refers only to colonies of bacteria, not to moulds. As far as my experiments go, there appear to be rather more moulds in open air than in sewer air.

The offensive odour which may proceed from a drain is no indication of the number of organisms in its air. In fact, I have found that when the odour was most offensive, I met with exceedingly few organisms. (See Experiments VII, XII, XIV.)

This reminds one of the exceedingly offensive smells met with in the towns of Belgium and Holland, which proceed from the canals so numerous there, and also from the ornamental ponds about the mansion-houses in the vicinity of those towns. Still, this state of matters does not seem to be detrimental to health.

As to the nature of the organisms which I have been able to obtain from open air and sewer air, there is a marked preponderance of bacilli in sewer air over that in open air; micrococci being the most common form of organism met with in open air. This will be seen on reference to the experiments.

The deductions which I have made from my experiments can only be regarded as general indications of what probably does exist in this new and most interesting department of bacteriology.

We must hope for a further development of the subject by more extended experiments, both in times of health and disease, and an accurate observation of the organisms which may appear at those times. My experiments were made at a time when no epidemic disease was prevalent.

I am afraid, gentlemen, by the length of my address, I may have wearied some of you who are not so interested as myself in this subject; but, if I have awakened the enthusiasm of any of you to come to the front in this work, the object of my address has been gained.

One of the advantages which the practice of our profession has over any other is the varied interest which it affords us; but, gentlemen, all of us who have practised for twenty-five years know that it is a very trying profession, both to the mind and body; to a conscientious man the responsibility is terrible. The uncertainty of our time and the continual interruptions to which we are subject are very apt to get our minds into a fragmentary condition. We want something beyond amusement and sport to get us out of the routine of our work; and, above all, we require to have our powers of accurate observation trained. No study will accomplish these objects more thoroughly than that of bacteriology. Sir James Paget, in his admirable address at Owens College last year, stated that the common proverb, "seeing is believing," is very fallacious, and that many who, when they say, "I believe what I see," might just as fairly say, "I see what I believe." There can be no doubt as to the truth of this statement. The greatest discoveries which have been made are the result of accurate observation; and doubtless we all have, staring us full in the face, facts which, if we could judge of them aright, would equal in brilliancy any discovery yet made. Although a great deal is supposed to have been accomplished in the science of bacteriology, I may say that comparatively little has really yet been done. The pathway is only being cleared to a science that will continue to revolutionise every branch of our profession.

In conclusion, gentlemen, I have to record my best thanks to Mrs. Robertson for the beautiful sketches which she has made of my microscopic specimens; also to Dr. Percy Frankland for the valuable aid he has offered me in my study of the subject. I am also much indebted to my partner, Dr. Thomson, for the valuable assistance he has afforded me in my laboratory work.

NOTES ON MULTIPLE PERIPHERAL NEURITIS AND ITS OCCURRENCE IN BRASSWORKERS.¹

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In a paper upon Alcoholic Paralysis contained in the June number of the *International Medical Journal* of this year I expressed the opinion that this disease is of more common occurrence than is generally supposed, and that it is often unrecognised. A few days after despatching my paper I met with a rapid succession of cases of multiple neuritis, at one time having four women suffering from alcoholic paralysis in the Queen's Hospital, and seeing several in consultation outside. The symptoms were very much the same in all of the cases when the disease was advanced, and

the diagnosis very easy. Some of the symptoms, however, were very uncommon and worthy of notice. In the case of a gentleman who had been a medical student, and who had been addicted to drink for many years, I found paralysis of both sixth nerves, with nystagmus on attempting to direct the eyes to either side. There was absolutely no affection of sensation or motion elsewhere, and the knee-jerks were normal. There was, however, great loss of memory, but not the characteristic form of delusion so common in chronic alcoholism—for example, of having been out walking.

The fact that paralysis of the ocular nerves and optic neuritis may exist without any affection of the limbs in chronic alcoholism is of great interest, and such cases may very readily be wrongly diagnosed. In one case of alcoholic paralysis that recently came under my observation the husband of the patient was told that she was suffering from a tumour of the brain, and that she could not live. The mistake was made from a want of knowledge of the fact that optic neuritis and palsy of ocular muscles may result from chronic intemperance. At the present time I have a man under my care in the workhouse infirmary who was admitted several months ago suffering from ophthalmoplegia externa and double optic neuritis due to chronic alcoholism. The paralysis has completely disappeared, but the man still does not know where he is, and, if asked if he has been out, will enumerate the different public-houses he has visited that morning, and state the several varieties of drink that he has had at each.

A point worthy of notice in the case of women suffering from alcoholic paralysis is the way in which the friends and even the medical attendant are often completely deceived as to the drinking habits of the patient. After making the diagnosis of alcoholic paralysis I have been told by the medical attendant that it was impossible; that he had known the patient for years, and that he was sure she did not drink; yet it has invariably turned out that the patient had been drinking excessively for some years. In one case the husband made inquiries, and found that his household bills had not been paid, and that he was heavily in debt. In bad cases, where the mind is much affected, we find that while the patient is helpless we can deprive her of all alcohol, but as soon as she can get about she again obtains it and ultimately dies. In two cases of multiple neuritis occurring in women, where there were no mental symptoms and no morning sickness or other evidence of alcoholism, I failed to elicit the slightest history of alcoholic excess; and I was obliged, though with great hesitation, to conclude that they were instances of idiopathic multiple neuritis, or that they were possibly due to exposure.

It is remarkable that in alcoholic paralysis, though mental symptoms are so commonly present, yet there may be severe neuritis without any affection of the mind. I recently saw a man who had been a traveller for a local brewery; he had been drinking for years, and had suffered several times from delirium tremens. I found him suffering from dropped feet and hands, with oedema and anaesthesia of the legs; and found also that he was suffering from extensive phthisis, yet his mind was apparently intact and his memory for recent events very good.

The presence of marked mental disturbance is always to be taken to indicate a very slow recovery. It must be remembered that alcohol causes a general chronic meningitis, affecting the convexity of the brain, which may account for the very tardy recovery of mental power in cases of alcoholic dementia. Inebriates are very liable to death from syncope; in two of my cases death occurred suddenly, and in one a slower process of heart failure was the cause of death, the pulse becoming gradually more and more infrequent and feeble.

I lately showed at a medical meeting a boy, aged 14, who was under my care at the Queen's Hospital, and who presented the symptoms of multiple neuritis in its most typical form. He had worked on lead for eighteen months, and, though there was no blue line on the gums, yet there was little doubt that lead-poisoning was the cause of the illness. The boy recovered under the influence of iodide of potassium, massage, and taradisation.

It is well known that lesions of the nervous system may be produced by lead-poisoning, without the production of the blue line in the gums. Anæmia is, however, a constant symptom in lead-poisoning. I was recently called in to see a gentleman who had had two most severe epileptiform attacks, as evidenced by ecchymosis of each conjunctiva. On inquiry, I found that he was partner in a firm of enamel manufacturers, and that he frequently passed through the workshops, and that the office was directly contiguous to the shops. I found also that he was anæmic, but there was no trace of any blue line on the gums, nor had there been

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colic or constipation. I expressed a very decided opinion to the effect that lead-poisoning was the cause of the fits, and strongly recommended him to withdraw altogether from the works. I heard some months after that he had followed my advice, and had been perfectly well since.

The pathology of diphtheritic paralysis is perhaps not definitely settled, though peripheral neuritis has been found *post mortem*; but it is certain that, clinically, the affection exactly resembles multiple neuritis from alcoholic or lead poisoning. I have recently had several cases of diphtheritic paralysis in the Queen's Hospital. In all of these, there was dropping of the feet and hands, with abolition of the knee-jerk. Sensory alterations and qualitative electrical changes were also present in each—in fact, the similarity of all these cases with those of alcoholic neuritis was remarked by the students who went round with me. There are no symptoms occurring in diphtheritic paralysis which are not also occasionally met with in alcoholic paralysis. Of course, the mind is not affected in the former affection, nor is it in neuritis from lead-poisoning. The occurrence of anaesthesia and paralysis of the soft palate and fauces, or paralysis of accommodation, is diagnostic of the diphtheritic nature of the affection.

Old people seem to be liable to degenerative changes in the peripheral nerves, perhaps in some cases due to gout, but in others to senile degeneration. I have seen recently two gentlemen of advanced years suffering from the following symptoms. They complained of shooting pains down one leg, affecting chiefly the cutaneous nerves on the front of the thigh, and of weakness of the leg. The knee-jerk was lost on the affected side, but there were no other symptoms. Antipyrin relieved the pain in both cases; but, when I last saw them, the knee-jerk was still absent. These symptoms occurring in men in the prime of life would cause great anxiety, and would probably be regarded as indications of commencing locomotor ataxia. In old people, these symptoms are not of such serious import, changes taking place more slowly in them, and such symptoms probably depend upon neuritis of the nerves of the lumbar plexus. Of course, a careful examination should be made to exclude malignant growths.

I have met with four cases of ataxia in brassworkers; in one case the knee-jerk was lost on both sides, and the case exactly resembled one of locomotor ataxia, except that there were no pupil changes. The ataxia is probably due to a peripheral neuritis, for at the present time I have two cases of multiple neuritis in brassworkers. No cause for the neuritis, except their occupation, can be found, and copper is known to affect the peripheral nerves.

CASE I.—The patient, a man, aged 39, has been a brassworker for twenty years. He has been a steady man, and not addicted to drink. About Easter last he began to suffer from pains in his legs, and especially from aching pains in his calves. The pains in the lower extremities were later on followed by slighter pains in the fingers, and still later by weakness in the legs and hands, so that in a few weeks he was unable to walk. There is a well-marked green line on the teeth, the lower half of the body of each tooth being stained of a deep green colour, the typical staining of brassworkers. He complains of his fingers feeling hot, and there is slight tactile anaesthesia in the hands and feet, thermal and painful sensations being normally perceived. There is marked loss of muscular sense in the legs. He suffers from double wrist-drop and foot-drop. The grasp is very feeble, and the fingers slightly flexed at all joints, there being inability to straighten them, or to extend the wrists. The feet are dropped and flaccid; the knee-jerk is lost on both sides. The calf muscles are tender when grasped, but there is not the extreme tenderness so often met with in alcoholic paralysis. There is emaciation of the arms and legs, but no oedema or change in the nails. The bladder and rectum are unaffected, and there is no bed sore. There have been no mental symptoms, no dyspepsia or morning sickness, and he has not had syphilis, rheumatism, or gout. He is not phthisical or diabetic, nor has he been much exposed to cold, nor worked in lead. He has considerably improved since his admission into the Queen's Hospital under the influence of iodide of potassium and massage. On admission, he was quite unable to stand, and now he can walk about the ward, though his gait is of the high action type. The electrical reactions in this case were normal, except that the faradic irritability was a little diminished.

CASE II.—W. G., a man, aged 31, a brassfinisher, was admitted into the Birmingham Workhouse Infirmary in June last. On admission, it was found that his gait was ataxic, and that the knee-jerk was lost on both sides. The grasp was very feeble, and he could not fully extend the fingers. The feet were dropped.

He complained of numbness in the fingers and toes, and there was some actual anaesthesia in the inner borders of the feet. He had a well-marked green line on the teeth, and had often suffered from attacks of profuse sweating. The pupils responded normally to light and accommodation. There was considerable emaciation of the thighs, legs, and forearms, but no qualitative electrical changes, except that faradic irritability was somewhat diminished. He had been ailing eighteen months before his admission, and had been unable to walk for twelve months. He has greatly improved under the use of massage and the administration of iodide of potassium internally, being now able to walk well without ataxia.

Unless the occurrence of multiple neuritis in brassworkers is borne in mind, cases in which the knee-jerk is lost and ataxia present are at once diagnosed as cases of locomotor ataxia. In brassworkers' ataxia I have not found any affection of the pupils, and relief has always been obtained by giving iodide of potassium. I have not been able to keep any patient long enough under treatment to enable me to say that the knee-jerk is recovered, and that recovery may be complete. The fact that cases occur in which the hands and feet are dropped seems to indicate that the ataxia is an early symptom which may later on be followed by paralysis, or that it is a distinct variety, just as alcoholic ataxia may precede alcoholic paralysis or may exist by itself.

CLINICAL MEMORANDA.

A NOVEL HAIR DISEASE: (?) ACNE MENTAGRA.

R. B., aged 35, has been ten years under observation, remaining unshaven throughout, though previously shaven. At intervals of a few months, he becomes suddenly aware of a tingling spot somewhere on the chin, where he always then finds a small tubercle, from which he extracts a number of diseased hairs, thus obtaining immediate relief. These hairs differ from their neighbours in many important points; they are extracted with very great ease, and give relief instead of pain in the process; they are often surrounded by a glutinous cylinder of rootsheath, and occasionally by a speck of pus outside this; they often have one or two white joint-like spots in their course, at which they very easily break off; the ends are always split up longitudinally into a brush of

from two to six segments, which may extend only down to a joint or nearly to the root; the unsplit part is always dull and coarse, and very easily splits artificially. The relief obtained by extraction is evidently greater in those hairs which are the more diseased, and the patient is greatly relieved by completely denuding a patch varying in size from a split pea to a threepenny piece, which he can accomplish himself solely by the aid of touch. During the next few days the tubercle quite subsides, and for several months recurrence at that particular spot is most certainly ward off, though others in the neighbourhood or at a distance