But these bodies, perhaps from their simple structure, appear to be adapted to attack all parts of the animal organisation, and they are apt to affect the nervous system and circulation. In order to avoid these disadvantages, various attempts have been made to obtain bodies of a similar but more complicated structure, which should have a more specialised action, and would lower the temperature while leaving the nervous system and circulation unaffected. These attempts have been more or less successful, and we owe to them the introduction of three new remedies—kairin, thallin, and antipyrin. The former two, after a brief period of trial, have been found more or less unsatisfactory; but the latter is perhaps, upon the whole, the best antipyretic that we possess, reducing the temperature and, at the same time, having few disadvantages. Salicylate of soda is nearly allied in chemical constitution to resorcin, and as a general antipyretic it is almost equal to antipyrin, and superior to it in cases of rheumatic fever. It is possible that we may still obtain antipyretics more powerful than any we yet possess, and specially adapted to the febrile conditions arising from different causes, for these antipyretics do not appear to be equally successful in different kinds of fever. Antipyrin is best in hectic fever, and salicylate of soda in rheumatic fever, but an antipyretic which will be thoroughly satisfactory in typhoid fever is still a desideratum.

I have said that antipyrin is generally free from any disagreeable action; but this is not always so, for it sometimes may produce collapse. This shows us that, in the action of all our drugs, we have two factors to consider, namely, the drug itself and the body into which we introduce it. We have just been considering the alterations in physiological action which may be produced by changes in the chemical constitution of our drugs; but there is another factor which is perhaps more difficult to investigate, and still more important in the treatment of disease, namely, the condition of our patients. The failure of our drugs to produce the effects we desire is one of the most trying occurrences in medical practice. Thus, in fever, we sometimes find that drugs will not reduce the pulse as they do in non-febrile conditions, and digitalis in pneumonia sometimes appears to have lost its sedative action on the heart altogether. Some years ago I thought that possibly this might be due to the high temperature producing paralysis of the nervous apparatus which restrains the heart, and supposed that the peripheral ends of the vagus in the heart might be paralysed. I then made some experiments, which showed that I was wrong in this supposition. Several years afterwards, my friend Dr. Cash and I made some further experiments, which showed that the failure of digitalis to slow the heart in febrile conditions is really due to paralysis of the regulating nerves of the heart; but the part of them which is paralysed by the heat is their roots in the medulla, and not their endings in the heart.

In other experiments which we made together, we found that the muscle of a frog poisoned by barium could be restored to its normal condition by a high temperature, and also by the application of potash salts. It occurred to us that, if we could saturate the body of an animal with potassium, we should be able to render it proof against the poisonous action of barium. On trying this, we succeeded in rendering animals so far resistant to the action of the poison that they were alive and well after animals of similar size, but unprotected, had succumbed to the action of the same dose of poison, although we did not succeed in ultimately saving the animals.

But Dr. Cash has pursued this line of investigation far beyond the limits of our mutual research, and he has obtained results which seem to me to be amongst the most extraordinary and the most promising in pharmacology. Knowing, as he did, that corrosive sublimate was an exceedingly powerful disinfectant, it occurred to him that it might be more harmful to disease-germs than to the bodies of higher animals, and that he might be able, by the introduction of the poison into the body of an animal, to render it insusceptible to zymotic diseases. A similar idea had occurred to Koch, who injected corrosive sublimate into animals after previously inoculating them with anthrax; but his experiments failed, while Cash has proved successful by introducing the corrosive sublimate before inoculating with anthrax, and thus giving the drug the start of the disease. These experiments acquire an additional interest from the fact that M. Pasteur, although uncertain regarding the exact mode in which his process of inoculation for hydrophobia has brought about such satisfactory results, is disposed to think that the agent which prevents the disease is a chemical substance, and not a microbe.

When we look back for twenty years and see how far pharmacology has advanced since Crum Brown and Fraser's experiments, directed it into a new path, we may hope that twenty years more may not only have greatly added to our stock of new remedies, but will have enabled us so to ascertain the condition of our patients that, either by the

proper modification of a single remedy, by the proper admixture of remedies, or by proper changes in the food or surroundings of each patient, we may ensure the action we desire, and we shall not have to feel, as we painfully do at the present, that our patients often die for lack of knowledge, not on our part, but on that of our art.

Nothing is more painful to a medical man than having to answer in the negative the agonised appeal "Oh, doctor, can you do nothing?" of those who see passing away friends who are dearer to them than their own life. It is because we medical men know the value of human life and the extent of human suffering; because we are called upon to prolong the lives of those whom not only their friends but their country and the world at large can ill spare; because we must, if possible, relieve pain sometimes amounting to extreme torture in the sufferers themselves, and felt hardly less keenly by their friends; that we consider it is not only permissible but is our imperative duty to gain the knowledge we require to attain our object, even though we sacrifice the lives of animals, and inflict upon them some pain, never wantonly, never carelessly, and almost always slight in comparison with what we often see our patients feel. Moreover, the lower animals suffer from disease as well as men, and we may hope that the advance of pharmacology will give us the means of relieving pain and prolonging life in them as well as in man.

AN ADDRESS

DELIVERED AT THE OPENING OF

THE SECTION OF OPHTHALMOLOGY,

At the Annual Meeting of the British Medical Association, held in Brighton, August, 1886.

By CHARLES OLDHAM, F.R.C.S.,

Senior Surgeon to the Sussex and Brighton Infirmary for Diseases of the Eye
President of the Section.

RECENT PROGRESS IN OPHTHALMOLOGY.

GENTLEMEN,—There are two primary duties incumbent on the members of this Association on whom you have conferred the great and responsible honour of presiding at your deliberations.

The first of these is to bid you all, in the name of your fellow-associates of this town, a most hearty welcome to the meeting which was yesterday inaugurated at the Dome. We sincerely trust that this meeting may be productive of the best results in every way; from a scientific point of view, that the papers read in this Section, and the discussions that will thereupon ensue, may materially tend to the advancement of the art and science of ophthalmology and also—for we do not forget the words of one of the most charming of poets—

"Neque semper arcum tendit
Apollo"—

that you may enjoy such social pleasures as we have done our best to provide for your entertainment, as fully as we, your hosts, could desire; and that after the meeting you may return home no whit the worse for the treatment you have received at the hands of "Dr. Brighton."

The second duty I have to perform is to crave your kindly and generous indulgence for the many shortcomings which I fear must inevitably occur in my conduct of your affairs. I can assure you that I bring a desire as earnest for your service, as I feel my capacity to be slender in respect of the position in which you have done me the honour to place me.

The last time the Association met in Brighton was in the year 1851. There was then no Ophthalmic Section. Nearly thirty years were to elapse before the Association, which at that date numbered only about 1,700 or 1,800 members in all, could boast of a body of its associates who devoted their time and abilities to the sole study and practice of the surgery of the eye. But that year was destined to be a memorable one in ophthalmic annals; for it was in 1851 that the great Helmholtz brought out the instrument of which it may be said (and it is an excellent illustration of Schopenhauer's just remark that all great thinkings are apparently obvious in proportion to their greatness) that its principle was apparently so obvious that we marvel that it had never been thought of before. I need not point out to you the entire change that has been wrought in our art by this discovery. It will suffice to say that diseases which, before its advent,

were so many additions to nomenclature, and to nomenclature only, have now become objective entities to the surgeon as well as to the patient.

At first, however, mechanical imperfections in the mode of applying Helmholtz's principles stood in the way of acquiring that accurate knowledge which we now possess, both of the diseases which invade the interior of the eyeball, and the errors of refraction of every kind and dimension which form so large a part of our work. In this enterprise, namely, that of improving the ophthalmoscope to such a point as to enable a practised observer to measure accurately the minutest refractive error, there have of late years been many workers. Perhaps one of the most prominent of these is Mr. John Couper, who has constructed, at a great expenditure of time and labour, one instrument after another, in search of perfection. Among other workers in the same field in this country, Messrs. Marcus Gunn, Purves, Johnson, and Stanford Morton, whose ophthalmoscope has become very popular, may be mentioned. In all these instruments the main object has been to make an estimate of the errors of refraction as accurately and as quickly as possible, by means of discs containing a varying number of lenses, and revolving on different systems of mechanism behind the sight-hole of the mirror; and it cannot be denied that many of these have arrived at such a pitch of excellence as to render any further improvement improbable.

Turning to the work of the past year, the magnificent Bowman lecture on Ophthalmology and Diseases of the Nervous System, delivered by Dr. Hughlings Jackson, (and Mr. Jonathan Hutchinson's address on Sympathetic Ophthalmia, and the discussion thereupon, will be in the memory of you all. There is not one of us here present who has not been compelled to face the latter terrible disorder over and over again, and, as often, to feel the bitter sense of helplessness in its presence. The mode of its actual propagation, whether, as Mr. Hutchinson suggested, it is the result of blood-poisoning, whose expression is limited to the dimensions of the fellow-organ; or whether it be, as I fancy is more generally accepted, an inflammation slowly extending along the optic nerves; or whether it be simply reflex in character, would still appear to be a matter of controversy, in spite of the admirable discussion which followed the address. In any case, the report of the committee of investigation, derived from recorded facts, is one with which, I think, all practical oculists will unhesitatingly agree.

Amongst other valuable contributions, Mr. Hartridge has published, as a supplement to that of Mr. Shears, a series of twenty cases of tobacco amblyopia; all his patients improved, and complete recovery resulted in thirteen of the number by simple abstention from the luxury.

A noteworthy analytical report of the causes of blindness in 111 inmates of the Sheffield Institution has been made by Mr. Snell.

Cases of essential shrinking of the conjunctiva have been shown by Messrs. Critchett, Brailey, Lang, and others; and a paper of very considerable importance on thirty cases of meningitis, after excision of the eyeball, was read by Mr. Nettleship, and provoked an interesting, though not an exhaustive, discussion in the Ophthalmological Society. Also a report on the poisonous effects of the vapours of bisulphide of carbon and chloride of sulphur, by a Committee of the same Society, may be recalled to your remembrance.

The thirty-nine cases lately published by Dr. W. A. McKeown, of intracapsular injection of water in the operation of extraction of cataract, will probably be further illustrated by a paper to be read in this Section by Mr. Charles Lee.

It is as alien to what I conceive to be my province to make you any learned address on the more recondite and controversial points of our art, for we have before us for our consideration a series of papers and discussions which promise much in that direction, as to anticipate in any way the matter contained in these contributions. We shall undoubtedly listen to them with great interest, as they will give us the experience of others on questions which each one of us has frequently attempted to solve, and has also lamentably failed more than once at least in the enterprise; such, for instance, will be the first and last papers on our list, namely, "The Treatment of Epiphora."

The authors will doubtless explain why, after we have slit up the canaliculus, and passed a large probe with ease into the nasal duct, it commonly and disappointingly happens that the patient cries to us as freely and as unwillingly as before.

We shall be glad to learn, among other things, from Mr. Edgar Browne's paper on "New Remedies," whether cocaine, that somewhat overrated drug, which has a curious selective power in unequally exerting its attributes on different individuals, may be justly accused of exerting this selective influence in a mode which tends to suppuration after important operations.

I note with some regret the absence in our list of any paper on the best mode of treatment of simple chronic glaucoma. Now that we have been enlightened by the labours of Priestly-Smith, Brailey, Landolt, and others, as to the etiology of this formidable affection, the advancement of our knowledge should bear fruit in the direction of some mode of dealing with the problem set before us, other than by iridectomy pure and simple, the results of which are very far indeed from satisfactory. Is there any hope that some other method of counterbalancing drainage, at once unirritating and effective, may be devised? At present, eyes so affected would seem to be best left alone.

Have we learnt anything in the past year with regard to suppuration after operation? Would he not render a great service to mankind who should give us, by some process of generalisation, amongst other precepts, rules for the kind of incision to be made in various operations, but principally, of course, in that for cataract in different individuals—whether such incisions should be severely corneal, or in the sclero-corneal junction—to give us, in short, some indications which should guide us as to the likelihood of consequent suppuration?

It is certainly given to individuals, now and again, to possess what, for want of a better name, may be called an instinct in such matters. As a pointed example of this power of selection by instinct, I may cite the case of Antonius Stradivarius, of Cremona. This great master, by the sense of touch alone, was able to divine the relative acoustic merits of the wood from which he made his hitherto unrivalled violins.

The late Mr. Critchett possessed a rare instinct for the selection not only of cases which were suitable for operation, but also of the particular mode of operating which should best favour success; but, like Antonius Stradivarius, he was apparently unable to convey the method of his secret to others.

I cannot but think that this selective instinct, which has been given to few, may in course of time be formulated for general use. In this connection it is pertinent to ask, how far we are agreed upon the value of antiseptic measures in operations on the eye; and whether, conceding the value of these measures, out of many agents we possess for the purpose, there are any solutions of greater antiseptic virtues, and with fewer drawbacks, than those of the perchloride of mercury and boracic acid?

One of the main objects of every society of oculists, is the propagation of such knowledge of ophthalmic surgery amongst those who do not enjoy their special advantages, as will enable them to avoid being pointed at as the authors of cases of preventable blindness; and also, by a routine acquaintance with the ophthalmoscope, to add a factor, or factors, to the items of evidence which they already possess towards forming a just estimate of many cases which must necessarily pass through their hands in the course of the working year. I venture to think that this has lately been, and is now being, very effectually done.

Such cases as those I have referred to are becoming rarer every day, and I am frequently surprised at the amount and accuracy of ophthalmological knowledge to be met with at the present time amongst those who are not specialists, as compared with the acquirements in this direction a very few years ago.

Ours is, indeed, one of the noblest of sciences. The blind have ever been considered amongst all nations and in all ages, to be the class that most appeals to the commiseration and sympathy of mankind. It is, with us, not only a plain sailing duty in the legitimate exercise of our profession, but also a pleasure of the acutest kind to relieve the necessities of those who call upon us in this respect for aid.

The trustful confidence with which blind humanity invariably relies upon the everyday assistance of its brother man, even in the guise of a stranger, is a very marked feature of this particular affliction. If they so touchingly repose on the ministrations of those who are strangers to them—strangers who possess no other powers for their service than those of sympathy and temporary assistance—must we not consider ourselves to be amongst the happiest of men of science, in that we possess solid and lasting means of relieving their sad fortunes—means largely augmented by the knowledge and insight into their troubles, that we gain in such meetings as the present, wherein we can increase our humanitarian usefulness, by uniting with all loyalty, to throw our experiences into one common treasury for the benefit of mankind?

VACCINATION.—Mr. C. H. Cockran, of Caversham, Reading, has been awarded a Government grant for successful vaccination in his district. This is the third time in succession that Mr. Cockran has received the grant.