Another disease which recent investigations seem to have clearly proved to be due to microphytes, is ague or malarious fever. A fungus has been detected in the air and soil of malarious localities, and more recently in the blood of patients suffering from ague, when examined during the cold stage of the disease. An attempt has also been made to place rheumatic fever in this class of diseases, and to prove it likewise has a parasitic origin. At present, however, this must be considered as unproved, and there are many features of the disease which certainly do not resemble the characteristic symptoms of diseases caused by parasitic fungi.

In a paper read before the North Wales Branch of the British Medical Association in September 1881, Dr. Roberts of Manchester has described some cases of disease caused by parasitic fungi in the urine. He first notices the well known cases of incipient and ammoniacal decomposition of the urine, due to the presence of bacteria, and then gives notes of some rarer cases, in some of which he has found bacteria, which, without causing decomposition of the urine, have given rise to violent bladder symptoms; and another, in which persistent nmaturia seemed to be dependent on the presence in the urine of a peculiar micrococcus. In the first cases, salicylate of soda; and in the last, oil of turpentine and oil of eucalyptus—all, acknowledged antiparasitic remedies—were found of much use.

Lastly, I must make a passing allusion to skin-diseases. Of these there are some, such as favus and pityriasis versicolor, whose parasitic origin has long been recognised, but every day is adding to their number. Quite recently, I see that leprosy and acute pemphigus have both been attributed to the presence of parasitic fungi. I have not made any allusion to certain rare or local diseases, such as filarial disease, etc., which have been proved to be due to parasites, either animal or vegetable, because they but rarely come under the notice of the general practitioner in this country. At the same time, I would remark, in passing, that it is quite in accordance with the germ-theory that some of these disease-producing parasites, like higher plants, should be either limited to certain portions of the earth's surface, or require certain climates for their development.

Now, let me make a few remarks on the practical result of this germ-theory. Of what use has it been to medical practice? Here, I think, we must all agree that, whether true or not, a theory which could produce such a practical result as antiseptic surgery has been of incalculable benefit to medical science, and it was in consequence of his firm belief in this theory that Professor Lister was led to introduce the method of treating wounds with which his name is connected, and which has met with such general acceptance throughout the surgical world. Whether we attribute the success of this method simply to extreme care and cleanliness, or whether we admit the existence of germs, we must in either case, I think, feel grateful to a theory which has led to practical results of such acknowledged utility.

Another most important benefit derived from the germ-theory is the guidance and direction which it has given to our efforts to guard against and prevent the spread of contagious diseases. In our choice of antiseptics we are guided mainly by the effects which these substances have in destroying germ life; and in dealing with sewage, both in the mass and in individual cases, our principal aim is to destroy those germs which we believe it to contain, and which are so injurious to health. Acting on this principle, Dr. Carpenter of Croydon has made some experiments, which I think have clearly proved that the most efficient agents in nature for the destruction of living germs are the spongioles of living plants; and just as Darwin and others have shown that the leaves of the Sundew and other insectivorous plants can destroy, digest, and assimilate both living and dead organic matter brought into contact with them, so Dr. Carpenter has shown that the spongioles of Italian rye-grass greedily seize upon and appropriate the organic germs which sewage contains. It follows from this that the most efficient method of dealing with sewage generally is, when the local conditions admit of it, to apply it to the roots of plants; or, in other words, to utilise it, and render it innocuous by means of a sewage-farm. Here, I may remark that if any present are interested in this matter, they may, if they think fit, avail themselves of the opportunity which their visit here to-day affords them, of inspecting the small sewage-farm connected with this town, which has, I think, up to the present fulfilled very satisfactorily the objects for which it was established. In medicine proper, the influence of the germ-theory has perhaps been less strongly felt than in surgery and sanitary medicine. The difficulty seems to be to discover agents which may destroy the germs which have got into the system without at the same time injuring the tissues of the body; but I cannot help thinking that it may ultimately prove that some of the drugs which have been proved by experience to be efficacious in the treatment of certain diseases may owe their virtue to their power of destroying germ life, as, for instance, quinine in the treatment of ague.

I see also that the bold experiment of injecting carbolic acid into the blood in cases of yellow fever has been made; and, it is said, with very marked success. If this should really prove to be the case, may we not hope, by working in this direction, to find some remedy for typhoid fever and other kindred affections? The use of continuous antiseptic inhalations by means of naso-oral respirators in cases of phthisis, is now being extensively tried, and would seem to have met with some measure of success. I have myself tried it; but not yet in a sufficient number of cases, or for sufficiently long, to enable me to decide on its merits. The practice of inoculation with attenuated virus, which has been introduced by M. Pasteur with such remarkable results in the case of chicken-cholera, and splenic fever in sheep, is another legitimate result of the germ-theory; and we can scarcely doubt but that the time is not far distant when this principle, which has been long empirically adopted in the case of vaccination, will be still more extensively employed in the treatment of diseases affecting the human subject.

There are, I fear, at least two classes of persons to whom this germ-theory of disease will be peculiarly distasteful, and they are the anti-vaccinationists and the anti-vivisectionists; for there are at least two points which the investigations connected with this theory have tended more clearly to establish, and these are: 1, that the practice of vaccination rests on a thoroughly scientific basis; and, 2, that by experiments on living animals, and on living animals only, has it been possible to establish truths, and introduce remedial measures, which have already been the means of saving a vast amount of animal life, and which promise to confer incalculable benefits on the human race. I rejoice, therefore, to think that the medical profession are now taking steps to prevent the enactment of such laws as must effectually check the progress of scientific research, and will compel earnest English students of physiology to exile themselves to foreign countries, in order that they may pursue their search for truth, and devise means for the relief of suffering humanity.

For my own part, I cannot help hoping that the germ-theory is likely to do for medical science, what the theory of evolution by natural selection has done for biology—that it will lead to the opening up and investigation of new and rich fields of research in various directions, afford a clue to the etiology of many obscure diseases, and last, but not least, lead to the introduction of new and efficient methods of guarding against and combating disease; and it is this feeling of the importance and many-sidedness of my subject, which makes me painfully conscious of the very inefficient manner in which I have treated it. If, however, the remarks which I have made should have the effect of eliciting the opinions of my hearers on this important subject, I shall feel that I have not spoken in vain, and I shall hope that those who have so patiently listened to me will forgive me for having trespassed so long on their time and patience.

SOME OBSERVATIONS ON RHEUMATISM AND GOUT, WITH A NEW DEPARTURE IN THEIR CURE.

By ALEXANDER HARKIN, M.D., F.R.C.S., Belfast.

SINCE the days of Sydenham, himself a martyr to gout, and the first English physician who pointed out the distinction between that disease and rheumatism, these painful disorders have afforded ample scope to the theorist and the practical observer; and yet, after the lapse of two hundred years, though in possession of more accurate knowledge than our predecessors of their effect upon the tissues, upon the structure of the heart, and the articulations; and though we can trace to their agency a number of secondary affections consequent upon cardiac injury, it cannot be affirmed that, in the treatment of these diseases, we have made correlative advancement. We are still at variance upon the etiology, the pathology, and, above all, upon the procedure most likely to effect a cure of arthritic ailments. The trusted remedy of to-day is discarded for a newer favourite on the morrow, and we seek in vain for some specific, some all-powerful agent, that will act like sulphur on the skin, or mercury in enthetic disease.

The remedy at present in the ascendant is a certain Galenical preparation, which, at its introduction in this country, was announced to be as sure a specific for acute rheumatism as quinine for ague, or ipecacuanha for dysentery, as well as a certain preventative of cardiac complications; and although time and sad experience have rather rudely dispelled these illusions, and none of its specious attributes remain but its sedative influence over pain and, pyrexia, the majority of the profession, if we may judge by the laudatory contributions with

which the medical journals are inundated, seem content to rely upon its empirical aid, in the absence of any remedy founded on pathological principles.

Thus, in a recent debate in the Medical Society on the use of salicylates in the treatment of acute rheumatism, while each speaker vied with his fellows in parading formidable columns of statistics to demonstrate the power of that drug over the subjective symptoms of the disease, it was also freely admitted, "that it seems to have no power of controlling or arresting the cardiac complications of acute rheumatism, that it leaves the patients exhausted and feeble, so that they slowly recover, and does not shorten their stay in hospital" (Dr. Fagge); "That both pericarditis and endocarditis may develop themselves when under its influence, and that the toxic effects are serious in proportion to the largeness of the dose" (Dr. Sidney Coupland); "That, when heart-complications occur, the treatment by salicylate of soda occasionally increases the patient's danger, and has often a very depressing action on the heart, which might be serious in the case of a heart already softened and enfeebled by inflammatory change. Hyperpyrexia is not at all benefited by its use" (Dr. MacLagan). The frequency of relapse following its administration were also generally admitted.

Formerly, the great aim of the physician was the prevention of inflammation of the heart, and its lining and investing membranes. Now-a-days, the development of cardiac disease appears to be regarded as a secondary consideration; and if, by soothing agencies, we succeed in relieving articular troubles, we pose as if we had really cured the ailment, of which they are only the peripheral developments.

For the discarded alkalies, whose efficacy in preventing the onset of endocardial and pericardial inflammation was fully established by the statistical tables published by Dr. Dickinson in 1869, there was much more justification, on clinical and scientific grounds; it is now firmly established that they act directly as sedatives upon the muscular tissue of the heart, reducing powerfully both its excitability and contractility. If authority, in this age of scientific scepticism, were of any weight, I might be permitted to adduce that of Dr. Graves, who taught in his clinic and in his published lectures that, "in the treatment of rheumatic fever, we cannot hope to cure the fever directly by means which merely tend to get rid of the articular inflammation. As arthritis may exist without rheumatism, so rheumatism may exist without arthritis" (*Clinical Lectures*, vol. ii, pp. 159-60). And Sieveking, in his classical disquisition on pain, appears to condemn, by anticipation, the practices of to-day. He ridicules the idea "That there was always an uniform relation between the severity of pain and the intensity and danger of disease, while one might be disposed to assert," he adds, "that the danger of a malady is in the inverse ratio of the pain with which it is associated. The reason why, even now, so many *post mortem* records reveal deep-seated mischief, not observed during life, is because pain fails to guide—nay, because it so often misleads us—negatively and positively, and we do not possess adequate physical means of exploration to detect hidden processes" (BRITISH MEDICAL JOURNAL, February 9th, 1867).

As for pyrexia, no one will venture to assert that in fever the danger is proportionate to the elevation of temperature; enteric fever is a patent example of the fact, that there may frequently be evidence of high temperature without any danger to life, and, as often, loss of life in cases which do not exhibit a high temperature in their whole course. My contention is, that the rapid stifling of pain and pyrexia by the salicylic method is not synonymous with the cure of rheumatitis; that such a result is likely to induce a false feeling of security while real danger is impending; and that abundant proof is not wanting to show that, just as the victory over the leading symptoms has been achieved, the patient may succumb to the disease.

My object, however, is not so much to call attention to the epidemic of salicism, from which apparently the medical mind is at present suffering, as to propose to the readers of the BRITISH MEDICAL JOURNAL a new and effective remedy for acute rheumatism, which, in my practice and in that of other professional friends, has afforded results as yet unequalled in the treatment of that disease.

In a paper on "The Pathology and Treatment of Acute Rheumatism," which appeared in the *Dublin Journal of Medical Science*, October 1881, I gave the particulars of thirteen consecutive cases of acute and subacute rheumatism, in my own and in the hospital and private practice of Dr. J. Walton Browne, surgeon to the Royal Hospital, Belfast, in which, by means of a topical remedy, and practically without administering a single dose of medicine, the cure was, in almost every instance, at once simple, rapid, and complete. In that treatise, I ventured to predict that, should the pathology of gout be found to be identical with rheumatism, it might be discovered that, owning a common origin, they might also prove amenable to similar cure. A

typical case of gout having soon after occurred, in which the remedy for rheumatism produced a like happy result, I propose to relate the particulars of that case and one of acute rheumatism; from which we may gather the converse of the proposition—viz., that both having proved amenable to similar treatment, we may fairly infer a common origin, *pro tanto*.

CASE I. Acute Rheumatism.—On October 24th, 1879, I visited subconstable H., aged 30, married. He had a rigor on the 21st, followed by pain in the left knee and thigh, which were now red and swollen. On the 25th, pain had extended to the right knee, both ankles, and shoulders. On the 26th, the left elbow was also affected; perspiration was acid and profuse; his urine scanty, and loaded with urates. On the 27th, his state was unchanged. I ordered an opiate at bedtime. He had been previously laid between blankets, and his joints enveloped in cotton-wool. On the 28th, he was no better; he had not slept for a week. At 1 P.M. his temperature was 102°; pulse 108. No cardiac affection was perceptible. I then applied a blister, four inches by three, over the region of the heart, to be replaced with cotton-wool at the end of eight hours. On the 29th, I found the patient completely relieved. His countenance was cheerful; his tongue clean; thirst diminished; perspiration gone; urine copious and clear; temperature 98°; pulse 90. He told me that he began to feel relief at 6 P.M., just five hours after the application of the blister; that soon afterwards he fell asleep for the first time for many days; and that, having had occasion to rise in the night, he walked unaided across the floor, and only remembered his pains after getting into bed. And thus, although on the previous day paralysed in every joint, he was now able without pain to flex and extend them all, and to sit up in bed with ease. On looking at the joints, every trace of redness had departed, and the swelling was very much diminished, and they could be grasped firmly without pain. On the 29th and 30th, he was still improving. Pulse 90; temperature normal. The swelling and pain were absolutely gone from every joint. On November 1st, the pulse was 84; temperature normal. Convalescence was complete, and my visits terminated. A week later he walked to my house, a distance of half a mile, and he soon afterwards returned to duty.

CASE II. Gout.—John W. consulted me on June 15th, 1881, for a severe attack of tonsillitis. I found him next day confined to bed by a well developed fit of gout, to which he and several members of his family were very subject; having himself suffered regularly from its visitation every spring and autumn for the previous six years. His previous illness happened in Cork, continuing for six months, during four of which he was treated by a very experienced Cork practitioner, and the remaining two months by an eminent physician on the staff of the London Hospital. When removed to London, he was crippled and deformed in every joint; his fingers, hands, arms, legs, and feet, were curved and flexed, and he could not move without the aid of a crutch. He was, however, ultimately cured. On examination, I found his right great toe and knee swollen and painful, his heart-action excessively weak, pulse very feeble, 100; temperature 101.4°; skin hot and dry, countenance flushed and anxious, urine clear and plentiful. He had passed a sleepless night, and, to relieve pain, he had plunged his right foot into a pail of cold water, where it remained all the night preceding. I ordered him an ounce of whiskey in a tea-cupful of milk every four hours, wadding to the affected joints, and a blister 6 by 3 inches to the region of the heart for eight hours; no medicine. On the 17th, he was greatly relieved, his countenance was cheerful and pale, his skin cool and perspiring freely, urine unchanged. He had slept for an hour and half; pulse 91, still weak; temperature, 100.6°. The heart's action was feeble, the second sound imperceptible. The pain, swelling, and redness were almost gone from the great toe, part of the left foot and little toe were red and swollen; he had no pain. On the 18th, the right great toe was absolutely well; he had slept well. The heart-sounds were unchanged. The whiskey and light nourishment were continued. On the 19th, temperature was normal; pulse 90, feeble; both feet were quite well; the left knee was swollen and painful, the right slightly so. As he had had some weak fits after slight exertion, approaching to fainting, I asked Dr. Seaton Reid to see him in consultation. He recognised the gravity of the case, the absence of the second sound, and advised an increase of the stimulant and another blister to the heart, alkaline lotion to the knees, and ammonia and other diffusible stimulants internally. The lotion was used, but the medicine, through neglect, not was taken. On the 20th, patient experienced great relief from the second blister. He had slept well; the joints were much improved; pulse 90; temperature 98°. The heart was acting more vigorously; the throat was almost well. On the 21st, he was able to sit up and walk about, the heart-sounds were improving, the second sound had returned. The knee was almost quite free from swelling and pain. On the 22nd, he

began to walk on crutches; I found him in the garden. The stimulants were gradually reduced. On the 23rd, he had dispensed with supports; all pain and swelling having disappeared; his appetite and strength were returning. He betook himself to his ordinary avocation, and my visits ceased. He informed me that he had never experienced so violent an attack, and never recovered so quickly or completely; and his delight was great at being spared the infliction of a single dose of medicine. Five days sufficed for the cure.

These cases, irrespective of their individual importance, afford subject matter for contrast and comparison. No. 1 is the prototype of thirteen published and many unpublished cases. No. 2 represents itself alone; for so far they agree in the simplicity, rapidity, and permanency of their cure, in its being effected by an external remedy, without any internal medication. No. 1 was free from perceptible cardiac ailment; No. 2 suffered from protracted weakness and rhythmical deficiency of beat; the fall of temperature in the first case was accompanied by immediate cessation of profuse perspiration, and by normal excretion of urine as to quantity and quality; while in the second case, with the fall of temperature, the hot dry skin became cool and moist with plentiful perspiration, and urine of normal quantity. The blister in the first case appeared to have restored the inhibitory power of the heat-centres, and to have reduced to their normal condition the powers of the centres which regulate heat-dissipation; while in the second case, the blister seemed to equalise the heat depression with that of production; the superficial vaso-motor and other nerves causing relaxation of the smaller vessels and secretion of sweat and consequent reduction of temperature. As to the pathology of rheumatism, my conviction is, that it is essentially a specific form of endocarditis of neuropathic origin, generally allied with myocarditis; that in its unchecked progress, it speedily modifies the composition of blood, the innervation and calorification of the body; in its ordinary course giving rise to lesions in the textures, the joints, pericardium, pleura, the neurilemma, the meninges of the brain; in fine, in any organ accessible to nervous or arterial influence. Pathologists such as Pfeuffer and Hueter, quoted by Senator in Ziemssen's *Cyclopaedia*, vol. xxi, also look upon cardiac disease as the primary change, and articular troubles as the consequence. Hueter states "that endocarditis may be present without giving rise to either subjective or objective symptoms; that it may very well precede the inflammation of the joints, even although not recognised till afterwards"; and says also that "its presence must be assumed in those cases which appear to run their course without any cardiac complication whatever". According to Watson, Hope, Graves, Fuller, and others, endocardial and exocardial inflammation may occur as the first, and be for some time the only, local symptom of the disease; and the cardiac complication sometimes precedes, even by several days, the access of articular redness and swelling (Aitken, vol. i, p. 805). Bouil-land taught that one-half, other writers one-third, or a less proportion, of rheumatic patients were always affected with endocarditis. This difference of opinion arose mainly from some of those observers mistaking the results of inflammation for the signs and symptoms, and consequently only recognising those as true cases of endocarditis in which they could detect by auscultation the changes worked by inflammation in the valves or lining membrane. This faulty procedure may, perhaps, explain the cause of the discrepancy shown in the returns of endocardial troubles exhibited at the meeting of the Medical Society of London referred to. Such returns, averaging from 3 to 76 per cent., can afford no guide on the subject of the incidence of heart-affections, and would suggest, in the majority, an absence of diligence in diagnostic work.

It is now generally admitted that the exciting cause of acute rheumatism, as of pleuritis or pneumonia, is a chill; and that the effect is produced through the medium of the nervous system; and that, although the integument alone may be directly chilled, the deeply seated internal organs also suffer. The immediate effect of cold upon the nerves of the surface is to lower their functional activity, and to increase the action of the nerves of the internal organ in relation with that part; endocarditis thus becoming the first step in the development of acute rheumatism after exposure to cold. If it be physiologically true that, when two parts of the same body are nervously in sympathy with each other, if we produce a powerful action in the nerves of one, we may withdraw vital energy from the nerves of the other, then it follows that, when a derivative in the form of a blister is applied in the nearest vicinity to the endocardial lining when in an inflamed state, it is but carrying into effect the principle that counterirritation is the most effective plan available to alter the excited condition of nerve-centres, and so to influence motor, sensory, and trophic nerves. Further, if experience tell me that counterirritation over the heart is a potent remedy for the cure of acute rheumatism in all its phases, this fact will

surely throw light on the nature of that disease. According to Dr. Peter Latham, "the treatment of diseases is in fact a part of their pathology. What they need and what they can bear, the kind and strength of the remedy, and the changes which follow its application, are among the surest tests of their nature and tendency." And Callen, in the preface to his *Nosology*, page 16, says that "remedies cure diseases only in so far as they remove their proximate causes". When, therefore, a blister over the region of the heart cures endocarditis and its articular complications, it would surely not be unsafe to infer that the proximate cause is located in the heart itself.

If, then, it can be satisfactorily established that acute rheumatism may be cured by a topical remedy alone, what becomes of all the theories based on the idea of its zymotic, its constitutional, or auto-genetic origin, and the sundry modes of treatment, and the antidotal remedies devised for the removal of the hypothetical condition of the vital fluid—eliminative, antacid, or otherwise? That it may be done—that it has been done in a number of cases—I have satisfied myself, and, knowing how prone human nature is to self-deception, I have guarded against the personal element by inviting the presence and co-operation of several medical men of the highest ability and scientific acquirements, as witnesses.

My chief desire is, that my simple plan for the cure of rheumatism shall be thoroughly tested by the profession at large; of its efficacy, my own experience, and that of a number of my professional brethren, assures me. I cannot expect, however, that every one who may be equally convinced by personal trial and experience, shall also accept my explanation of its *rationale*. The pathology and physiology of the nervous system are not yet established on sure grounds; its supposed laws are subject to many contradictions, which only a more extensive knowledge of its principles, and their application, can elucidate. Nor would I wish to appear as proclaiming its efficacy in every case. I am satisfied, indeed, that endocarditis will still claim a place in the sad category of fatal diseases; but I also feel that, in cases possible of cure, the abortive plan proposed must claim precedence as the most rapid, safe, and permanent; from its very nature, the most potent to anticipate or remedy functional or organic disorder in the heart and its appendages.

One other important result is likely to flow from its general adoption, viz., the reduction to very moderate dimensions of that class of applicants to whom the physician has so often reluctantly to refuse the benefits of life assurance, on account of the existence of permanent cardiac injury, caused by undetected lesion in cases of ordinary acute rheumatism.

MEDICAL NOTES OF TRAVELS IN EGYPT, THE SOUDAN, AND THE KUNAMA OR BASÉ COUNTRY: 1881 AND 1882.

By JOSIAH WILLIAMS, L.R.C.P.Ed., Sheffield.

IN November 1881, I accompanied an expedition to the above-named places. I have recently returned, and, in view of passing events, I trust some notes, detailing some of my professional experiences, etc., will not be unacceptable to the readers of the *BRITISH MEDICAL JOURNAL*; and those who purpose making a similar journey may, perchance, pick out here and there an useful hint.

Having sent out my heavy baggage and medicine-chest by P. and O. steamer to Suez, I started off in the early part of November, and rambled through Italy, arriving at Brindisi on the 21st, in time for the P. and O. steamer *Tanjore*, bound for Alexandria, which we reached after a pleasant voyage of a little over three days. Alas! what was then a thriving handsome town, is now a heap of smouldering ruins. A few hours by rail soon took us to Cairo, so full of old world history, dirty Arabs, and flies. *En route*, everyone is struck with astonishment at the number of Arabs suffering from ophthalmia, and the loss of one or both eyes is very common indeed. Even children manifest the greatest indifference to these flies, and do not take the least trouble to brush away the swarm that settles all over their eyelids.

Various reasons are ascribed to the extreme prevalence of Egyptian or purulent ophthalmia—such as the glare of the sun, the fine impalpable dust and sand, etc. This may have something to do with it; but I think there can be little doubt that the chief reason is, that these people live in direct violation of all sanitary laws, and no effort whatever seems to be made to check or get rid of the disease. They live in mud huts, admitting no light nor air, except through the door-way; the earthen floor is sodden with filth and half-covered by pools of water; and even the calls of nature (in the case of children) are obeyed in the dwelling. Several people of all ages and both sexes, who seldom wash, and live