mapped out in veterinary works, to see what instruction their history must contain could it once be thoroughly made out.

A searching investigation into them would open up analogies that could not fail to be of the deepest interest in their bearing on the great group of kindred maladies which are so fatal to man. It is not too much to say that many a vexed problem relating to these last would here find a ready solution. It is, in fact, only by thus extending the survey that it is possible to obtain a just and comprehensive view of the nature and mode of propagation of that great and remarkable brood of morbific agents, which are the material cause of contagious diseases, and which, low as they are in the order of created things—as yet undefined in nature, but specific in essence—are so destructive to men and animals alike.

As related to animals, such an inquiry is the more inviting, because its prosecution offers facilities from which we are debarred in our own case. In studying the epidemics which infest sheep and oxen, for instance, *experiment*—that great instrument of modern research—might often be brought into play; in forms, too, in which experiment is most sure of its aim, most easy to interpret, and least likely to mislead. The light which it has already thrown on the history of the particular disease which is the subject of this paper is a good example, both of the extent and nature of the elucidation it is capable of affording.

By this and other means so employed, we might, in no long time, succeed in investing our knowledge of whole provinces of disease with much of that precision which is the charm of the physical sciences, and medicine's greatest want. By the same means, we should gradually

childhood than in adult ages.

be accumulating data whereby to make the work of prevention sure, and thus help towards that great consummation to which we may even now confidently look —the ultimate deliverance of man from that vast brood of contagious diseases, which at present seem to mock his power—whose very existence is a humiliation to him, and which, under the form of slighter visitations or of wide-spread pestilence, bring every year so many millions to the grave by a cruel and untimely death.

P.S. About a fortnight after the foregoing paper was read, I received from Dr. Markham an extract from the *American Medical Times* of July 19th, 1862, containing a review of a paper on Malignant Pustule in the United States, by Dr. A. N. Bell, physician to Brooklyn City Hospital—the paper being a reprint from the *Transactions* of the New York State Medical Society. I have not seen the paper itself; but judging from the review, there would appear to be an almost complete coincidence between the conclusions at which Dr. Bell has arrived, both as regards the origin of the disease and its mode of propagation, and those put forward by myself. As these conclusions were come to in entire independence of one another, the fact may be taken as a strong presumption in favour of their soundness. The following is Dr. Bell's description of the affection:—

"It first appears in the form of a painful swelling, which after a lapse of time, varying from one to three days, rarely more, developes upon its central part, a small reddish or purple spot, accompanied with itching. In the course of twelve or fifteen hours more this spot changes into a bleb or vesicle, not usually larger than the head of a pin, containing a reddish brown or a yellowish fluid. Owing to the continued itching, the vesicle is ordinarily ruptured soon after its appearance; if otherwise, it dries up in about thirty-six hours, leaving the exposed derma dry, and generally of a livid colour. Itching now ceases; and after a time, varying from a few hours to a day, the centre of this discoloured and denuded surface begins to grow hard, and becomes surrounded by an inflamed areola covered with numerous small vesicles similar to the vesicle which first appeared. The middle of this areola is depressed, and the colour varies from yellow to black. It is now hard in the centre, and more painful than at any other stage. It is, however, a remarkable feature of malignant pustule that severe pain is generally absent; and this character, so different from all other acute inflammations of the skin, is a valuable negative diagnostic of the disease. During the next twenty-four or forty-eight hours the subcutaneous tissue becomes involved; the tumour strikes deeper, and rapidly extends; yet it is so indurated as to be easily circumscribed, and its confines determined without difficulty. Meanwhile the central point, now of brown or livid hue, exceedingly hard and insensible, becomes gangrenous. If the disease ceases to make further progress, an inflamed circle of vivid redness now surrounds the gangrenous portion; the tumefaction which had before rapidly extended diminishes, and the patient experiences something like an agreeable warmth, accompanied by a pulsatory motion of the affected part. The pulse, which had before grown irritable and feeble, revives; strength increases; and if there has been some degree of fever, accompanied with nausea, as occasionally happens, it is resolved into a gentle perspiration, and the nausea ceases. Suppuration now sets in between

childhood than in adult ages.

the living and the dead parts of the pustule, and the detachment of the gangrenous portion leaves a suppurating surface of variable extent in different cases. Should the disease, on the contrary, tend to an unfavourable issue, generally no suppuration takes place; the gangrene spreads rapidly from the centre to the circumference of the tumour; the pulse becomes smaller and more contracted; the patient complains of extreme lassitude with an inability to sleep, is attacked with fainting fits, and becomes passive as to the result; there is disinclination to take food or medicine, or to have anything done, and there is a total loss of appetite; the tongue is dry and brown; the features shrink; the skin is parched; the eyes are glassy; cardialgia and low delirium premonish the fatal termination."

It is impossible not to recognise, at once, in this description the same disease as that which is the subject of this paper, and the identity of both with the malignant pustule of the continental writers.

ADDITIONAL NOTE.

In the preceding paper, I ventured on the opinion that the reason why the disease known by the name of Malignant Pustule has remained hitherto almost unnoticed in England is, not that it does not occur, but that, except by one or two observers, its real nature has not been recognised.

In confirmation of this opinion I may state that, during and since the publication of the paper in the JOURNAL, I have been favoured by medical men living in various parts of England with numerous histories of characteristic cases of this peculiar and striking malady. Two of the number, on account of their special interest, may be fitly recorded here, by way of appendix to those related in the paper itself.

For my knowledge of the first of the two, I am indebted to the kindness of Mr. Nunneley of Leeds. The data which Mr. Nunneley has placed in my hands consist of two drawings with memoranda attached. One of the drawings represents the head of the patient. The appearances are in the highest degree characteristic. It is very remarkable that, although the disease began in the hand, the head and face present precisely the same aspect as that which is observed when it begins in these

parts. There are the same enormous swelling, the same black discoloration, and, in particular, the same thickening and negro-like protuberance of the lips, which were such striking features of the cases which came under my own observation, and in all of which the disease began in the mouth or in the immediate neighhood of it.

The subject of Mr. Nunneley's case was a young man, 19 years old, and a *plasterer* by trade. His illness occurred in April 1856. About a month before, he was bitten on the knuckle of the left forefinger by a young dog. The dog was quite well. The wound, which was small, festered, and was still open at the time of death. It did not, however, prevent the man from continuing his work. The disease began in the injured hand.

"When I first saw him," Mr. Nunneley says, "the arm was enormously swollen and greatly discoloured, as were also the face and head." These last parts were nearly twice their natural size.

The whole of the body and limbs, but more particularly the lower limbs, were covered with purple blotches. When these first appeared, they were of a brownish-red; but they afterwards became violet, and showed a tendency to spread. In some of these blotches, vesicles containing a dark-coloured serum formed around a central patch of a somewhat lighter shade. (These appearances are represented in the second drawing.)

The patient died six days after the onset of the malady. The mind continued unimpaired to the last.

On examination of the body, the lungs were found much congested, and there was dark coloured serum in both pleuræ. The blood was diffluent.

This case occurred at the time when the poisoning

cases of Dove and Palmer were so much canvassed by the public, and it was in consequence of Mr. Nunneley's connection with them that he was called in to the patient. The fact is worth recording, as showing two things: first, that the disease was of a very uncommon character; and secondly, that the friends of the patient associated the idea of *poisoning* with it.

Mr. Nunneley himself says: "The appearance of the young man was so peculiar that I never saw anything like it before"; and several other eminent surgeons who visited the patient with him made the same remark.

The aspect of the case, as exhibited in the drawing, was equally strange to the medical gentlemen who gave evidence for the defence on Palmer's trial, and not one of the number could form even a guess as to the cause of the malady.

Mr. Nunneley rightly supposed that it was a case of "the malignant pustule of the continent."

A clue to its probable origin, apparently overlooked by these gentlemen, seems to me to be furnished by the *calling* of the patient. Two points in the history may be taken to be pretty sure. The first is, that the man was not inoculated with malignant pustule by the dog; the second, that, as the disease began in the injured part, its virus must have been subsequently received through the open wound. To complete the chain of evidence, we must remember that, in spite of the sore on his finger, the patient continued to work as usual. Now, plasterers are constantly handling *bullock's hair*, which is a large ingredient of mortar; and as bullock's hair is known to be a very common vehicle of the charbon virus, it seems to me to be highly probable that the wounded finger received the contagion from this source.

For the particulars of the second case, I am indebted to the kindness of Dr. Milner Barry of Tunbridge Wells; and I give them in his own words:—

"Mr. J. E., aged 47, a respectable *butcher* of this town, was apparently in perfect health on the morning of Sunday, July 14th, 1861. In the evening, as he was sitting with his family, he was observed to be picking at a little sore on his upper lip, a little below his right nostril. He had only then noticed its presence, having had his attention directed to the lip by a peculiar itching and tingling sensation, which compelled him to keep rubbing the sore spot.

"On Monday, July 15th, there was no change, and he did not complain of feeling ill.

"On the 16th, he went to Tunbridge market, a distance of five miles; and having returned home early, he went to the hay-field to see how his haymaking was getting on. Thinking that his haymakers were working rather sluggishly, he scolded them for their idleness, threw off his coat, and set to work lustily, to show them a good example. It was a warm and rather moist day, the temperature in the shade being 73°. One of the men who was working next to Mr. E. remarked that he did not seem to get hot, or to perspire, from his exertions, although the sweat was pouring down his own face profusely. In the afternoon, Mr. E. felt ill, and went home and lay down, but was well enough to come down to tea. The lip continued to be itchy, and to tease him, but did not swell. He allayed the itching by bathing it repeatedly with warm water. He had a restless, uncomfortable night; but got up early next morning (July 17), and went off to the hay-field. After working there vigorously for an hour, he was compelled to give up and

return home; and immediately went to his bedroom and called to his wife to help him to bed, for he felt very ill. When in bed, he said that he should never leave that bed again, and he proceeded to give directions respecting his affairs. His usual medical attendant was sent for, and noticed that he looked pale, and that there was apparently a little gathering in the lip.

"On Thursday morning, July 18th, the swelling of the lip had increased, and appeared to contain matter. It was lanced, but only a little reddish serum was discharged from the wound. The swelling increased rapidly during the day, and spread over the face; and by evening, the right eye was closed.

"On Friday, July 19, the lip was considerably swollen, and the swelling and discoloration extended completely over the face. The left eye was closed.

"On Saturday morning, July 20th, at ten o'clock, I saw him for the first time, in consultation with his regular medical attendant, an experienced surgeon.

"Mr. E. had been a handsome, well-featured man. He was now so frightfully disfigured that I could not recognise him. The face seemed featureless, swollen out of all shape and comeliness, and of a livid, purple hue. The upper lip was frightfully enlarged; the eyes were closed tightly; the eyelids were puffy, discoloured, and œdematous, and their edges crusted over with a gummy exudation. The swelling and discoloration affected the whole of the face, and all the anterior region of the head. He was propped up in bed, muttering deliriously; his hands trembling, his breathing hurried, the skin perspiring, the belly tympanitic, and the pulse so feeble and so frequent that it could not be accurately counted.

"Brandy and stimulants were freely administered;

but he continued to sink, and he died about three hours after my first visit. The disease ran its course in seven days."

Three other cases, of which the particulars have been communicated to me, may be mentioned here as interesting in relation to the question of cause. The subject of one was a *tanner*; of another a *shepherd*, who had been engaged in tending diseased sheep; while a third was seized with malignant pustule in the *hand* immediately after being employed *in unloading hides*. In all three the disease was fatal. In the five cases which form the subject of this note, therefore, the circumstances not only pointed strongly to an animal origin, but brought the sufferers into actual contact with things which are recognised as common sources of the malady of which they died.

Of the cases related in the body of the paper, there were two in which the contagion was implanted by flies (a well known mode of communication), and one in which it was derived from contact with the carcase of a sheep that had died in a field. The callings of four other subjects were equally suggestive, one being a bullock jobber in a large way, another a great flock master, a third a provision dealer, and a fourth a shepherd. That is to say, in twelve out of thirty cases, *without any inquiry being once directed to the point*, the disease was ascertained to occur, under the circumstances, or in the conditions of life, in which the malignant pustule of the continent is known most to happen.

As it is impossible to suppose this to have been the work of chance, the only rational explanation of the fact is that these conditions and circumstances operated in developing malignant pustule in these twelve persons,

merely by exposing them to the specific cause of the malady. Had the real nature and origin of the affection been suspected by the observer, contact with this cause would probably have been actually traced in many of these as well as in other instances.

As regards the probable intervention of flies in the propagation of the disease, it is worthy of mention that, with the exception of one case which occurred in the latter end of March, all the cases of malignant pustule of the *face* that have come to my knowledge have happened either in the summer or early autumn, and for the most part in dry, hot weather. The cases in which it has occurred in the hands (presumably from direct contact with the virus) have happened at various seasons of the year.

Lastly, it should be remarked that in the five cases which form the subject of this note, as in the twenty-five before related, the disease attacked the only parts of the body which are habitually uncovered.

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ADDENDA.

SEVERAL reports and cases having reached me from various medical officers in the Crimea, too late for publication in their proper places, I have thought it best to notice some generally as to results, others particularly. Chloroform has been freely administered in all the Divisions of the army save the Second, and has been generally approved; one death only, as far as is known, having occurred directly from its administration, of which Staff-Surgeon Gordon, P.M.O. of the Second Division, has favoured me with the following report.

Martin Kennedy, 62nd Regiment, aged 32 years, a healthy soldier, having accidentally wounded one of his fingers by his musket going off, and the medical officer in charge considering it necessary to remove it, was brought under the influence of chloroform, but, according to his (the Surgeon's) statement, only about ʒij could have been inhaled. He had commenced the operation, when the patient suddenly expired. On the post-mortem examination, beyond a little fatty deposit on the external surface of the left ventricle, together with a degree of hypertrophy of the same, no morbid appearance existed. The usual restoratives were resorted to, but ineffectually.

The following case, furnished by Assistant-Surgeon Hannan, 49th Regiment, is given as an illustration of the success of amputation without chloroform in the Second Division.

Patrick Kenny, 49th Regiment, aged 22. This soldier whilst on duty in the trenches, on the 21st of July, received a compound comminuted fracture of the right humerus, extending from its middle third to the head of the bone. The integuments of the outer and upper part

of the shoulder were carried away. There was also a contused and lacerated wound of the left knee, opening into the joint, with comminuted fracture of the patella; these injuries being caused by pieces of shell. He was seen a quarter of an hour after admission by Dr. Gordon, P.M.O., who removed the arm at the shoulder-joint, making a sufficient flap from the integuments of the axilla. The thigh was then amputated in its lower third. These operations were performed in immediate succession without the administration of chloroform. The thigh healed nearly by the first intention—all the ligatures having come away by the fourteenth day. The shoulder healed by granulation—the ligature of the axillary artery coming away on the twenty-first day. During the progress of treatment he had not any constitutional disturbance further than three slight attacks of diarrhœa. He is now up and about, and goes to England by the next opportunity.

In the worst cases of amputation at the hip-joint, or at the upper third of the thigh, chloroform has appeared to cause insensibility to pain without diminishing the powers of the sufferer, when given with due caution, or not carried so far as to affect the pulse or respiration. (See Aphor. 51.) The evidence on this point is sufficient to authorize surgeons to administer it in all such cases, with the expectation that it will always prove advantageous, an accidental death, such as has been observed from its use, being independent of the nature of the injury. The amputations performed at the hip-joint, at least six in number, have not been successful as to the result, although the sufferers bore them well in the first instance, offering every prospect of recovery for days and even for weeks.

Deputy Inspector-General Taylor informs me, and his opinion is corroborated by all the medical officers, that the labours the troops had to perform, the privations they suffered, the frequent insufficiency of their food, the want of proper clothing, with other depressing causes, had so deprived them of that power British soldiers generally possess, that all the operations of importance performed on the lower extremities were more or less unsuccessful, whilst those on the upper were as remarkable for their

success. This deprivation of power, it is said, was even more observable in the French army; and he informs me that most of their surgeons had declined performing any of the great operations usually done on the upper third of the thigh, in consequence of their almost certain failure; preferring to let the injuries take their course, even unto the death of the sufferers, rather than hasten their dissolution by any operation usually considered, and often found to be conservative; a lamentable state of things from which Governments may draw an inference of the utmost importance—viz., that to guard against the effects of disease as well as of injuries, the utmost pains should be taken to preserve the health and maintain the vigour of their soldiers. A matter of expense as well as of arrangement.

This statement is corroborated by Deputy Inspector-General Alexander, who informed me, on the 3rd of August, 1855, that "During the whole of this campaign, where we have had ample opportunities of testing the use of chloroform, both after the battles of the Alma and Inkermann, as well as throughout the whole siege operations before Sebastopol, up to the present period, no operations whatever of any consequence (save with one or two exceptions, and then at the patients' own request) have been performed in the Light Division, without first placing the patient under the influence of chloroform, and in no single instance have either the medical officers of the Division or myself seen any bad results follow, or had to reject its use, but quite the contrary. Of course, in such a campaign many operations of the most serious character, both on the upper and lower extremities, have been performed in the Division by the different medical officers as well as by myself. At the Alma, I operated upon three patients at the hip-joint, two being our own men and the third a Russian. All the three patients were first placed under chloroform, with the results above stated. In the case of a soldier, of the 90th Regiment, whose right arm I removed at the shoulder-joint on the 10th of July, for great destruction of the soft parts, and extensive injury to the humerus, the patient was so low when placed on the table, that brandy-and-water

was given to him, and he was then immediately afterwards placed under chloroform. When I had finished, it was found that his pulse was stronger than before commencing the operation. In Sir T. Trowbridge's case, in which I had to remove both feet, one at the ancle-joint and the other above it, he was placed under chloroform for both operations, a few minutes having been allowed to elapse before giving it to him again for the second operation, and with the best results. Both feet were much injured by round shot, the bones of both being completely smashed with great destruction of the soft parts, so much so, that in the case at the ancle-joint, I had to form the flap from the cushion of the heel. I however did not remove the articular surface of the lower end of the tibia, as recommended by Mr. Syme, and the wound healed well. Of the three cases mentioned at the hip-joint, two were performed on the 21st, and the Russian on the 22nd of September. At one of the former I was assisted by the late Dr. Mackenzie, from Edinburgh. All three were carried down on the 22nd, to be placed on board ships for conveyance to Scutari. It has been reported to me that one of the two operated on the 21st, Peter Sullivan, 33rd Regiment, died at Scutari General Hospital on the 11th of October, three weeks from the date of the operation, 'from excessive debility.' Nothing could be ascertained about Peter Cleary, 23rd Fusiliers; it is therefore most likely that he died on the passage.

"The Russian died on the 22nd of October, 'from great debility and extensive sloughing.' A shoulder-joint case in the 90th Regiment never had a bad symptom, and the wound is all but healed. The flap in this case was made from the axillary portion of the arm, the deltoid having been all but destroyed.

"The flap operation has been invariably performed in Light Division, with two exceptions—viz., one of the arm and the other of the thigh."

Excision of the head, neck, and trochanter of the femur, with portions of the shaft, has been performed at least six times before Sebastopol. The result has been unfavourable in five, although in all there were well-grounded expectations of success for weeks. In one case by Mr. Blenkins, of the Grenadier Guards, he informs me, it was for the first

three or four weeks very favourable. The man however sank at the end of the fifth week from deposition of matter in the knee-joint. (See p. 42 et seq.) Of the second case, which occurred in the general hospital in the camp and ended fatally, I have no further notice. The third, in the 68th Regiment, in charge of Mr. O'Leary, the operation performed on the 19th of August, was going on most favourably on the 5th of October.

Private Thomas McKenena, aged twenty-five, was struck by a fragment of shell, on the 19th of August, over the great trochanter of the left femur. The wound, nearly an inch in length, extended down to the bone, which was distinctly fractured. Some loose scales could be felt at the bottom of the wound. On examination, the injury appeared to be a transverse fracture of the neck of the thigh-bone, apparently involving the joint.

After a consultation with superior medical officers, it was decided that excision should be performed, which was done without difficulty. No vessels required ligature, although the man lost a considerable quantity of blood.

The excised parts, which are herewith forwarded, show that the nature of the injury was different from what it was supposed to be, and that the head of the bone was intact.

After the wound, about five inches long, had been sewn up, the limb was placed in a sling made of strong canvas, and was swung from a beam over the man's cot, the bed being raised.

This method of treatment was adopted with a view to encourage approximation of the upper end of the bone to the pelvis, and by pressure on the sides of the limb to prevent the accumulation of matter among the tissues. The man progresses favourably.

Diet was very generous.

J. C. O'Leary,
Surgeon, 68th Light Infantry.

Camp, 4th Division, Crimea, Sept. 14. 1855.

The bones removed are in the Museum of the Royal College of Surgeons.

The fourth case is given at length by Staff-surgeon Crerar, as follows.

Private William Smith, First Battalion First Royals, was brought to hospital from the Greenhill trenches, in front of Sebastopol, about twelve P.M., on the 6th of August. On questioning him, I ascertained that an hour or so before, he was struck by a fragment of an exploded grenade, which first broke into small pieces a water canteen, which was suspended over the left hip, and then made an opening or wound about the size of a shilling nearly a quarter of an inch posterior to the great trochanter. Crepitus was quite distinct on moving the limb, and I easily ascertained, on exploring the wound with my finger, that a fracture through the trochanter had taken place, but was quite unable to ascertain to what extent upwards and downwards the fracture extended. I accordingly solicited a consultation with Deputy Inspector-General Taylor and Staff-surgeon Paynter. After a careful examination (the patient being under the influence of chloroform), the femur was discovered to be comminuted. Excision at the hip-joint being recommended by these officers, in which opinion I concurred, I proceeded to perform the operation by commencing an incision, nine inches in length, in a line with, and two inches posterior to, the anterior superior spinous process of the ilium, and carrying it down in a straight line directly over the trochanter major; a second incision about two and a half inches in length was made, commencing immediately below the trochanter backwards through the gluteus maximus; by a little easy dissection the seat of fracture was exposed, the trochanter was found broken into several portions, detached and imbedded in the contused muscles around, from which they were at once removed. The fracture was found to extend obliquely inwards about an inch and a half along the shaft of the bone. The femur was now protruded through the wound and I sawed off the whole of the fractured bone, leaving a smooth clean surface; I then proceeded to disarticulate the head of the femur, which was effected without difficulty. Scarcely three ounces of blood were lost, and little or no shock was induced; only one small bleeding point was secured near the tail of the wound, and the divided parts were brought together by two sutures and bands of adhesive plaster.

At twelve, A.M., two hours after the operation on the 7th instant, his pulse being rather feeble, he was ordered some wine and water.

7th, vespere.—Countenance cheerful, voice strong; says he intends keeping up his pluck, and is sure he will get well, has no inclination to take the beef tea ordered for him, but has had some arrow-root and wine. To have a morphia draught at bedtime.

8th.—Passed a good night; limb in a good position; retracted about two inches; wound looks healthy; pulse 100, soft; has made urine freely; skin moist; bowels were opened freely in the night.

9th.—Slept well all night; says that he feels very comfortable; skin moist; pulse 120; sutures were removed and the wound allowed to gape; it has a remarkably healthy appearance. To go on with the simple water dressing, chicken broth, arrow-root, and wine.

Vespere.—Has been very cheerful all day; limb has retracted about another half inch; pulse 112.

10th.—Passed a more restless night in consequence of not having the morphia draught as early as the previous night; has had several hours' sleep this morning, and is more refreshed; pulse, on waking, from 114 to 120, skin comfortable; no sign of distress in his aspect; wound suppurating healthily; bowels were opened again once last night.

10th, vespere.—Has been very easy all day; skin cool; tongue normal; pulse 120, soft and regular; has had to-day two eggs, one ounce of arrow-root, two gills of wine, and two pints of chicken-broth, all of which he relished much. To have a grain of acetate of morphia in solution at bedtime.

11th.—Slept soundly all night; when I visited him at six A.M. he had just awoke; pulse 115, soft; appears contented and comfortable.

Vespere.—Doing well; wound continues to look healthy; position of limb good; has consumed a fair quantity of chicken-broth, beef-tea, arrow-root, and three gills of sherry to-day; pulse 113 at eight P.M.

12th.—Bowels were opened in the night; the introduction of the bed-pan gave him a good deal of annoyance;

the air of the hut was rather stagnant last night, and he did not sleep as well as usual; pulse 120, soft; tongue continues clean and moist; there is more discharge from the wound to-day.

Vespere.—The progress of the case is most satisfactory; had a fresh egg, tea and toast for breakfast, his own selection, which he appeared to relish greatly; at twelve he had two mutton chops and a glass of wine, and at five P.M. a pint of chicken-broth with bread, and a second glass of wine. The morphia draught as usual.

13th.—Continues to look happy and contented. Healthy looking granulations are evident over two-thirds of the wound; swelling of limb subsiding; discharge from wound healthy; pulse 114, regular and soft; all the symptoms are so very favourable that I have every reason to expect a successful issue.

14th.—A small slough at the lower part of the wound, remainder healthy and clean; tongue a little too dry this morning, and he has more thirst than usual; pulse 118. To have effervescing draughts of bicarbonate of potass and citric acid three times a day; to continue simple water-dressing.

Vespere.—Thirst not so urgent; tongue cleaner and moister; has a feeling of fulness in the abdomen. To have his usual morphia draught and an ounce of castor-oil at bedtime.

15th.—Passed three large stools in the night with great relief; aspect resigned, and his spirits continue good; slough has come away; pulse 118, soft and regular; skin tolerably cool.

Vespere.—Felt a good deal exhausted to-day, from the heat, which was very great, ninety-two degrees.

16th.—Looks heavy and out of spirits this morning; discharge has increased, but is of a better quality since the slough separated; tongue dry, inclined to brown; pulse the same, skin rather hot; continue effervescing draughts every third hour.

Vespere.—Tongue more moist, less thirst. When asked how he felt, he replied, with a great deal of life in his countenance, "I am very well, and I feel very comfortable;" asked for a mutton chop early in the day, which he got, and appeared to like; he had at different times in the day arrow-root, chicken-broth, and wine.

17th.—Wound looks very healthy, and the general symptoms very favourable to-day; tongue clean and moist; less thirst; skin cooler; had him removed to a fresh bed without a great deal of pain or trouble; limb retracted less than three inches; position now good since he was shifted.

18th.—Very much worse this morning; had a rigor about ten A.M. yesterday; features now sharpened and pinched; tongue dry and brown; pulse thready, about 125.

Vespere.—Continues in a very low state; wound has a very healthy appearance; discharge healthy, but not as abundant as it was; has had besides wine, a pint and a half of porter, mutton-broth, and a chop to-day; zinc lotion to the wound.

19th.—When I visited him at six A.M. to-day, I was much pleased to find him looking quite cheerful; pulse soft, 112; skin cool and moist, paler than usual; wound doing well. Continue zinc lotion to the sore, and to have his choice to-day of mutton-broth, beef-tea, or chicken-broth; arrow-root to be given twice, four gills of sherry or port as usual.

Vespere.—No change to report.

20th.—Looking rather pale, and features pinched; pulse better, about 100, soft; skin cool; tongue more coated than usual, inclined to be dry. I fear this case is a bad one, not likely to terminate as we so much desire.

Vespere.—Has been very uneasy all day; skin hot; tongue dry.

21st, six A.M.—Has just awoke, having been asleep since nine last night; says that he feels stronger; aspect certainly improved since the last visit; coating on the tongue thicker, brown; the pulse has more strength than it had yesterday; no feeling of uneasiness; wound looking remarkably well, and discharging laudable pus; asks for cold drinks; to have his choice of iced soda, tamarind, toast or rice water; diet the same as yesterday.—Eleven A.M.: has fallen off very much since the morning, features pinched and blue; pulse irregular, small, and wiry.—

Twelve nocte: continues to sink; died at half-past twelve P.M.

Examination of the limb six hours after death.—Cut surfaces of femur perfectly smooth; bone easily denuded of its periosteum; acetabulum smooth; muscles infiltrated with pus; nature had not made the slightest attempt to repair the loss.

What would the result have been if amputation at the hip-joint had been performed? The same. The vis medicatrix naturæ is not sufficient to carry our sick through such formidable operations; it is no fault of the surgeons. A better and a more liberal allowance of animal and vegetable food during health is required, if England expects her soldiers to survive severe operations, disease, and wounds. An attempt to save the limb, for the very same reason, would most undoubtedly have been a failure. Our Minié rifle-ball fractures of the femur all sink under conservative surgery. Our amputations above the middle of the thigh have a like issue; it is truly disheartening.

J. Crerar, Surgeon, 68th Regiment.

Camp before Sebastopol, 24th August.

Dr. Crerar was greatly distressed by the loss of this man, and the manner in which he expresses his grief is declaratory of his feelings. The excised bones are in the Museum of the Royal College of Surgeons.

The fifth, by Dr. Hyde, ended fatally on the sixth day.

Corporal Benjamin Shehan, 41st Regiment, advanced with his corps, about twelve o'clock on the 8th of September, to storm the Redan. Having succeeded in getting into the work, the regiment was afterwards obliged to retire; in the retreat to our trenches he was wounded, and lay on the field till the following day, when he was brought to the hospital of the Royal Sappers and Miners. On examining the wound, it was found that a grape-shot had entered at the great trochanter, and passing inwards and a little forwards, had passed out at the groin of the same side, about an inch below Poupart's ligament, externally to, and a little in front of, the femoral vessels. The

lower fragment of the fracture protruded through the external wound, and the introduction of the finger discovered a comminuted state of the neck of the bone.

Excision of the joint having been decided on, the operation was performed in presence of Deputy Inspector-General Taylor, Staff-Surgeon Dr. Paynter, and Surgeon Elliot, Ordnance Department.

Operation performed about one P.M., 9th of September.—An incision, about four inches in length, commencing a little above the trochanter, was carried downwards along the outer side of the femur. The lower fragment, for about an inch of its extent, was cleared of its attachments. An assistant holding the thigh below, and pushing the bone upwards and outwards, so as to bring the fragment through the incision, about an inch of the bone was then sawed off. The head of the bone was next dissected from the socket; this part of the operation was considerably facilitated by an assistant catching a firm hold of the neck by means of a pair of tooth forceps, then rotating the head, and using slight force to dislodge it from the cavity, the operator dividing the capsular and round ligaments, the latter of which is more easily and safely divided at the lower and outer side of the articulation. The upper part of the trochanter was next dissected out, and several small spiculæ of bone removed. The edges of the incision were then brought together by sutures, and a bandage applied. It was not found necessary to tie any vessel, and there was very little hæmorrhage. The man bore the operation well, and was returned to his bed in good spirits, and with a good pulse.

10th.—Passed a good night; slept pretty well; pulse 106, soft; skin cool; in good spirits.

11th.—Slept some hours; pulse 106, soft; bowels open; tongue furred but moist. Wound dressed and looking well; some healthy discharge.

13th.—Going on apparently very well; pulse still 106; countenance good. Vespere: Complains of an increase of pain in the hip, but otherwise says he feels much as usual; pulse small and rapid. Ordered wine and arrow-root.

14th.—Died at six this morning.

The autopsy showed a considerable cavity filled with sanies in the situation of the operation, but no other fractured bone was discovered. The articulating surface of the acetabulum was coated by a fetid pasty substance.

GEO. HYDE, M.D., Staff-Surgeon.

The sixth, by Staff-Surgeon Coombe, also ended fatally.

Private James Nadauld, aged twenty-one, First Battalion Rifle Brigade, was admitted into the Castle Hospital, Balaklava, upon the 16th of July, 1855, five days after the receipt of a gun-shot injury of the right shoulder. Upon the 19th of July the head of the humerus was excised, and the ball was found impacted in it. The healing process went on most favourably, and the man was discharged upon the 26th of August, quite well, for the purpose of proceeding to England. The excised bone is in the Museum of the Royal College of Surgeons.

W. H. MACANDREW, M.D.,
Surgeon, 57th Regiment.

Camp, Sebastopol, Sept. 14, 1855.

Private John Purcell, 57th Regiment, aged twenty-one, was wounded upon the 18th of June, in the unsuccessful assault upon the Redan, by a Minié rifle-ball, which passed directly through the head of the humerus, but did not touch the glenoid cavity. Upon the 22nd of June, the head of the bone was excised; and upon the 26th August, the man was discharged from hospital, quite well, for the purpose of proceeding to England. The excised bone is in the Museum of the Royal College of Surgeons.

WM. H. MACANDREW, M.D.
Surgeon, 57th Regiment.

Camp, Sebastopol, Sept. 14, 1855.

The following case of wound of the larynx is instructive.

Lieutenant Charles H. Evans, 55th Regiment, aged nineteen years, was wounded on the evening of the 5th of August, 1855, about eleven o'clock P.M., while on duty in the trenches. The ball entered the right side of the neck, close to the angle of the jaw, and passed apparently between the hyoid bone and the arytenoid cartilages, and then downwards, having its exit below the cricoid cartilage on the left side. The pharynx and larynx were wounded, and the trachea was contused and displaced. Respiration somewhat hurried; a quantity of mucus collects in the trachea, and is expectorated in fits.

About seven o'clock P.M. of the 6th, the respiration becoming more difficult, with a degree of lividity of the lips, indicative of the non-oxygenation of the blood; it was deemed advisable to have recourse to tracheotomy, which, in consequence of the displacement of the parts and the swelling, was effected with considerable difficulty. The usual tubes were found too short for the purpose, and a large silver catheter was inserted, through which the air passed freely. Whenever he attempted to drink, the liquid passed into the trachea through the openings caused by the ball. From the operation no benefit arose, and he continued very restless until within an hour of his decease, which took place about twenty-six hours after the receipt of the wound. The voice was never heard above a whisper.

Post-mortem examination, twelve hours after death.—The ball would appear to have passed through the hyo-thyroid membrane, fracturing and shattering the thyroid cartilage. The membrane lining the glottis was torn and destroyed. The vessels escaped without injury, the ball having passed anteriorly.

ARCHD. GORDON, M.D.,
Staff-Surgeon, 1st Class, in Med. Charge, 2nd Division.
Camp before Sebastopol, 3rd September, 1855.

Deputy Inspector-General Taylor, who was present during the operation, adds—"The want of a longer tracheal tube than is commonly supplied for such operations was obvious, and is a good practical hint. For the first time in my life I found my two fore-fingers transfixing a man's neck from side to side. The fingers did not cause any cough or irritation, but those symptoms were occasioned by the least attempt to swallow water. The thyroid cartilage was separated into two pieces.

The following cases, one of wound of the profunda femoris, the other of the popliteal, deserve attention.

Late in the afternoon of the 14th of August, Private George Irvine, aged twenty-five, was brought from the trenches, having been struck by a Minié ball of the largest size, which had penetrated the left thigh, about two inches below Poupart's ligament, just in the course of the femoral artery. The ball passed slightly outwards, fracturing the femur, and was cut out at the back of the limb, completely flattened. As there was considerable hæmorrhage, both venous and arterial, no examination with the finger was permitted. Dr. Taylor, superintending the Division, having been informed of the case, a consultation was held.

Amputation at the hip-joint was forbidden by the prostration of the man, who had lost much blood before he was brought to camp. Excision of the head of the femur was also inadmissible, from the evident wound of a large artery, with probably that of a large vein. Search for the wounded artery, for the purpose of applying a ligature, was then determined upon, but before the operation had well proceeded, the hæmorrhage was so great, that it was found impossible to continue it, and pressure by means of graduated compresses was resorted to, with complete success.

On the following morning an operation was still out of the question. Prostration continued, with great irritability of stomach, and a small, quick pulse. No return of hæmorrhage, though the pressure of the tourniquet was but very slight.

On the 16th the pulse was more quick and irritable, with the same irritability of stomach, and urgent thirst. He had passed a better night however. At the consultation this morning, the circulation through the posterior tibial artery was so evident that the question of the femoral artery being wounded was set at rest. It was decided, as no return of hæmorrhage had occurred, that the case should be left to nature.

On the 17th, he suffered from starting pains in the thigh. There was less irritability of stomach, but the

pulse was very small and weak. During the night there was slight hæmorrhage, owing to his restlessness, but it was easily arrested by a turn or two of the tourniquet.

On the evening of the 20th, this restlessness increased; delirium set in, and early in the morning of the 22nd he died.

The limb was examined after death, when the following appearances presented.

Femoral artery intact. Femoral vein wounded, with more than half its calibre shot away. At about two inches from its origin there was a wound of the profunda artery, on which an aneurism, nearly the size of a pigeon's egg, had formed, and passed upwards through the wound made by the ball. The profunda vein was intact. The injured vessels having been removed for preservation, the bone was then cut down upon, when a fracture, nearly transverse, and not at all comminuted, was observed below the trochanters. No splitting of bone upwards; downwards its outer plate was slightly cracked, but nothing more. The preparation is in the Museum of the Royal College of Surgeons.

Private James Ross, a lad of eighteen, was brought up from the trenches, on the morning of the 3rd inst., having had his right leg blown off below the knee by a round shot. He had lost a very large quantity of blood before the tourniquet was applied, and was consequently so much collapsed that an operation was out of the question. He was therefore dressed and the tourniquets (two had been put on) removed. He never rallied, and died on the 12th, nine days after the receipt of the injury. No hæmorrhage ever occurred though all pressure had been removed from the artery.

R. V. De Lisle,
Surgeon, 4th King's Own Regiment.

Camp before Sebastopol, Sept. 14, 1855.

The following is worthy of publication, as showing the successful effects of strychnia, when carried to the extreme verge of propriety, in injuries of the spinal chord.

Sergeant William Aldridge, 46th Regiment, aged 39

years, during a sortie from Sebastopol, was knocked down in the trenches, and his back formed a bridge over which Russians and English passed. The result was serious injury to the spine, causing paralysis of the lower extremities and bladder. The pain was excruciating, and the patient could not be moved in bed for several weeks.

On the 4th of March, 1855, he was placed under my charge in the military hospital at Portsmouth, when he complained of great pain and tenderness along the spine, and incontinence of urine, together with wandering day dreams and insomnolency at night. Solution of the muriate of morphia ♏j was prescribed without any effect. (♏j contains 1 gr.) The dose was gradually increased to ♏ij of the solution.

15th March.—Fell out of bed during the night, trying to hide himself. Is wandering, and fancies that he has deserted from the Crimea, and will be shot. The narcotic has been omitted for several days. Strychnia was now ordered, one-sixth of a grain three times a day.

20th.—Continues much the same, with slight twitchings of the face.

25th.—Has been unconscious for three days. Now complains of intense pain in the back and violent cold perspiration.

28th.—Returning consciousness; feels easier, having slept uninterruptedly for forty-eight hours. Expressed a desire to make his will, and send to Dublin for his wife; both wishes were complied with.

30th.—Sensation and motion are gone from the lower extremities, and the urine is still passed involuntarily. One-eighth of a grain of strychnia was ordered twice a day.

31st.—Is powerfully under the influence of the remedy, with convulsive movements of the upper and lower extremities; wild stare and fixed jaws. The lower extremities had not moved for several months previously. This paroxysm lasted for one hour under my own observation, after which the muscles became relaxed, the face bedewed with a gentle perspiration, and resumed its ordinary tranquil appearance.

April 2nd.—Feels greatly relieved from pain, and is comparatively comfortable; sleeps calmly. His appearance is entirely changed; looks natural; features calm; is cheerful, and reads the papers. Strychnia was omitted for some days after the last paroxysm, and replaced by the tincture of the sesquichloride of iron with quassia, and a generous diet.

6th.—Continues to improve. Has now and then slight twitchings in the legs and arms. The strychnia was resumed and omitted, as the symptoms indicated, to the end of the month.

May 1.—Is greatly improved; goes about the balcony in a chair. Returning sensation in the right leg. Bladder still not under the control of the will.

20th.—Sensation much improved in both legs; and motion increasing in the right leg.

25th.—Convulsive movements all over the body, resulting from the use of the strychnine. Lower extremities decidedly improved, both in motion and sensation.

June 1st.—Maintains his improved condition. Recommenced the strychnine to-day, without any marked effect at the moment.

10th.—Violent tetanic spasms followed the employment of the remedy, producing considerable increase of motion in both extremities. The paroxysms *usually* continue about fifteen minutes, when the muscular system resumes its ordinary appearance.

20th.—Continues the same. Strychnia not resumed since last entry, as occasional twitchings occur about the head and face, and he is now affected by the smallest dose.

July 1st.—General health excellent.

10th.—Continues to improve daily in regaining the use of his limbs. Is now able to walk on the ramparts with crutches, but is extremely sensitive to every change of weather—damp always causing pain in the spine. Continued to improve to the end of the month.

August 1st.—No change worthy of note.

14th.—Discharged to Chatham.

T. H. Burgess, M.D.,
Military Hospital, Portsmouth.

The following case of injury of the abdomen sent to me by Dr. Rooke, Civil Surgeon with the army in the field, is very remarkable.

Robert Cousins, æt. 20, 77th Regiment, was admitted into the general hospital, camp, June 8th, with severe injuries, caused by a round shot, which struck him when he was on duty in the advanced trenches. When the shot struck him he was standing up, half-face towards the enemy, his right arm extended in front of the right hip; he was in the act of reaching his water-can, which rested against the parapet of the trench.

On admission he was in a state of semi-collapse, the integuments of the right hand and fore-arm greatly lacerated, the wrist-joint laid open, the bones of the carpus comminuted; the radius and ulna were also fractured at the middle third. There was a lacerated wound in the right iliac region, the size of the palm of the hand; over this space the skin and muscles of the abdominal wall were torn away, the peritoneum lining it was also lacerated, and at the bottom of the wound was seen a coil of intestine in situ; there was no tendency to protrusion, nor were its coats at all injured. The crest and body of the ilium were much comminuted, the fracture extending downwards between the anterior superior and anterior inferior spinous processes. The anterior superior spinous process was broken off. There was another wound just below the great trochanter; this apophysis was also shattered. The right limb was two inches shorter than its fellow, the foot everted, but from the great comminution of the pelvis and the extreme pain produced by examination it was not satisfactorily made out that the neck of the femur was fractured, but the shortening of the limb and eversion of the foot were in favour of that diagnosis. The injuries which the patient had received were considered mortal; it was thought unnecessary cruelty to amputate the fore-arm. Such pieces of the ilium as were loose were removed; wet lint applied to the wounds; and brandy and water with opiates was ordered. One of his comrades volunteered to watch over him, and he was left, as all thought, to die. The next day (June 9th) he had partially rallied from the state of collapse; had taken

liquid nourishment—beef-tea, arrow-root, &c. There was no pain or tenderness of the abdomen; had passed his water without difficulty. The surface of the abdominal wound was sloughy; intestine still visible; complains of pain in the arm. It was not yet considered advisable to perform any operation. He was ordered opium gr. j. every four hours; also a dose of morphia at night, arrow-root, beef-tea; and port wine, which he prefers to brandy.

10th.—Has rallied completely; no pain or tenderness of the abdomen; complains greatly of his arm, and is anxious that something should be done. He slept well after taking the morphia; his face is tranquil, breathing natural, pulse weak; no irritability. Deputy Inspector-General Taylor saw the case in consultation with Dr. Mouat, P.M.O. of the Hospital. It was decided to amputate the fore-arm. This was done at the upper third; chloroform was administered, and produced no ill effects. He was ordered any fluid nourishment he might fancy, with port wine, and an opiate at night.

11th.—No symptoms of peritonitis; suffers no pain; tongue clean and moist; pulse quiet; passes his water regularly; the bowels have not acted. The abdomen is quite soft and fallen; not the slightest tenderness on pressure. To continue on the same plan. He could now give some account of the way in which he was wounded. He stated that he thought it must have been a round shot that struck him. It first struck his arm, then entered the right iliac region, emerging at the lower wound. The surface of the wound in the iliac region is in a sloughy state from the severe bruising of the parts. The coil of intestine is still visible at the bottom of the wound.

12th.—No symptoms of peritonitis; bowels have not acted; tenderness down the outside of the thigh, with redness of the skin, and pitting upon pressure. Stump dressed to-day and looking well.

13th.—No unfavourable constitutional symptoms. The outer part of the thigh is tender and the skin red; free incisions were made; the fascia was sloughy. He takes nourishment: has eight ounces of port wine daily, eggs, arrow-root, and essence of beef. Bowels not acted.

21st.—He had no symptoms worthy of remark since

the 13th. The bowels have not been moved; he complained to-day of not being able to pass his motions. Two injections of warm water were administered in the course of the day. He passed a large quantity of hardened fæces, which relieved him greatly. The sloughs are separating from the incisions in the thigh; the crest and ala of the ilium are exposed: healthy granulations are springing up from the bottom of the wound. Stump healing favourably.

July 26.—The case has progressed without a bad symptom. At first it was thought that the greater part of the ala of the ilium would exfoliate, but some red points appeared on the surface, and the concavity of the bone became covered with granulations. The exfoliation was limited to the anterior part of the crest of the ilium, which separated on the 17th instant. At various times pieces of bone have been removed as they became detached; there are others still left to come away. The granulations on the upper wound are on a level with the skin of the abdomen. The crest of the ilium is covered with granulations; the wound is contracting, but there is a deficiency of skin to cover the projecting portion of the ilium. The lower wound is also open, and has been enlarged to remove pieces of bone; the incisions in the thigh have healed. The bowels have acted regularly without medicines until to-day, when he required a castor-oil injection. The right thigh is more than two inches shorter than the left; union appears to have taken place; he has no pain on motion. The dead bone that still remains, alone prevents the wounds from closing, their surfaces being covered with healthy granulations. His general health is good. He has taken at intervals some oleum jecoris aselli; and, for a mild attack of bronchitis, under which he suffered at the end of June, expectorants and diaphoretics. There has not been a single symptom of any abdominal complication. He has an opiate at night. The stump has been healed nearly three weeks.

September 14th.—Since the last report no unfavourable symptoms have occurred. The stump of the fore-arm has been healed some weeks; his health is good; indeed, from first to last, he has not had a single symptom denoting constitutional disturbance. All the dead bone from the

crest of the ilium has separated; the wound of the abdomen is skinned over, with the exception of a small spot about the size of a sixpence. This is healthy, and is gradually healing. The bowels act regularly. There are still two sinuses on the outer side of the thigh, one above, the other below the great trochanter. On probing these, dead bone is felt, which has not yet separated. The right limb is about three inches shorter than the left; is freely moveable in any direction without pain. He can raise the knee from the pillow, but cannot lift the heel from the bed; he can however turn himself over on to the left side without assistance. The prominence of the crest of the ilium is greatly diminished from loss of bone. The trochanter major is unusually projecting; the natural appearance of the hip-joint is entirely gone. The injuries to the bones have been so severe, it is difficult to say what changes have occurred. The ilium and pubis have been greatly comminuted, the fracture most probably extending through the acetabulum. Immediately below Poupart's ligament, to the outside of the femoral artery, a hard substance is felt beneath the skin. This when he was admitted, was at first supposed to have been a piece of a shell, but it is now thought to be a portion of the pubis driven downwards upon the thigh.

He may now be said to be convalescent.

John Sheehan, aged nineteen, 57th Regiment, was wounded in the left thigh before the Redan on the 18th of June. He was brought to the general hospital, and placed under the charge of a gentleman of considerable skill and experience. The wound presented two openings, an anterior and a posterior; the latter offered greater facilities for examination than the former; the finger, passed from behind, detected several fragments, which were removed, and as a tolerably uniform surface of bone (*vide* specimen) was then felt, it was determined, after consultation, to make an attempt to save the limb. The injured extremity was accordingly bound up with a long splint in the most careful manner, and matters promised favourably for a time. He however complained of a good deal of suffering in the limb from time to time, gradually

wasted, suffered from diarrhœa, and finally sank on the 6th of August. On examination post-mortem, I found the chief organs in a normal condition. There was some congestion of the ileum, and the colon presented a few points of ulceration. The condition of the parts in the left lower extremity was very remarkable. Beneath the integuments, all the muscular and other textures, from the seat of injury to the groin, were converted into a soft, broken down, black, rotten mass; and I may here observe that this low, but intense, disorganizing process, extending through the greater part of the limb, has presented itself in several of my examinations of somewhat similar injuries, and appears to me to be connected with *a peculiar pathological state in which all the vital organs remain sound, but the vis vitæ is remarkably reduced below par.* The fractured bone it is unnecessary to describe. The vertical and cross infraction of the fragments and its almost "arborescent" appearance are most remarkable. I look upon it as a specimen of no ordinary value, conveying more than one most useful lesson. The bones are in the Museum of the Royal College of Surgeons.

R. D. Lyons,
Pathologist to the Army in the East.

Camp before Sebastopol, August 30, 1855.

Private William Leah, 30th Regiment, aged twenty-one, was brought to me on the 27th of June, while I was on duty in the trenches, with fracture of the external condyle of the humerus of left arm, by a musket-ball, which had entered the joint between it and head of radius, and had made its exit over olecranon process of ulna. Artery uninjured. On being sent to camp, the joint was excised by Mr. Dowse, surgeon of the regiment. The patient progressed favourably, and the wound has been healed for nearly a month. He can use all the muscles of the fore-arm, except the flexor of the little finger, and is regaining the motion possessed by the elbow-joint.

David Milroy, M.D.,
Assistant-Surgeon, 30th Regiment.

Camp, Second Division, Heights of Sebastopol, Sept. 5, 1855.

J. Maguire, 31st Regiment, aged twenty, wounded in the advanced trenches.

July 12, five A.M.—Carried into hospital, wounded by a splinter of shell in left elbow and on left hip. The splinter struck him in an oblique direction from behind, fracturing olecranon process and internal condyle of humerus, lacerating and otherwise injuring the joint, the ulnar nerve being also injured. The splinter continuing its onward course, inflicted a lacerated wound on the hip, with comminuted fracture of about the anterior fifth of the crest of the ilium, several small pieces of bone being driven in on the peritoneum, causing pain on the slightest motion. All the loose portions of bone were removed, and several others separated from the muscles. Abdomen painful, and swollen at that side. Abdomen continued painful during the day; bowels acted; he also passed water freely.

13th.—Pain in abdomen much less; little, if any, constitutional disturbance; elbow extremely painful; the pain accompanied with partial paralysis of the little and ring fingers. Staff-Surgeon Dr. Gordon having seen him, and not apprehending any danger from the wound in the side, the operation for excision of the elbow-joint was determined on, and performed under chloroform, by a single straight incision passing through the original wound, including the upper and lower fourths of the fore-arm and arm. There was very little hæmorrhage. The arm was then put up in an angular splint. It continued to progress favourably, the greater part healing by the first intention. There was some suppuration, but a free exit being given to the matter, it did not retard recovery.

August 19th.—This patient was discharged from the Regimental Hospital, to General Hospital, Balaklava. The wound nearly healed; sensation partially restored to the fingers; slight motion at the bend of the elbow; but he has not power to raise the hand.

Thomas J. Atkinson,
Assistant-Surgeon, 31st Reg. in Med. Charge.

Camp before Sebastopol, Sept. 1, 1855.

Private Anthony Murray, aged 28, 41st Regiment, a healthy man, was struck, while on duty in the trenches before Sebastopol, on the night of the 23rd of July, 1855, by a portion of a shell, which penetrated the left elbow-joint; the head of the radius and the outer half of the articulating surface of the humerus were comminuted, fragments being impacted in the cancellous structure of the humerus, and driven in between that bone and the ulna. Excision of the joint having been determined on, it was performed in the following manner: a straight incision was made along the posterior surface of the joint, the olecranon cut through, and the extremities of the several bones removed in succession; the parts were then brought together by suture, and the limb placed in a fixed position; about a third of the wound healed by the first intention; no inflammation supervened. On the 3rd of August the wound was granulating in a healthy manner; on the 22nd, it had almost healed, and the limb was put up permanently, the fore-arm at right angles to the arm; on the 31st, some union had taken place between the bones; the man can move the thumb and three fingers; he is free from pain; his health is very good, and he appears to be progressing favourably in every respect.

J. E. Scott, M.D., Surgeon, 41st Regiment.

August 31st, 1855.

Private Jesse Lockhurst, 31st Regiment, aged 26, was wounded in the advanced trenches 17th of August, 1855.

August 17th.—Six o'clock A.M., carried into regimental hospital, having received an extensive lacerated wound of right cheek: very little apparent hæmorrhage, but the power of deglutition was completely lost, and respiration impeded. On making an examination of the wound, it was ascertained that the right superior maxillary bone was fractured, and a portion of the hard palate with the molar teeth driven in on the tongue; there was a large piece of shell or shot lodged at the bottom of the wound, lying on left palate and, as far as could be ascertained, on the back of pharynx. Staff-Surgeon Dr. Gordon being present, the ball, after much labour, was extracted, and found to be

a grape-shot of seventeen and a half ounces weight. During the operation it was found necessary to dilate the wound by dividing the lip near its external angle—the portions of bone that were removed were the alveolar process, with all the molar teeth, including part of the palate and a portion of the orbital plate and nasal process of the superior maxillary bone, and all the malar bone. There was no serious hæmorrhage during the operation, nor immediately after the extraction of the shot. The cheek was then plugged with lint and the wound brought into apposition by sutures. The man experienced immediate relief after the operation, sat up in bed, washed out his mouth, and drank some water; he seemed extremely thankful, and blessed the doctors. During the night and part of the next day there was some oozing from the mouth. No bad symptom occurred until the 20th, when an active hæmorrhage came on from the back of the palate. The exact source could not be ascertained. He became very weak and almost pulseless; but the hæmorrhage was eventually restrained by means of ice and plugging the wound with lint moistened in tincture of matico. Iced drinks occasionally.

31st.—The man is now doing extremely well, can talk, and takes a pint of jelly daily; the external wound is not yet quite healed, in consequence of the saliva flowing through it. The right eye is uninjured, and sight unaffected.

September 1st.—He has just been discharged to General hospital, Balaclava, from the regimental hospital.

Thos. J. Atkinson, Assistant-Surgeon,
31st Regiment, in Med. Charge.

Camp before Sebastopol, September 1st, 1855.

On the morning of July 24th, Private Francis O'Brien, a lad of eighteen, was brought from the trenches with a wound from a musket-ball in the right temple. It entered about two inches above the orbit, passed downwards, and drove out a large portion of the supra-orbital ridge, which appeared to be imbedded in the upper eye-lid, and was cut down upon by the medical officer in the trenches, in mistake for the ball, which it certainly very much resembled.

As no ball could be found, it was supposed to have passed out at the opening of entrance.

The finger when passed into the wound could feel the pulsation of the brain, yet from that day to the present no symptom of cerebral disturbance has appeared, unless it be that since his convalescence the muscles of the face work convulsively when he feels faint and weak from remaining too long in the erect posture. About a month after admission, the detached portion of the bone above the orbit was removed from the eyelid, though with considerable difficulty, and on the following morning the ball fell from the wound, much to the poor lad's horror, who thought his eye had dropped out.

Both wounds have now healed, but he is unable to raise the right eyelid; the eye is perfect, but apparently without power of vision, though sensible to the stimulus of light, for on turning the wounded side to the light, the left pupil contracts. His general health is good.

R. V. De Lisle,
Surgeon, 14th King's Own Regiment.

Camp, Sept. 10.

Private Joseph Bourke, 17th Regiment, admitted on 9th September, 1855, with fracture of anterior superior angle of right parietal bone, with depression of about one-third of an inch, for the size of a florin. No attempt was made to elevate the depressed portion. Has not had a bad symptom. Wound of scalp nearly healed.

W. P. Ward,
Surgeon, 17th Regiment.

Private Michael Caffrey, 88th Regiment, wounded at the attack upon the Redan on the 8th of September, was brought to the hospital of the 38th Regiment, on the morning of the 9th. A round rifle ball struck him at the anterior part of the left parietal bone, and passed through the brain in a line which brought it out at the vertex, fracturing the parietal bone of the opposite side; the ball at its entrance split, and one half pushing before it a small piece of bone, both lodged at the entrance; the other half of the

ball was found lodged in the brain at the upper and back part, having detached a circular portion of the skull.

A director was passed along the track of the wound, and the scalp laid open; the brain was found to protrude through the fracture. In this condition the patient lived for eleven days, utterly unconscious of everything passing around him, the urine and fæces coming away involuntarily. There was paralysis of the opposite side.

A post-mortem examination showed the brain to have been reduced to a pultaceous mass only in the direction of the passage of the missile; the remaining portion of the wounded hemisphere and that of the opposite side were healthy.

The absence of the usual train of head-symptoms, and the length of time which so extensive an injury permitted life to remain, render this case worthy of some remark.

Frederic Wall,
Surgeon, 38th Regiment.

Camp before Sebastopol, Sept. 20, 1855.

Private William Doyle, 19th Regiment, aged nineteen years, was wounded in the head by a rifle-ball, in the advanced trench of the right attack, on August the 13th. The scalp and pericranium were cut about two inches, and a portion of the cranium, a little in advance of the posterior and superior angle of the right parietal bone, close to the sagittal suture, about an inch in length and half an inch in breadth, was depressed. According to statement the man was rendered perfectly senseless and motionless, from the instant of being struck by the bullet. On reaching camp he presented all the usual symptoms indicating compression; pupils dilated and fixed, warm surface, total unconsciousness, complete paralysis, &c. On examination of the depressed portion of bone, no opening whatever could be felt; the edges of the sunk bone and the bone adjoining were in contact, and it was presumed to be an ordinary case of fracture with depression simply. Some very minute portions of cerebral substance were observed to be mixed with the clot of blood about the wound, such as might be squeezed through a fissure.

Trephining being determined on, it was performed at once, and the depressed bone raised without difficulty. No relief of symptoms followed. The dura mater bulged slightly upwards into the opening. On passing the finger over its surface, a little beyond the space exposed by the trephine, a defined cut edge was felt about an inch in advance of the depressed piece of bone, being the boundary of an opening into the cerebral substance.

Three hours after arrival in camp the patient died. On examination post-mortem a wedge-like section of the ball was found to have entered and penetrated the cerebral substance; it was discovered in the anterior lobe on the right side, just above the orbitar plate. It had not completely penetrated, but was lying just above the membrane covering the lobe. The ball—a conical rifle-ball with three cannelures—was cut smoothly from apex to base, as if by a sharp knife. This must have been done by the edge of broken bone above the opening made in the parietal bone, one half of the ball flying off, the other entering the skull. On close examination, several very small points of lead were found to be imbedded along the margin of the bone alluded to. The depressed portion of bone, directly after the piece of ball entered, must have sprung up again by its own resiliency, or been forced up by sudden pressure from within, so that no evidence of an aperture, but merely a fissure and depression remained. The inner table was separated, and nearly detached, for a space rather more extensive than that of the depressed part of the outer table. The superior longitudinal sinus was wounded by the sharp edge of the broken inner table, and a very considerable quantity of blood extravasated upon the surface of the brain.

The portion of bone implicated in this injury has been preserved.

THOMAS LONGMORE,

Surgeon, 19th Regiment.

Camp before Sebastopol.

REMARKS.

Six amputations at the hip-joint (if not more) have been performed in the Crimea and all the sufferers have died, a loss which has not been experienced in civil life under any circumstances, many persons having survived the operation for years. It has been fairly attributed to the depressing causes from which the army suffered, and for which the Government have been blamed; although the great functionaries appear to me to have less to account for than their subordinates, as far as regards deficiencies in the treatment of the sick and wounded.

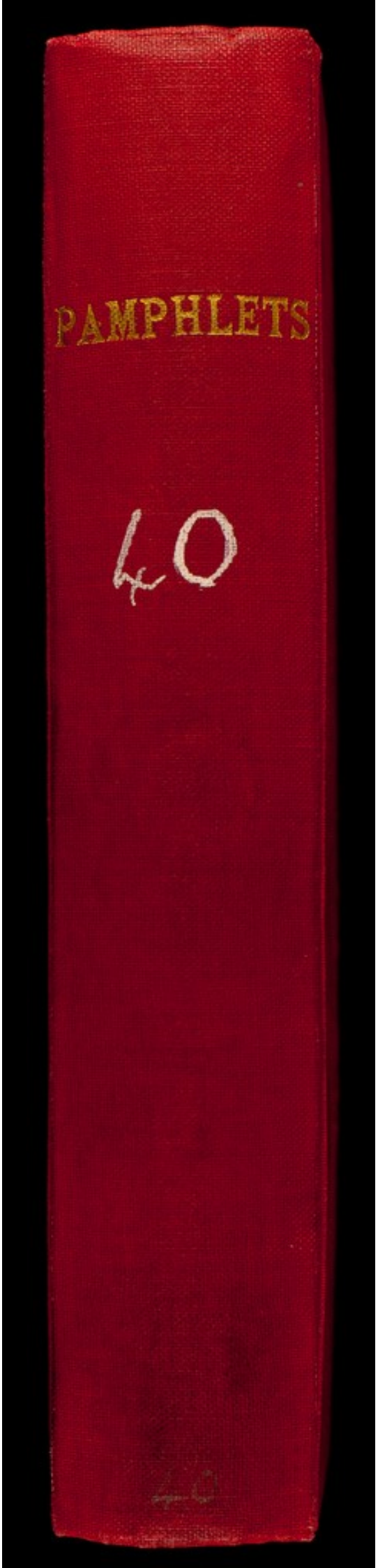
The operation for removing the head of the femur from its connexion with the hip, leaving the limb for future use, was first recommended by me as a substitute for amputation at the hip-joint, and has been done in at least six instances, one only surviving. I limited the operation to injuries of the head and neck of the bone, or with little extension beyond these two parts, being cases which hitherto invariably died unless amputation at the hip-joint were performed; and which it was and is hoped the operation of excision might render unnecessary; but it must be done under happier circumstances, and perhaps with greater restriction. The success which has followed the removal of the head of the humerus from the shoulder-joint even with as much as one-third of the shaft, as low as the insertion of the deltoid muscle, has led to the belief that as much may be done in the thigh; and in the hope that it might be so, a considerable portion of the shaft of the femur has been removed with the head and neck in the cases alluded to, so that an approximation of the remainder of the shaft to the cavity of the joint has not been possible. If the operation performed by Surgeon O'Leary, 68th Regiment (page 621), which at the end of seven weeks is reported as doing well, although the pulse remained between 80 and 100, should succeed, it is doubtful whether the limb will be of any use or better than an artificial leg, from the extent of bone removed, which will prevent the formation of a firm joint or union. The sling used in this case has been con-

the chain-saw, when too late, for many are now nō more who stood in the greatest need of them, and without which machine they had little chance of being saved.

On the 14th of April, 1855, I published a lecture, in which I gave a sketch of an apparatus for slinging a broken leg, which instrument I declared to be a *sine quâ non* in the successful treatment of a gun-shot fracture of the leg. By permission of the Duke of Newcastle, I sent out forty-six sets complete for every part of the body, the year preceding. They were, I am told, left at Varna; and four medical officers, of character and knowledge, who have lately returned from the East, assure me within the last week no such, or any similarly useful apparatus was ever seen in the hospitals in front of Sebastopol. Other instances of remissness of equal importance might be adduced, if it were not useless to advert to them; for we delight, I believe, in being admitted by foreigners to be a wonderful people in the mismanagement of our affairs in the first instance, however important or trivial. It is, I believe, an admitted maxim, that the right men should be in the right place—the square ones in the square holes, the round ones in the round holes; but there is another of equal importance—viz., that the right thing should be in the right place at the right time, without which teaching or practising surgery becomes of little value.

Amputation at the knee-joint has been done, I hear, in six cases since the taking of Sebastopol: four are dead; one is doing well under Mr. Blenkins of the Guards, and the other yet survives. Excision of the knee-joint has been performed since the taking of Sebastopol in one case by Staff-Surgeon Lakin, and is doing well.

The excisions performed on the head of the humerus, and on the bones composing the elbow-joint, have been very successful. There is however a circumstance to which I am desirous of drawing attention—viz., that the head of the humerus should never be removed in amputations, when it is uninjured, however close the destruction below may have approached it. The round head of bone left in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