

INTRODUCTION TO A DISCUSSION ON THE EFFECTS OF ALCOHOL.

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THE subject which I now bring before your consideration is as old as medicine itself and yet is ever new. Its bearings upon the welfare of humanity, as well as its relations to therapeutics, must make it of continued and never-ending interest. The subject of the evil effects of alcohol as formulated by a section of society has continually been before the Association, and for my own part, without having joined its ranks, I found it necessary, at an early period of my career, to withstand the free use of alcohol in medicine.

On this occasion it has been thought wise, without attaching ourselves to any dogmatic section, to see how medical opinion stands at the present time in reference to the use of alcohol, both in health and in disease, taking as our guide simple observation and experience. We may thus enter upon the discussion with free and unbiassed minds, for we see no reason why opinions should not be formed as disinterested and honest as on the use of any other article of diet or medicine. It might perhaps have been thought wiser to have taken up only a portion of the subject and discussed alcohol in its various forms, either as an article of diet or as a therapeutic agent; but such a separation of the question is practically impossible, seeing that its very recommendation by many medical men as a beverage is because they regard the individual requirements as a departure from health. Diet and medicine are thus inextricably mixed. This makes the subject a very wide one, seeing that the two parts cannot be dissociated. I may as well say at the outset that I have nothing very novel to advance; my position here is to ask you to offer your opinion and give your experience on a subject which must be familiar to you all and has its important bearings on society and in the treatment of disease. Every one is competent to make a statement and thus I hope we shall gauge the sense of the Association at the present day.

It would have been a far easier task for me to have taken up the question on some fixed basis even from opposite points of view, and then defended the security of my position. I could have taken on the one hand the position of the supreme value of alcoholic drinks to mankind, or I could have taken the position of their extreme harmfulness. It would have been easy to show the enormous amount of evil which alcohol causes in the shape of poverty, crime, disease and miseries of all kinds, and from this conclude that it were better if such a substance were swept off the face of the earth, and then insist that philanthropists could have no higher aim than to join in a crusade against this poison (as some designate it) and try and construct a regenerated world. On the other hand it would be equally easy to frame the proposition that alcohol in some shape is a necessary part of the sustenance of a large part of the human race, that the fermented juice of the grape has been used from time immemorial amongst the most cultivated nations, and at the present moment amongst those especially who boast of the highest civilisation; and further, that the peasantry of wine-growing countries are the most temperate of the European people. It were a simple proposition to make and not easily refuted, that whatever food mankind partake of must be the right. Amongst the lower animals we never for a moment argue as to the right or wrong of their food, but we assume that they take what is best suited for them, and even amongst human beings we continually compare the food of those who live in northern climates with that of the inhabi-

tants of the sunny south. We do not call these differences errors in diet, but assume the correctness of their instincts. In the same way it may be argued that other nations have discovered the food which is most appropriate for them. If the Turk or Hindoo flourishes on a particular kind of food we do not quarrel with him, but believe it is best suited for him, and in the same way the Englishman, Frenchman, or Scotchman has found the kind of food best suitable to his condition. If I chose to take this position I should have little more to do than discuss the evil effects of alcohol when taken in excess, and what is its value in disease. I would rather, however, make no assumption on either side, but approach the subject with an open mind and see as fairly as I can put it how the alcoholic question now stands.

I shall briefly go over the old ground, so as to remind my hearers of some of the more usually-discussed questions relating to the subject. First of all, a few words on the physiological action of alcohol. Alcohol appears to act directly on the nerves of the mouth and so at once on the heart and circulation. Physiologists would probably say that it has an inhibitory action on the vagus, and so increases the vigour of the heart and vessels. Brunton tells us that the act alone of sipping any fluid has a somewhat similar effect; it rouses the heart to more vigorous action than if the fluid were simply swallowed. I have always known as a fact that there must be an immediate effect on the nerves when one has seen a mother place one or two drops of brandy on a lump of sugar and, putting this in the mouth, immediately restore her fainting child.

When taken in large quantities alcohol is absorbed and then acts first of all and almost immediately as a stimulant. This is seen by the flushing of the face, more rapid action of the heart and increased mental vigour, giving a vivacity to the features and to the conversation. If these effects are seen on the surface of the body, probably similar ones take place in the interior, as the brain and other organs. It is therefore presumed that alcohol may promote an increased flow of gastric juice. In still larger quantities alcohol is absorbed and ceases to have a stimulating effect. It then produces marked lowering of all the functions of the body, its more immediate effects being seen on the nervous centres and digestive organs. This is best observed when it produces anæsthesia and loss of motor power; the latter sometimes ending in absolute paralysis. The anæsthetic effects of alcohol are well known, as for instance in the case of a drunken man in a quarrel who is quite insensible to the blows or other injuries he is receiving, or when a severe neuralgia or toothache is removed by a glass of brandy or intense gastralgia is immediately relieved by a teaspoonful of the same remedy. If we assume that the most powerful agent in wine is alcohol, then its power of benumbing the nerves of sense has long been known, for we read in a very old record that it was the custom to set forth good wine at the beginning of the feast, and when men had well drunk, that which was worse, that is, when their sense of taste had been impaired—and which could have been due to no other cause than I know than the imbibition of alcohol. This sedative or benumbing effect of alcohol is one of its marked properties, and is the reason no doubt why it is so largely taken by the poorer classes and is one of the chief reasons for its administration by members of our profession. When I speak of wine as alcohol I am aware that some of its properties are due to other ingredients, as ether and many other subtle essences. This is especially so with champagne.

As time does not allow me to make the distinction, I must speak of alcoholic drinks as a whole, assuming that their great characteristics as affecting the human body are due to alcohol. This is more truly the case in England, where the stronger and fortified wines are drunk, but I by no means consider this statement as applicable to many countries where much lighter wines are consumed. I feel, indeed, that this constitutes a markedly weak part of my communication—the confounding of wines and spirits.

The great fact to remember about alcohol is its lowering the function of the nervous system, by which it gives repose to the body and a quietus to the mind, or as some say, the conscience. It is to produce these results that it is taken by the multitude. These medical men, who, according to preconceived or ancient notions have styled alcohol a stimu-

lant, have really been watching its sedative effects, as, for example, when a patient with typhoid fever is benefited by an ounce of brandy, it is by its lowering the temperature and reducing the pulse. Thinking that this action of alcohol was not sufficiently recognised under the false name stimulant, I wrote some years ago an article in a public journal to demonstrate it. I showed, for example, that if we go into a house when the whole family are grieving over the loss of one of their members, and we find they had all been imbibing spirituous fluids, the object is to drown their troubles in the bowl. It would be absurd for them to have taken a stimulant to excite greater manifestations of grief. The reason is not far to seek why a miserable wretch should spend his last penny on a glass of gin. He sits in his garret gazing at the naked walls, his weeping wife and starving shivering children around him. He would, were he able to, put another picture in its place representing comfort and happiness, but he has not the strength of mind to set about making the change. He swallows down a glassful of the anæsthetic liquor; a dissolving view immediately takes place, and all is changed. All is now *couleur de rose*, although he himself is a little stupid. I daresay many of my hearers have read an article by the well-known Russian author Tolstoi, on the evils of wine and tobacco as the great causes of crime and disease. Several distinguished French writers have commented upon it, but possibly the response of mankind generally may be found in that of Dumas fils. He says: "The man drinks because it makes him cheerful and gives him forgetfulness or sleep. Who would not wish to forget the evil which he has done or the evil done to him by others? Those persons who have not had a happy life and do not reflect, find a glass of wine or a pipe a pleasant companion or trusty friend. They have had some disquietude or a troubled conscience, and the glass or the pipe put them into an agreeable frame of mind, and modifies the course and colour of their ideas, and may even give them imagination, eloquence, and courage. The priest may in vain promise eternity, or the philosopher in vain counsel imagination, but the little glass of *eau de vie* that burns, or the little packet of herb which ignites, procures for him at once, without his making the least effort, what the one promises and the other counsels him to do. It is not complete felicity nor absolute forgetfulness, but is the dulling of thought, the obscuration of consciousness—a mental lethargy—before which realities continue to move without ceasing. Animals are happy, for they do not think at all. This is the depth of his reasoning and the conclusion of his philosophy."

It may be remembered that in the *School for Scandal*, when sitting down to the gaming table, Charles Surface says, "Let me throw in a bottle of champagne and I never lose—at least I never feel my losses, which is exactly the same thing." The reason for drinking is obvious; in small quantities wine takes away the sensibility, and thus annihilates trouble; in larger quantities or with spirits it produces complete forgetfulness. Its quieting effects are said to constitute its great value at the dinner table. Both Matthew Arnold and Wendell Holmes upheld its advantages in this respect. Without it the guests would be quarrelling or keenly discussing religious or political subjects—with apologies to teetotalers—but wine comes in, rubs off the acerbities, and brings all down to the same level of good humour. For a time they are all in a happy frame of mind, and love one another. The writer of *Three Men in a Boat* said that a glass of wine often made him a better man than hearing a sermon.

It may be remembered that in *Julius Cæsar*, after Brutus and Cassius have been engaged in a violent altercation, Brutus exclaims, "Give me a bout of wine. In this I bury all unkindness, Cassius." The mention of Shakespeare naturally reminds me how this wonderful observer described the appearance of the drunkard, and had seen the effects of alcohol, for when the porter at the Castle of Macbeth says there are three things which drink especially provokes, and answers by saying, nose-painting, sleep, and urine, he was making a pathological demonstration on the blood vessels, the brain, and the kidneys. He goes on further to say how it paralyses the various functions, especially the sexual, by declaring that it "provokes the desire but takes away the performance; it makes him and it mars him. It gives him the lie and leaves him."

This, then, is the great central fact relating to alcohol—its direct and immediate effect on the nervous system, by diminishing and lowering the function. After a time it causes degeneration of the nerve centres, and produces a general paralysis; this is first observed by the trembling lips, shaky hand, and unsteady walk. The muscles themselves, too, undergo a change, and the heart often becomes fatty. The nerves become hardened and thickened from a neuritis, producing a painful paraplegia, more common in women than in men.

On the digestive organs the ill-effects of drink are only too well known—want of appetite, a loathing of food, and sickness. It has been stated that ulceration and thickening of the walls may result, but with this I have no acquaintance. Although the gastric disturbance is common enough, I am not familiar with any marked organic changes in the stomach which are evidently attributable to alcohol. In the same way as the stomach, so does the whole intestinal tract show evidence of irritation by the diarrhoea.

The chronic effects of alcohol have been so largely written upon, and not long ago were the subjects of discussion at the Pathological Society, that I need not dwell upon them here. It has been thought that alcohol has a special affinity for certain organs, as the brain and liver, and is given off from the system by the skin, kidneys, and lungs. It is true that alcohol will produce degeneration of the brain and cirrhosis of the liver; but, as regards the lungs and kidneys, the statement is questionable. Dickinson, who made a series of observations on the subject, denied that there was any connection between drinking and kidney disease, and as corroborative of this I might say that everyone is aware how, in the cirrhosis of the liver of drunkards, the kidneys preserve their function; if it were not for this fact we should never relieve the patient of his ascites by diuretics, which we are often able to do. As regards the lungs, there is a very prevalent opinion that drinkers are liable to chronic phthisis, some say to true tuberculosis.

One of the most important questions which have been discussed in reference to alcohol is the chemical change which it undergoes in the body. The failure of the physiologist to inform us of what becomes of alcohol after it enters the system has caused great diversity of opinion as to its mode of operation. It is a surprising fact that hundreds of thousands of gallons of spirit are annually poured down the human throat, and that no scientific man has yet informed us what positively becomes of it. If it were decomposed in the body there would be strong arguments, many think, to regard it as a food or aliment; but others maintain that this does not occur, it is taken up in the system and given off in its totality by the lungs, kidneys, or skin. The quantities, however, are so infinitesimal, that I think few regard this eliminative theory as proved.

The advocates of the two chemical theories correspond to those who maintain opposite opinions of the value of alcohol. If this be decomposed in the system, an argument exists in favour of its being alimentary, but what is a food? It is generally said to be a substance taken into the stomach, where it undergoes changes, and so is fitted to repair the losses of the organism, or at least to preserve it. Those who cannot see any resemblance to an ordinary diet in alcohol regard it as a food for the lungs, but this theory of Liebig is altogether wanting in proof. Todd thought it was changed into heat, and that it increased nerve power, strengthened the heart's action, and shielded the tissues from oxidation. We remain, therefore, still in ignorance of the behaviour of alcohol in the animal system. We must be left to the practical inquiry as to whether we find it to be in any sense alimentary. On the one hand, no one has yet seen a person live upon alcohol, but there seems to be an overwhelming amount of testimony coming within the reach of every medical man that persons taking large quantities of alcohol will preserve their weight with the minimum of food. This rather supports the theory that alcohol, like opium, tea, and some other substances, is not nutritive in itself, but prevents the wear and tear of the body. This, I believe, is the theory of Lionel Beale, which agrees with that of Todd, but it must be remembered that an opposite theory also exists that alcohol acts as a spur to the nervous system, and quickly wears it out. It is a curious fact, and of which there seems

good evidence, that although it impoverishes the system generally, it will, when taken in large quantities, produce fat. This is seen in a remarkable manner in atrophied children, as I shall presently mention. As regards the question of nourishment, I have only amongst my notes some old cases referred to by Anstie, E. Smith, Marcet, and others, at the time when I was interested in the subject. Amongst these I have the case of a man, aged 50, and long intemperate. He took a pint of brandy a day, no meat, and very little of anything else. A woman, aged 64, had been intemperate for thirty years; she took a pint of gin daily; she ate no food but an occasional biscuit. I think it is Anstie who gives the history of a man who for twenty years took a bottle of gin daily, with a piece of bread the size of his finger; he was thin but not emaciated.

Coming again to the practical question as to its utility when taken as an ordinary diet or as medicine, we must fall back on facts and experience. As before said, it is impossible to separate the question of diet and medicine, since so many persons take alcohol with their food and yet regard it as a medicine. I suppose no one would cavil at the statement that persons in good health do not require any alcoholic drinks; also that children are best brought up without them; but it becomes altogether another question whether as we go on in years and have to live under artificial conditions, many of us passing very anxious lives, the use of wine or a little alcohol may not be useful. In many cases where this is thought advisable it is owing to some deranged or sickly condition which does not belong to perfect health, and, therefore, although in such instances wine and spirits are spoken of as constituting part of the diet, they are really medicinal. The question, however, makes no difference as to the practical inquiry which daily comes from our patients, What shall we take to drink? For my own part, if I find a patient living without the use of any of these alcoholic drinks I should never without some urgent reason think of altering his course; or when I meet with a young man who says he takes a glass of beer twice daily, I generally advise him to continue it, for I regard him as a temperate man. I certainly do not do that which I find is a very common practice, to invariably stop a patient's beer, for I find if this be done he does not take water as a substitute, but has recourse to whisky if this be not suggested by the medical man himself.

I do not know much about the hurtful effects of beer in the lower orders, but I have observed the most temperate and long-lived people amongst them are those who say they take their glass of beer for dinner and supper. In the class of society to which we belong I find the beer drinker is generally a temperate man. They seem content with their beverage and have no craving for anything stronger. I do not put their lives before those of the congenial water drinker, but I do before the persons who have signed the pledge, because one is always a little doubtful about these gentlemen's or ladies' antecedents.

When I do recommend wine or a little spirits daily it is usually to quiet a perturbed nervous system. One example will suffice. An oldish lady had become very nervous, irritable and excitable, so that she could not fix her attention on anything. She was also sleepless, and had other symptoms which often precede an actual mental aberration or melancholia. Sedatives of all kinds had been given in vain, as their effect was only transitory. She had been very abstemious and of late had taken nothing in the way of what is popularly called stimulants. The mention of the word alarmed her, as she did not want, she said, her nervous system further excited, but rather quieted. I urged upon her the value of taking a glass or two of wine or a glass of grog at night, hoping it might have the desired effect. After much entreaty she acquiesced and took the wine and spirit with good result, her nervous system became soothed, she slept better, and soon regained her health. I attributed the result to the wine, just as I should have done to any medicine which I had ordered her. In this particular case I should have liked to have discriminated between the pure wine and the small amount of pure alcohol which she took. I believe the difference between them is considerable, and I believe the mistake we make in placing them together is due to the language of teetotallers, who speak of spirits, wine, and beer as differing only in their degrees of poisonous qualities. I think this is a

great error, for my own belief is that if a good wholesome national beverage of the malt liquor kind could be found a very large majority of persons would not take the stronger wines, much less spirits, and more good would ensue in the cause of temperance than by all the teetotal societies. But, as regards the value of wine as a medicine, one example amongst many may suffice. A lady who seldom drank anything but water was asked in my presence to take a glass of wine, and she answered "Not for the world." This of course made me believe she was a teetotaller. She declared she was not, but had so great a belief in port wine that she would not think of spoiling its effects unnecessarily. She said if she went home after a day's shopping in London with a violent headache a glass of port wine would immediately restore her; she therefore reserved so good a thing for special occasions. But, lately I was with a gentleman who had long been dyspeptic, and had been a prey to fears about his diet, complaining constantly of pain or disagreeable sensations about the stomach and bowels. He had left off all wines, which he was told not to touch. A very superior glass of port wine was put before him, and in a few minutes he exclaimed: "That has done it; I have not felt so well for months."

If I had given him a dose of physic out of a bottle I should have attributed the effects to that. That good wine cannot have the injurious effects which some attribute to it must be concluded from the longevity of some of our ancestors, who were great wine drinkers. Our President is acquainted with a gentleman, 87 years of age, who is said to have opened his bottle of port every day of his life. This probably is an exaggeration, but during the fifty years I have known him he has drunk several glasses of port wine daily. I believe, therefore, that using such a term as poison to a drink of this kind gives rise to the remark that it is a very slow poison, and therefore real damage is done to the cause of temperance.

I know that the test of the value of wine and spirits cannot altogether be taken from the feelings of the patient, much less from the reasons given for imbibing. A list of these was once given in *Punch*, and I must say there was no guiding rule for their use. One man took a glass because he was merry, and another because he was sad; one man because a friend had come to see him, and another because his friend had left him; one because he had a daughter married, and another because he had a daughter buried; one because he had a rising, and another because he had a sinking, and so on. The test of one's feelings is most fallacious. It is different, however, when a glass of spirit, or glass of wine, is swallowed, and a headache or some other positive trouble immediately departs; and so precious to many persons are these things that, although exceedingly temperate, they always keep them in their house in case of emergency; indeed, every now and then taking a glass of wine to soothe their ruffled nerves. It is difficult therefore to protest against the use of these drinks when persons declare they are better for them, or even if they only say they like them. Only lately I was in the house of a clergyman who had his nightly glass of grog on the table; a brother clergyman, with a blue riband in his coat, came in and asked him why he took it. He answered readily and curtly: "Because I like it." "But don't you think it does you harm?" said the former. "Not that I know of," he said. "But do you think it does you any good?" "Not that I know of," he again said. "Then," urged the teetotaller still further, "why do you take it?" "For the reason I first said; because I like it," was the answer. It would be very difficult to say this gentleman did wrong if it made him feel more comfortable and happy and he was not aware that it did him harm. Abstinence as often practised by clergymen, for example's sake, opens up another and a moral question.

The statement that alcoholic drinks shorten life is of course worth consideration; that apart from any temporary good effects, all drinks containing alcohol, when long continued, are injurious; they may not, it is said, in moderate amounts produce any marked disease of any one organ, but the affect nutrition, and so, by depriving the tissues, shorten life. The statistics of assurance offices are said to show that total abstainers are better lives than moderate drinkers.

I think much larger numbers would be required before this could be admitted, but to my mind they are fallacious—not defining the moderate drinker. I can cast my eye around me

and see several persons who were admitted to insurance as temperate people: their friends, no doubt, had never seen them markedly worse for drink, and they are not styled drunkards, but the amount of whisky they consume daily must be deleterious and shorten their lives. I am confirmed in this by a paper read before the American Association for the Study and Cure of Inebriety by Dr. Crothers, and found in the *Medical Temperance Journal* for last April. He says that insurance offices who admit moderate drinkers will always have a large number of risks, and declares that from a third to one-half of all the inebriates under his care have life policies. The result is obvious when a comparison is made between total abstainers and a class of persons amongst whom are many drunkards. Dr. Crothers says companies who admit moderate drinkers and leave the question of risks in these cases to the judgment of examiners will always have a large number of these dangerous risks and a larger mortality. What we want is a comparison between total abstainers and real moderate drinkers. Now I think we have this in the tables published by the United Kingdom Temperance Institution and the Clergy Mutual Assurance. Amongst the clergy we have abstainers and moderate drinkers, but very few intemperate lives, so that we may well compare them with the total abstainers. As far as I can understand the tables, the clergy, including the moderate men, have a slight advantage over the total abstainers. I know how difficult it is to rightly appreciate the value of figures, and therefore am ready to stand corrected, but my conclusion on reading the tables was as I have stated. If it were possible, I should like to see a comparison made between the lives of wine drinkers and spirit drinkers. If it were even proved that a few months' gain of life would be followed by totally abstaining, the argument would have little weight with the wine drinker; he certainly would prefer the shorter life if made more happy and comfortable by a glass of wine. If the prolongation of life by a very short period is the great desideratum, then no doubt many other luxuries might be given up, but the law of the greatest happiness for the greatest number governs the world. My late colleague, Dr. Moxon, in a paper which he wrote in the *Contemporary Review*, declared that the alcoholic question was not one of food only, but of one man's superiority over another. I do not know if degeneration of tissues resulting from alcohol would affect each generation in progression, as this idea would require some discussion of the Darwinian doctrine; but, if true, the alleged results of assurance statistics would afford some corroboration to the theory that the shortened duration of life after the flood was owing to Noah, when "he planted a vineyard, and he drank of the wine and was drunken."

As regards its value in digestion it is difficult to come to a conclusion. That pure spirit or whisky aids digestion is by no means evident. There are many people who take it and maintain it is useful, but the actual proof is wanting. If this doubt exists it behoves the medical man to pause before he heedlessly orders it for every patient he comes across, to follow a routine plan of telling a young man to leave off his beer and take whisky instead. Constantly I hear complaints from patients on account of being obliged by their doctors' orders to take that "horrid" whisky, which they abhor. It is said that fashion rules in everything, but it is sad to think that fashion should guide us in our art, which is supposed to be based on scientific principles. Within fifteen years whisky has become the drink recommended by medical men to their patients. Is this a real advance in treatment, or mere fashion? Physiologists tell us that spirit retards digestion when experiments are made with it outside the body, but it does not necessarily follow that the same would occur in the living stomach. I have heard a markedly temperate man say that he takes a liqueur glass of spirit after his dinner, as it counteracts undue fermentation; at all events, he thinks so and feels the better for it.

I have rather fully spoken of the reasons which exist for drinking wine and alcoholic fluids, because by this means we get a real insight into their effects, and it is evident that the proposition is right that they have a sedative effect on the nerves and lower the function of the nerve centres. If this be so it is impossible that the opposite can be true, that alcohol stimulates the nerve centres and provokes them to increased energy and more work. Now, the consensus of all

observers is that it markedly deprives the nervous system of its force. Amongst labouring men, as well as amongst gentlemen engaged in sport or higher avocations, it is agreed that taking so-called stimulants diminishes their activities. There is the well-known experiment of Parkes with the spirit ration, in which it was shown that the men did more work without the spirit than with it. The Arctic expedition told the same tale; spirits did not at all assist the men in their arduous task of sledge-pulling, so that they themselves discovered that a cup of tea did them more good than a glass of grog.

We must go back to the question, Is wine drinking, beer drinking, or a little spirit drinking in moderation, useful to the community or not? Is it our duty, as medical men, to recommend it or denounce it? As regards pure spirit, I myself rarely recommend people to take it as an ordinary diet, feeling grave doubts as to its value. As regards the drinking of light wine or beer, when taken in moderation I do not object, and I find sufficient reason in the fact that the person likes it and believes he is better for it. Even should it stand on the same footing as tea or tobacco, I should not forbid it. A well-known gentleman at the head of our profession, who has gone out of his way to preach temperance and against the evils of drinking, yet finds that a moderate amount of wine at his dinner seems to do him good; and the late Dr. Carpenter, who published a book to show the evils of alcohol in all forms, yet subsequently took a little wine, declaring he was better for it. This, I should say, is at the end of the day when the work is over and some amount of fatigue is felt. The wine then soothes.

This is a very different thing from taking these things earlier in the day for the purpose of assisting in the day's work. This they do not, and everyone should consider himself in a pathological condition who feels in early morn that he must have recourse to them. He is in a morbid state, and this is increased by the so-called stimulant. When exhausted and tired, however, at the end of the day, I do not know any other test than that of the person's feelings, and if drink is no better in its nutrient effects than tobacco or tea little can be said against it. There seems scarcely a nation on the earth that does not like some sedative to act on the nervous system, something which quiets or soothes, the universal cry being that of the lotus eaters: "There is no joy but calm."

There is not only the alcohol in the form of spirit, wine, beer, or cider, but there is tobacco used by large part of the world; opium by millions, as well as Paraguay tea and other vegetables. We have also tea, coffee, chocolate largely consumed by persons because they enjoy them. I have a teetotal friend who is so attached to his five o'clock tea that he makes all his arrangements conformable to its celebration. No doubt many of these substances I have mentioned are injurious, and certainly so when taken above a certain amount, but the attempt would be purely quixotic or impossible to stamp out the habits of the people who indulge in them, especially if the livelihood of millions is dependent on their production, as wine planting or hop growing. If the world is to be regenerated the crusade must not be against alcoholic drinks only, but against tobacco, opium, and all these superfluous substances, until we get a regenerated people, of whom it may be said "their meat the fruits, their drink the crystal stream."

Now comes the important question of alcohol as a drug. I have no hesitation in saying that those who in times past gave it and found it useful were totally mistaken as to its action. They believed they gave a stimulant instead of a sedative, when they found it beneficial in such a case as fever with high temperature, quick pulse, etc. This mistake led it to be so universally given in all cases of disease. If alcohol gave strength there was no morbid state in which it was not useful, and it thus became the universal medicine. I remember a practitioner near Guy's Hospital, whom I frequently met, and having remarked to him that he had given brandy to patients with complaints of a totally different character, he declared this was so. He gave brandy to all his cases, for he found all the Bermondsey people weak and required it. I should imagine that the same might have been said of other districts, and that all people who were ill were weak, and therefore required stimulants. It was about this time when brandy was the universal medicine that

I set my face against it, and in spite of the statement that alcohol was an antidote to fever, showed by an array of figures and cases that typhoid fever would run as favourable a course without it. If a temperance hospital had been instituted in Todd's time it would have been of great value as showing his mistaken views about alcoholic treatment, but at the present time when this is given up little room remains for comparison.

At the present time, although this universal treatment by brandy is abandoned, there are a large number of medical men who hold fast to the old notion that brandy supports, and therefore if the patient be weak it should be given. For my part I think the reasons for giving it are very erroneous. We do not yet know exactly the conditions of system which suggest its use. Some years ago the late Dr. Anstie believed that the sphygmograph would give certain indications for the employment of alcohol. At present its employment by the most judicious men is almost ignored, and they are certainly better practitioners than those who give it to every patient who has a weak pulse. One must have often seen two patients, apparently much alike as regards their state of debility, and yet one benefited by alcohol and the other not. For example, I have seen it given with the greatest success in some old persons with pneumonia, whilst it has failed to do any good in persons equally low with other complaints. In the late influenza epidemic, where patients have suffered much from broncho-pneumonia, the administration of whiskey has been a very universal practice, but the result has been so varied that I am not in a position to form a conclusion as to its value.

I think our knowledge of the use of alcohol in disease is almost purely empirical, having so few principles to guide us. I believe, however, the condition called typhoid is one requiring and benefited by alcohol—the case where the temperature is high, pulse quick, and delirium present. In typhoid fever itself we are constantly meeting with its beneficial effects. A little while ago a medical man asked me to see a case of typhoid with him. The lad had a severe attack, and was running on in the usual way when the fever became excessively high, with delirium, and he was questioning the propriety of giving wine or brandy. He therefore sought another opinion. I at once assented to its use, and a tablespoonful of brandy was given every three hours. After three doses the pulse was lowered by twenty beats, the temperature had fallen two degrees, and the boy's mind became clear. After this he made a good recovery. With results of this kind I cannot see with what reason alcohol is to be excluded from our list of drugs. It is difficult to see how any other conclusion can be arrived at than its being often beneficial. For example, a girl was in the hospital suffering from a most severe attack of typhoid; she grew worse until her end seemed approaching. When apparently dying brandy was administered, and this was continued for two days and nights until an enormous amount had been given; she then began to rally, and slowly recovered. Now, as regards the effects of this brandy upon her I see only three modes of reasoning: It did her good, it did her harm, it was valueless. Now I think few persons would say that giving two bottles of brandy in a few hours was of no importance, that its action on the system was *nil* and might be disregarded. It might then be said that it did harm, but in such a case as this there was only one step more to death, and this must have inevitably ensued had the patient got harm. The only alternative left is that it did good. Then, again, I believe the tolerance of a remedy is always taken as a measure of its need. We know iodide of potassium produces coryza and headache in a healthy person, but in another who has a specific disease and requires it he grows daily better under its use; the same is markedly true of opium, digitalis, and all good drugs. I remember the case of a young servant girl, who had never drunk anything stronger than water, coming into the hospital with most severe erysipelas of the head and face. She took a large quantity of wine and spirit without producing any apparent inebriety. I have notes of a case of an old man, aged 72, with bronchitis, who took a bottle of brandy daily for seven days: it produced no intoxication, and he recovered. I was told of a case of flooding where a bottle of brandy was given in the course of two or three hours, and not the slightest inebriety was produced. In a case of typhoid, delirium ceased after 12 ounces of brandy had been given.

As regards the use of alcohol as a temporary restorative, the conditions of the case must be considered. In cases of fainting from a nervous shock it is, in my experience, the most speedy and powerful restorative. In collapse from hæmorrhage opinions seem to differ as to its value. I have always considered that it is inadmissible, seeing that with the fainting and lowering of the circulation coagulation takes place and bleeding ceases, whereas alcohol rouses the heart to increased effort, which is often detrimental. I have myself always refrained from its use in case of collapse from hæmatemesis or in hæmorrhage from typhoid. There might be, however, cases where its use might be of advantage. I have notes of a case related by Dr. Williams in an old number of the BRITISH MEDICAL JOURNAL, where wine used as an injection seemed to have a most marked effect in restoring the patient. The case was that of a woman, aged 40, who in her tenth labour had a most severe flooding, and fainted. The uterus was cleared out, and compresses laid on the abdomen, but the syncope remained. For half an hour she was quite pulseless, and the extremities were growing cold, the skin bathed in a cold sweat, and she was quite unable to swallow. A large quantity of wine was thrown into the rectum, and the effect was immediate. In two minutes the pulse was felt, and in five minutes was clearly beating. The injection was repeated in twenty minutes, and in ten hours all anxiety was over. If any trust can be put in this story, surely wine as well as spirit ought to take its place in our list of drugs. In this case, although it roused the vital powers, it is still a question how far alcohol is useful in all cases of hæmorrhage. Amongst my notes I have recorded the case of a snake bite in India, accompanied by collapse, where a pint of alcohol saved the life of the patient. Hyde Salter says large doses of brandy will sometimes stop attacks of asthma. I have also read the same about arresting the onset of ague. I have already said in the so-called typhoid state I believe alcohol is a most valuable remedy. In very bad cases my practice has been to give a tablespoonful of brandy every hour, and watch the results; if after a few doses the pulse and temperature are lower and the brain clearer, I feel sure of its benefits.

Heart disease is one of the affections in which much more careful observation is required in reference to the value of alcohol. In functional disturbance with irregular pulse, due often to dyspepsia, a glass of brandy and water will set it straight, but in many organic diseases the same remedy would do harm. I have seen several cases of mitral disease where the heart was most irregular and the pulse scarcely perceptible, at the same time the patient being in a state of great prostration, the continued use of so-called stimulants seemed loudly called for, and yet they only added fuel to the fire. Benefit was derived from their withdrawal, and in two or three cases where digitalis was substituted the patient made for a time a rapid improvement. I have not made up my mind as to the indications in heart disease which make alcohol beneficial or otherwise. There is another class of case in which I see it harmful—the case of advanced heart disease, where the patient is dropsical, obliged to sit up in a chair, and with great oppression of breathing from engorged lungs, enlarged liver, and inactive kidneys. In such a case, because the patient is necessarily very low, the nurse is charged to give all the nourishment she can get into the patient, including a large amount of wine or brandy. He is already oppressed by gorged vessels, and now his blood is overcharged with material which he cannot use or get rid of. Under these circumstances, if the stimulants be stopped, the food reduced in quantity, and a purge given, the patient obtains very rapid relief. I have seen more than one person in this condition with his head hanging down in an insensible state, and his friends standing around, believed him to be dying when he has been simply intoxicated. Drunkenness in a person who is ill seems very difficult of recognition.

I might mention the fact, given on the authority of Mr. Brudenell Carter, that Dr. Braun, of Moscow, had 45 per cent. of bad cases after operations on the eye amongst the peasants until he gave them wine or brandy, when these cases fell from 45 to 6 per cent.

And now I must allude to the very striking and remarkable effect of alcohol in wasted children, the nearest approach to a proof that alcohol is nutritive. It was many years ago that I

found alcohol in the form of brandy had a very remarkable restorative effect in the case of atrophied children, and I therefore introduced it as a medicine into the pharmacopœia of the Infirmary for Children, Waterloo Road. There is a notice of this in the *Lancet* of January 27th, 1872. Under the hospital practice of Guy's Hospital is reported the case of a little boy, aged five years, who had entered the ward on October 25th previously in a state of extreme emaciation. Finding no disease to account for it, I handed him over to the sister of the ward to treat by feeding. After some weeks he was no better, and so, on December 15th, I ordered him the mixture, containing a drachm of spirits of wine, four times a day. He soon began to improve, and was markedly better in a few days, and strong enough to leave his bed. He then grew rapidly fatter as well as stronger, and at the time of the report, six weeks after the commencement of the treatment, he was an entirely altered child. The mixture, consisting of spirits of wine, tr. cardamomi, and water, has been in use at the Infirmary ever since, and my successor informs me that it still keeps up its repute in these cases of atrophy. Its effect is certainly very remarkable. I must again repeat what I consider to be an essential fault in my paper, and that is, mixing up together spirits, wine, and beer, as if they were all alcoholic drinks differing only in degrees of strength. I have already mentioned cases of wine drinkers who have been very long lived, and were medical men here from wine-growing countries, they would not allow for a moment that the peasants who drank wine were anything but temperate, and would be indignant at their being placed on the same footing, even in a different degree, as spirit drinkers. Others would say the same of the moderate beer drinker.

From inquiries I have made there can be little doubt that there is less drunkenness in wine-growing countries than in others. Thus there is more drunkenness in the northern parts of Europe, where spirits are taken; and a French physician informs me from his own practical knowledge that he has seen much more intoxication in Normandy than in the wine region of Bordeaux. If this be so, it is quite confirmatory of what Adam Smith said more than a century ago. In his *Wealth of Nations* he says: "It deserves to be remarked that, if we consult experience, the cheapness of wine seems to be a cause not of drunkenness but of sobriety. The inhabitants of the wine countries are in general the soberest people in Europe; witness the Spaniards, the Italians, and the inhabitants of the southern provinces of France. On the contrary, in the countries which either from excessive heat or cold produce no grapes, and where wine consequently is dear and a rarity, drunkenness is a common vice—as amongst the northern nations." This is a very remarkable statement, and has never been contravened. The idea of intoxication is not even understood by many peasants in these wine countries. It should, therefore, make us careful in the name of temperance in denouncing the inhabitants of wine-growing countries as addicted to stimulants; and we might have something to learn of the Irishman who, after drinking largely of champagne, declared it be a very "deceitful" wine.

I fear that those acting in the cause of temperance have done real harm by classing a number of things together as intoxicating drinks, and denouncing them as a whole. If logical and true to their cause, they would not apply their doctrine to England only, but in a true missionary spirit preach their gospel over the whole of Europe; but perhaps they see the immensity of the task, that they must induce millions of the peasantry of France, Spain, Italy, and Germany to give up their employment as vine dressers, and find some other industry. They must discover some other beverage for the inhabitants if they dislike water; in fact, they must produce a revolution amongst the people greater than any which had been before conceived. The political changes having to do with forms of government would be lilliputian compared with the revolution in the manners and customs of countries which temperance societies would hope to effect. To upset opinions which have been held for ages would be no slight task, and especially when we have the voices of great physicians before us ever speaking of the value of wine. The succession has never ceased from Hippocrates and Aretæus downwards to our Sydenham. I will only quote one, Aretæus, who says, "In cases of great debility the only support is wine, to nourish quickly by its substance, and to penetrate everywhere, even

to the extremities, to add tone to tone, and to raise the torpid pœnum, warm that which is cold, brace what is relaxed, restrain those portions which are flowing outward. Wine being sweet to the sense of smell, so as to impart pleasure, powerful to confirm the strength for life, and most excellent to soothe the mind in delirium. Wine, when drunk, accomplishes all these good purposes, for they become composed by the soothing of their minds, are spontaneously nourished to strength, and are inspired with pleasure."

I believe myself that great harm has been done to the cause of temperance by denouncing beer, cider, wine, and spirits as all bad from coming under the designation of intoxicating drinks. In the same way, a medical man should discriminate between them when ordering diet, and also if he has to prescribe them as medicines.

And now, in conclusion, I feel that I almost owe the meeting an apology for the poverty of this paper. My only excuse is that the duty imposed upon me was to open the discussion. I should never have thought of demanding a hearing from you unless I had some good facts and observations to present to your notice—that is, a truly scientific paper. At present I have been able to do little more than talk about the subject, and place its different aspects before you; its weakness in want of definition no one knows better than myself. My statements have been then—that alcoholic drinks are not necessary to a large number of people—in fact, they are better without these drinks. As regards wine and beer, if taken in moderation and liked by masses of people, I cannot disapprove from the existence of any apparent evil which results, and I am quite open to the correction that they may do good. As regards spirits, or spirits and water, as a beverage, I have by no means made up my mind that it is in any way useful, and seldom recommend it. As a medicine, I give both spirits and wine as restoratives and sedatives, and more especially as soothers to the nerves. I give beer in thin people to fatten them; in fever I give alcohol to reduce pyrexia, and in various other diseases according to circumstances.

I hope to elicit from members some important facts, so that we may discover what are the conditions which indicate the use of alcohol, and frame some principles to guide us. We may gain from all empirical knowledge, and learn in what diseases alcoholic drinks are useful and in what harmful. I now leave you.

II.—J. C. BUCKNILL, M.D., F.R.S.

DR. BUCKNILL said he agreed with Dr. Pye-Smith on this subject, and called attention to the paper he had written on Intemperance and Lunacy. The wise use of wine might cure some cases, and be useful in others.

III.—NORMAN KERR, M.D.,

President of the Society for the Study of Inebriety.

DR. NORMAN KERR said that alcohol was a poison analogous in many respects to poisons such as arsenic and lead, acting like the former on the stomach by its irritant properties, and like the latter by its influence on the nervous system. The pathological appearances of alcohol found after death were as well marked as those of the other two substances; and the true language of science was that alcohol, like arsenic and lead, was a poison. Alcohol was a sedative and a narcotic; a depressant, not a stimulant; a paralyzant, and not a restorative. As a medicine, Dr. Kerr never prescribed alcohol in hæmorrhage, as he had found that its action arrested the coagulation of blood, which was Nature's method of stopping the flow of blood. In enteric fever he very rarely prescribed any kind of intoxicant. He had found occasionally that some form of wine or spirit, probably from the developed ethers, had saved a patient's life; but, as a medical practitioner, who felt bound to practise the art of healing on the basis of science, he preferred to give alcohol in compound tincture of cardamoms, spirit of chloroform, and aromatic spirit of ammonia, whereby he knew the exact dose he was administering.

IV.—J. J. RIDGE, M.D.,

Physician, London Temperance Hospital.

DR. RIDGE said the results of the use of alcohol were extremely important to the community; the evils were so great

that the subject was beyond a joke. If there were no alteration in the national habit, these evils would continue, and it rested largely with the medical profession to alter it. Alcohol produced progressive paralysis of the vasomotor system, and permitted the flow of blood to the skin and brain. But while the blood flow was increasing the brain itself was being acted on, and the higher centres, those last developed, were first attacked. There was progressive paralysis of the judgment and of the will, leading to gradual loss of control of the thoughts, speech, emotions, and, lastly, the muscles. This gradual loss of self-control or temperance showed that the use of alcohol and the perfection of temperance were incompatible. Alcohol gradually peeled off layer after layer of the results of education and civilisation. But the effect of small doses continued daily for years was different. To test this, the whole life must be examined, or alcohol must be tried on animals or plants. He showed photographs of geranium cuttings and poppy seeds grown with and without alcohol, 1 per cent. and $\frac{1}{2}$ per cent. respectively, which demonstrated a very remarkable difference. He referred to similar injurious effects on the eggs of the blowfly, while, on the other hand, the bacillus of hay multiplied more rapidly in the presence of alcohol. The common use of alcohol was chiefly a matter of custom, and any narcotic became indispensable, or was thought to be so, by any who used it for a longer or shorter time. This did not prove its necessity. The life assurance statistics proved its injurious effect on man. Dr. Wilks had not made a fair comparison; he should have compared abstaining and non-abstaining clergy, because those insured in the United Kingdom Provident Institution were of all classes and trades who had a higher mortality than the clergy. The vitality of the Quakers had increased since they had almost to a man become abstainers. Alcohol might be a medicine, but it ought to be in the *Pharmacopœia*. Many medical men never treated a bad case without alcohol, or knew how well they could get on without it.

V.—SIR J. RISDON BENNETT, M.D., F.R.C.P., LL.D.,
Consulting Physician St. Thomas's Hospital.

SIR RISDON BENNETT agreed with Dr. Wilks's remarks, but did not approve of spirits as a beverage. He gave an interesting account of what suited himself best. He also believed alcohol was useful in fever and in some nervous diseases. It was a good and useful medicine.

VI.—M. SEMMOLA, M.D.,

Professor in the Royal University of Naples; Senator of the Kingdom of Italy.

PROFESSOR SEMMOLA said: (1) As to the sobriety of vine-dressers in Italy, I entirely agree with Dr. Wilks. Drunkenness is excessively rare among these vine-dressers, whether it be that they do not abuse wine or that they drink only the pure wine of their country. (2) As to the employment of alcohol in sickness, I have always thought and found that alcohol ought to be looked upon as a stimulant and diffusible remedy, and consequently that it is not expedient to abuse it from that point of view. It can only be a remedy for use in emergencies—that is to say, when in the course of acute diseases adynamic conditions occur which may put the patient's life in danger, owing either to cardiac or to respiratory adynamia. But it is not right to use alcohol in large doses, because in that case it profoundly disturbs the nutritive changes and its action aggravates instead of relieving the adynamic symptoms by adding to the disease more or less profound disorders of the mucous membrane of the digestive tract, which should always be very tenderly dealt with and reserved for purposes of alimentation, which is the true source of the repair of the patient's strength. (3) Lastly, in using alcohol we must clearly distinguish its therapeutic action as a stimulant from its toxic action as a substance paralysing the activity of organic combustions, and therefore of dangerous effect in the treatment and in the final evolution of diseases. It is precisely for these reasons that I seven years ago proposed (see Dujardin-Beaumetz's *Clinique Thérapeutique*) the use of glycerine as an antipyretic in acute infectious diseases. I showed by laboratory researches as well as by clinical experiments that glycerine is harmless, and that as a waste-preventing food (*aliment d'épargne*) and

as an antithermic it is unquestionably superior to alcohol. Since that time, therefore, I give in acute infectious fevers the following draught: R Pure glycerine, 60 grammes; tartaric or citric acid, 5 grammes; water, 600 grammes; 50 grammes to be taken every hour, or half that quantity every half-hour. I employ alcoholic medication solely as a stimulant remedy to be used only in emergencies and in small doses.

VII.—C. R. DRYSDALE, M.D.,

Senior Physician Metropolitan Hospital.

DR. DRYSDALE said he quite corroborated the views of Dr. Wilks as to the lower disease-rate of people in wine-drinking countries as compared with spirit-drinking countries. In a lunatic asylum in Finisterre 40 per cent. of the lunatics were said to be alcoholic, whereas at Pau only 1 per cent. were alcoholic lunatics. The important part of the question was that connected with insurance companies. This was the accurate point. If insurance companies were consulted it would be found that one and all of them admitted that total abstainers had a better expectation of life than non-abstainers. In Norway it was lately said that alcoholic habits in the patients caused imbecility and epilepsy in the offspring, and this seemed to be true. As to the effect of alcohol in this country, beer in London was a most fertile source of gout, and as to spirits, the amount of disease produced was, as Dr. Ogle had said in the case of servants in public houses, "quite appalling." On the whole he would not dare to argue with such a distinguished therapist as Dr. Wilks; he merely said that as a whole it was as well to discourage the use of alcohol in healthy persons.

VIII.—C. H. ALLFREY, M.D.

DR. ALLFREY would not have presumed to address the meeting had he not had, from accidental circumstances, unusual opportunities of forming an opinion. He was educated in King's College Hospital, where the wards might at that time be said to be a land flowing with wine and brandy, and where he was clinical clerk to the late Dr. Todd, who used to give as much as 24 to 48 ounces of brandy, as reported in his Clinical Lectures on Acute Diseases. He then went to Edinburgh, where he had the advantage of being clinical clerk to Dr. Hughes Bennett, who, as Dr. Lauder Brunton told them the other day, used to treat pneumonia on feeding principles, though not to such an extreme extent as Dr. Todd. He had since considered the matter during the twenty-eight years he had been in practice. As a result, he now gave alcohol very sparingly and tentatively, and as far as possible always with food, as with milk and eggs, etc. He gave it with two objects, as a stimulant in low states such as typhoid, or as a sedative, as in the relief of neuralgia. He believed, as Dr. Wilks seemed to indicate at the beginning of his address, that in small doses alcohol was a stimulant, in large doses a sedative. He thanked Dr. Wilks for his protest against the fashion of ordering whisky. Patients seemed to think that it was ordered medicinally, and that therefore the more they took the better. He believed that the origin of the fashion was that whisky was supposed to be the purest spirit obtainable, but this was not the case now, where the fashion had created a demand, and where all sorts of whisky was advertised. With regard to the general use of alcohol he was inclined, although not an abstainer, to envy the two congenital teetotallers, Dr. M. Skerritt and Dr. Drysdale. He thought that, as St. Paul said of marriage: "He that drank moderately doth well; he that drinketh not doth better."

IX.—J. A. ROBERTSON, M.D.

DR. ROBERTSON said there were two points of the greatest importance which he wished to call the attention of the profession to. These were: 1. The necessity of securing pure alcoholic drinks for the working classes, and (2) the necessity of warning those who were known to be injuring themselves by the abuse of alcohol, and if necessary State interference if such warnings were not attended to.

X.—WILLIAM ODELL, F.R.C.S. ENG.

DR. ODELL said that he quite agreed with the last speaker that it was the duty of the medical profession to give a note

of warning to those who were approaching the whirlpool of excessive drinking. He said that the best lecture on the subject he had read was that of the late Mr. Fairlie Clarke on "Moderate Drinking and Total Abstinence." He believed that the only safe course was total abstinence for the majority of people, and instanced the advantages, both physical and mental, which would accrue therefrom. He mentioned a case of death from hæmorrhage from a varicose vein caused by the heart's action being stimulated by brandy whilst the patient was lying on the floor. He said he had proved in his own case the value of total abstinence in the active duties of a hardworking country practice.

XI.—JAMES CUMING, M.D.

DR. CUMING regretted that the term poison was used, and that alcohol was likened to arsenic. This revolted the common sense of the community. He had been told that delirium tremens was hardly ever produced in wine drinkers. As a practical fact, alcohol prolonged life in the very old when the digestive powers and the power of retaining food were almost lost.

DR. WILKS'S REPLY.

DR. WILKS said that thirty years ago he gave a lecture on temperance, and agreed with Dr. Skerritt and Cuming entirely. He was very pleased with Dr. Kerr, whom he considered a most temperate man, but thought Dr. Ridge went a little too far.

A DISCUSSION ON THE VISION OF RAILWAY SERVANTS.

In the Section of Ophthalmology at the Annual Meeting of the British Medical Association, held in Bournemouth, July, 1891.

I.—W. M^r BEAUMONT, M.R.C.S.,

Surgeon to the Bath Eye Infirmary.

SOME degree of care has been exercised in recent years in the examination of the vision of sailors, especially with regard to colour blindness, and the War Office has issued certain orders for testing the sight of recruits for the army, but the railway companies of this country have been left to frame for themselves rules or no rules. It requires no argument to show that perfect vision in railway servants is an absolute necessity for the safety of the public, and all must agree that to no class of the community is the greatest possible range of vision of more importance than it is to engine-drivers, guards, and signalmen. Nevertheless, the method of testing the vision of railway officials appears to be insufficient and inaccurate. This opinion is founded on a knowledge of the method adopted by two of the most important and one of the subsidiary railway companies of this country, and it is confirmed by the practical experience gained by attending many railway servants suffering from refractive and pathological anomalies of vision.

The usual routine, when a candidate applies to be taken into the service of a railway company, appears to be to refer him to their surgeon in order that he may have his sight tested both for acuity and for colour vision. So far there is no fault to be found with the method. When, however, the time arrives for the servant to be promoted—for instance, from engine cleaner to fireman or from fireman to driver—his vision is again tested, but this time not by the company's surgeon but by an official called a "superintendent," who examines him as best he can by means of the dots. The colour test is carried out by asking him to name the colours on a variegated sheet of paper, and he is also taken on the line and questioned with regard to the signals. If the superintendent is not satisfied with the answers he may refer the man to the surgeon, but it is not usual to do so if the dots are counted or guessed fairly accurately. From this it would seem that when the servant is first taken on, with very little responsibility, the surgeon examines his vision, but when he rises to the more responsible posts that duty falls upon a

layman. Do the railway companies imagine that vision is a fixed quantity for life, or do they consider that the superintendent is the more reliable examiner?

To those who are aware how easy it is to be mistaken in examining the sight, especially when the examiner has had no technical training in the subject on which he examines, and when it is to the candidate's advantage to deceive, it is surprising that the system can have survived so long. The early days of railway travelling were the early days of ophthalmology, and the methods of testing the vision that were in vogue fifty years ago are quite unsuitable now.

The subject has been impressed upon me somewhat forcibly by the number of railway servants who come to the Bath Eye Infirmary complaining of imperfections of vision; in some cases the congenital deficiency points to a very slipshod method of examination; in others the rapid deterioration points to the necessity of repeated application of tests, so that no servant may long attempt to perform duties for which his eyesight unfits him.

The following cases tell their own tale:

CASE I.—A fireman came to me in October, 1890, giving the following history: He had been a railway servant for thirteen years, and was now 31 years old. He found some difficulty in passing the superintendent's examination when he became a fireman; and now, when he was about to be examined for driver, he wanted his sight "stretched," as he expressed it. His vision was found to be R. $\frac{3}{3}$, L. $\frac{3}{3}$. On examination with the ophthalmoscope he was found to have 2.5 D of hypermetropia in the right eye + 4.5 D in the left. The following day he was passed by the railway authorities, and appointed to a luggage train. One may therefore infer that the absence of more than a quarter of the normal vision in one eye, and more than two-thirds in the other, does not disqualify a man for the post of engine-driver. Moreover, it is to be expected in this case that, as his hypermetropia becomes more and more manifest, so will his vision correspondingly decrease.

CASE II.—A fireman, who had passed the superintendent's examination two years previously, was found in January, 1890, to have V. R. $\frac{3}{3}$, L. $\frac{3}{3}$, due to myopic astigmatism.

CASE III.—A fireman came to the Bath Eye Infirmary in May, 1882, when his vision was found to be $\frac{3}{3}$ in each eye, the defect being due to slight hypermetropic astigmatism. He was seen again in November, 1889, when he was fortunately transferred to shed work.

CASE IV.—An engine cleaner, aged 24, of two years' standing, was seen in April, 1886, when his vision was found to be R. $\frac{3}{3}$, L. $\frac{3}{3}$, due to simple hypermetropic astigmatism (R. + 5 D, L. + 4 D). Two years later—in August, 1888—he was passed by the company without a surgeon's examination, and became a fireman. In July, 1890, the man was examined for promotion, and referred to the surgeon, who, of course, rejected him.

These and other cases induced me to bring the subject before the attention of the manager of one of the railway companies in question, but without any satisfactory result. The system was justified by him on the ground that it was the same as the method employed by another company, and that it was identical with the army and navy test. It appears to be useless to attempt to get any voluntary reform from the railway companies.

I would suggest tentatively the following rules as a basis on which to found regulations with regard to the examination of the vision of railway officials:

1. The tests shall always be applied by qualified medical men.
2. No one shall hold the post of guard, signalman, driver, or fireman whose vision is less than $\frac{3}{3}$ in either eye, or whose vision is not normal in all respects.
3. The vision of all such officials shall be examined at intervals of not more than one year, and if in any case the sight is found to be less than the standard such official shall be transferred to less responsible work.

These rules may appear to be severe, and individual hardships may occur, but the responsibility connected with the duties is too grave to allow of less stringency. The cases I have cited are hardly needed to show that an official who has had no medical training is quite incapable of testing vision. What does such a one know for instance about the field of vision? He would without hesitation pass a candidate who