PRESIDENTIAL ADDRESS ON SOME POINTS OF PROGRESS IN OPHTHALMIC SURGERY.

*Delivered at the Annual Meeting of the Yorkshire Branch of
the British Medical Association at Sheffield.*

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AFTER a reference to matters affecting the Branch and its work, the author proceeded:—No one can, I think, on taking a survey of medicine or surgery of to-day, doubt how little applicable to the present time is Lord Bacon's sneer, when he said "that these (medical) sciences stand at a stay, and have done for many ages." The time we live in is essentially one of progress, and not less so is this true of medicine and surgery than it is of science. Look where we will, and on every hand and in every department is evidence of activity. True it is that much that is called progress may, in the course of time, be proved to have been spurious, but much must remain as permanent advances.

The increase in our knowledge of nervous diseases and the elucidation of many problems connected therewith in clinical, pathological, as well as histological respects, is at once evident as one of the many paths along which medicine has and is travelling on the road of progress. For certainly one of the brightest pages in medicine and surgery of this or any time is the one recording the successful efforts at the localisation of nervous function, and the consequent recognition of the seat of disease and the surgical means which have satisfactorily, in many cases, been adopted for its eradication.

Again, in the domain of surgery may be mentioned the widened field opened out by the improved means of diagnosis and treatment of abdominal disorders. Other directions in which the progress of medicine and surgery is evident will at once be apparent.

In speaking, however, of progress, I am not sure that sufficient stress is always laid upon the greatly improved means at our disposal for investigating disease, and the necessity which in consequence, among other causes, has arisen for the more exact and complete recording of cases. These are both, I take it, great advances of themselves. There is a leaning towards exactness, but it must be confessed in truth that in too many respects the goal is still remote.

It is not long since that the cavities of the body were more or less sealed and impenetrable as far as the medical eye was concerned. The groping in the dark has ceased, and now their recesses are illumined, and an insight is held to be necessary, and for this the simple knowledge of how to use a mirror is largely responsible. Not only is this insight true of the ophthalmoscope and the interior of the eye, but who for instance would ever now syringe an ear without examination with mirror and speculum, or would give an opinion on a nasal case without the use of similar instruments, or a laryngeal one without the laryngoscope. The same in other ways will at once suggest themselves. In every direction facilities have increased for the greater use of the eyes in diagnosis. Not that the value of the sense of touch is lessened, but that sight is enabled to be taken more advantage of.

Now, in this general progress to which allusion has been made, as well as in the acquirement and use of better and more accurate means for investigating disease, and the consequent more exact and complete recording of cases, the department of surgery in which I am specially interested has borne its part and reaped corresponding advantages. Many of the ways in which progress could at once be indicated have on many occasions been demonstrated, and are some of them now so apparent as hardly to need further remark. My intention to-day is rather to leave this well-trodden track, and to briefly refer to some points in comparatively recent work—of interest, I trust, outside the confines of ophthalmic surgery.

Let me take an instance illustrating the more exact investigation of a case as practised now than was formerly done. The pupil shall serve as the text. At one time, and at not such a

remote period, it was held to be sufficient to note with respect to it that it acted to light or was sluggish, was contracted or dilated. Now we know that much labour has been bestowed on the investigation of the pupillary movements and their significance. Its indications frequently in a treatise now find separate notice, and often at some length. The conditions of its reflexes as an aid to diagnosis in locomotor ataxy, general paralysis of the insane, and other nervous disorders, are well known. An examination nowadays of the pupil, not pretending to be exhaustive, would include the following among other points: Does it act to light? If so, does it do so to light thrown on all parts of the retina? For it is known that, in some cases of hemianopsia, light projected on the portion of nervous expansion in which function is in abeyance or abolished does not occasion a pupillary response. Exclusion of the fellow-eye has been taken for granted.

Further, does the pupil act to accommodation? If so, and it does not respond to light, the well-known Argyll-Robertson phenomenon is present, so indicative of spinal disease. Again, does it act to convergence? There are other reflexes, such as from surface-irritations, which I need not refer to. Is the pupil dilated? If so, to what extent? and the measurement may be taken with a pupillometer, indicating, also, whether the size was recorded in the shade or light. What is the effect of atropine? does it further dilate the pupil or not? Does eserine contract it? if so, does it do so fully or not? If the pupil is contracted, note the effects again of atropine or eserine.

These latter points are of importance in deciding whether the mydriasis or myosis is dependent on irritative or paralytic lesion. In what has been said no account is taken of the effect of disease in the iris, and the pupil is regarded only as an index of disease elsewhere.

Passing next to the consideration of the ways in which progress has been made in the methods and means of investigating disease, I will take the perimeter as my example. Under the ruder and rougher methods, the lessons to be taught by an examination of the visual field could not be understood. With the means which have been now at our disposal for some time, thanks in our country to the labours of Mr. McHardy and Mr. Priestley Smith, the field of vision is able to be mapped out with something approaching exactitude. Most valuable information has been gained, and this not only as aiding to the diagnosis and prognosis in some cases, but also, in some cerebral lesions, to its localisation. Among other diseases, its use may be mentioned both for diagnosis and prognosis in the insidious non-inflammatory form of glaucoma. The perimeter, moreover, has not merely taught lessons as to the perception of light, but as to colours as well.

A case illustrating particularly the value of perimetric taking of the field of vision came under my notice about this time last year. A young married woman had been severely injured in the Doncaster railway accident of the preceding September (1887), and she was suing the railway company for damages. Her injuries had been very severe. Amputation at the right thigh had immediately been required, and the left leg was severely fractured. She lost a considerable amount of blood, had been badly knocked about the head and neck, and had remained more or less insensible for three days. My friends, Messrs. Knight and Garrard, who had been in attendance, referred the case to me to report on her vision for the trial. I found that sight was perfect, and that the weakening of accommodation from which she suffered was completely relieved by spectacles, and with these she was enabled to read with comfort. There was no tangible change in the optic nerve discoverable by the ophthalmoscope. I was aware, however, that Mr. Garrard for some time believed that the visual field was somewhat contracted. A casual examination was sufficient to enable me to agree with the accuracy of Mr. Garrard's surmise, and a careful mapping out of the fields of vision demonstrated a decided narrowing in each, but more especially in the right. Moreover, the field for red was also correspondingly contracted in each eye.

Here was a fact that could not be got over. The charts coloured, as now shown [the charts coloured were shown at the meeting; they are now of course printed plain], placed before the jury, presented evidence more telling and tangible than verbal could be. Mr. Garrard had known for some time that the field had been contracted, but there was no evidence whether the impairment indicated by the perimetric charts was progressive or stationary. The optic nerve yielded only negative evidence. The cause of this peripheral retinal impairment and other questions connected therewith I must pass by, and I will merely add that

the woman's severe injuries entitled her to handsome compensation. The company offered £600; she wanted £800, and the jury awarded her £1150.

The revolution which has been wrought in general surgery by the introduction and adoption of antiseptics has not been without effect on ophthalmic surgery. Without desiring at all to question the better results, which by a tolerably general consensus of opinion have been obtained under a strict antiseptic *régime* in general surgery, I am free to confess that it has seemed to me that in attributing so much to the kind of antiseptic used and the plan adopted, too little credit has been assigned to the increased care and cleanliness practised in the treatment of wounds of all kinds. The principle involved in the drainage of wounds, for instance, must exert its influence for good, quite independently of any antiseptic system.

It may be admitted that the greatest care had for long been taken as to the performance and after-treatment of ophthalmic operations, but at the same time it is quite noticeable that increased vigilance is exercised now as to the cleanliness of the instruments, and to details in preparations for operations. Generally speaking the results have been better. I believe I was one of the first in this country to record the adoption of antiseptic precautions in cataract operations. That was before this Branch in a paper¹ in 1878. Carbolic acid was then the antiseptic used, but even in weak solutions it was condemned as irritating, and the convalescence of cases after operation was stated to be prolonged.

Perchloride of mercury, after a trial of many others, is the agent now mostly employed, and it is used in weak solutions, 1 in 5,000, or less. Before proceeding to operate for a case of cataract, for instance, the patient's face should have been well washed with soap and water, especially about the eyes and eyebrows. Then immediately before operating the eyes outside are bathed with the perchloride solution, and the lids are separated and the solution allowed to run freely over the globe and under the eyelids. Most antiseptics act injuriously on the instruments, and, therefore, their immersion should only be momentary. For my part I believe it is sufficient to see that your knife is *spotless* and then to place it and your other instruments in absolute alcohol before using.

Some operators will assert that antiseptics completely banish suppuration from their cataract cases. I am disposed to agree that, with the precautions I have pointed out, with cleanliness in the nursing afterwards, and with good sanitary surroundings, suppuration should be only of the rarest occurrence.

In a less methodical manner there are many additional ways in which antiseptic agents are of use in ophthalmic surgery, and upon which I cannot now touch. Iodoform is a most valuable remedy, whether it be in combating the gonorrhoeal gonococcus in the conjunctiva, or checking sloughing corneal wounds, whether after operation or otherwise.

¹ JOURNAL, 1880, vol. i, p. 241.

Any reference to the changes in recent ophthalmic practice would be singularly incomplete without a mention of cocaine. The introduction of this remarkable agent, only about four years and a half ago, immediately wrought a complete revolution, and the test of time has well substantiated its value and efficacy. Valuable, however, as the drug has proved to be in other directions, it is in the field to which it was originally introduced that its properties are most esteemed and find their most constant use. In my own practice, hospital and private, general anaesthetics have almost been put on the shelf, and are only resorted to as a rule in cases requiring enucleation of the eyeball, or in those which are for some reason exceptional. Speaking generally, all conjunctival and corneal operations are done under its influence, as well as strabismus, cataract operations, puncturing the sclerotic, and cases necessitating the use of the electro-magnet. Iridectomies

and operations on the iris must also be added to this list. Ether is still necessary, as before mentioned, for removal of the eyeball. But, here also, I must have performed more than a dozen enucleations with the aid only of cocaine. Generally they have been cases in which, for some reason or other, the use of an anaesthetic was wished to be avoided. After instilling a 3 per cent. solution three or four times during the quarter of an hour or ten minutes preceding the operation, it will be found that the conjunctiva may be divided without pain; then, after checking the bleeding, the cocaine solution is allowed to run freely over the insertions of the tendons, and by avoiding undue haste, it will often be found that the recti may be divided and the operation performed almost painlessly down to the division of the ciliary nerves surrounding the optic nerve. The latter step certainly causes pain, though once or twice a patient has stated that he has suffered hardly anything. Invariably however, I think, they have expressed their pleasure at the operation having been performed without a general anaesthetic.

Simple instillation of cocaine is sufficient, and in only two or three cases of enucleation have I resorted to subcutaneous injection. Toxic symptoms will occasionally occur even from simple instillation. The patient will say that he feels queer, his face will be pale and moist. I have never met with any really serious symptoms. For all operations involving the cornea or sclerotic, too much care cannot be exercised, I think, to have the solution of cocaine fresh. My practice is to have it made just before it is required, either with plain water or with salicylic or boric acid added.

Another point of distinct advantage in the use of cocaine is the saving of time effected. One of my students recently told me that he had calculated that I had occupied just over sixteen minutes in the performance of five squint operations, and that included bringing the patients into the room, laying them on the couch, and their afterwards retiring into the ante-room. I was not aware at the time of the calculation, and I need hardly add that previously all the cases had been carefully examined.

In the performance of the ordinary squint operation, cocaine is

of very great service. It can often be performed almost, if not quite, painlessly. Down to dividing the tendon sensation can be avoided if expeditiously performed, and by keeping the conjunctival wound open and dropping the solution into it, over the site of tendon, it can be completed with but little pain. A general anæsthetic is not required in more than 10 per cent. of my cases and then often its administration² is limited to a "moral effect" to calm the fears and consequent difficulty in believing that the eyeball has been rendered so insensitive.

The operation for squint which I have advocated,³ namely, dividing the tendon from above instead of from below, as is usually done, is of special value when cocaine is employed. The operator is behind the patient, who thus is prevented seeing the instruments, an important point, especially with children. There are other advantages in this method, which I have on other occasions described. I have during the last three years performed it in more than 200 cases.

The present generation has witnessed many improvements in the operation for squint. The objects to be aimed at by operations have become well understood, and though our Board schools and other educational establishments are still busy aiding in manufacturing the article, and the supply is as large, it is the experience of perhaps every operator, that, comparatively speaking, he submits fewer squints to operation than was even a few years ago the case. The reason is easily stated. It is our better knowledge of the relations of optical errors to strabismus, and our increased facilities by retinoscopy and other means of estimating the degree of hypermetropia or astigmatism present, and then of prescribing the appropriate glasses. In this way many cases are cured without operation, and if seen sufficiently early this would generally be the case. Age is hardly a bar to wearing spectacles for this purpose. I have frequently prescribed them for children of three, and sometimes under, and considering that it is generally after this age that squint commences, there is usually little difficulty in this matter of spectacles. Even in the cases that do come under operation the tenotomy is limited as much as possible, the after-correction of the refractive error being allowed to complete the cure.

A mode of treatment which has come much into vogue in both medical and surgical practice in recent years has also found its uses in ophthalmic cases; I refer to massage. It is true that there is not scope for the many refinements under various names with which massage has beset itself. The mode of employment as advocated on the Continent and in this country by myself⁴ is very simple. It consists in rubbing gently, in varying directions, to and fro, and in a more circular manner, the eyelids over the eyeball. The friction may be concentrated chiefly on one spot or be more general, and the surfaces of the eyelids may be rubbed together. Usually a lubricant is used, and vaseline⁵ answers this purpose; but, especially in corneal and conjunctival affections, which are so often well treated by massage, the yellow oxide of mercury ointment, made with vaseline, is to be preferred, the value of the ointment and of the massage being made use of at the same time.

Time compels me only to mention in the most general way the cases for which this method is applicable. Corneal and conjunctival affections, chiefly in chronic, but often in acute cases, derive great benefit from massage; generally they should be free from irritability. In the often obstinate cases of periscleritis it is frequently of great service.

Dr. Mules not long since recorded a case illustrating the value of massage in a recent instance of embolism of the central retinal artery; vision was recovered.

A class of cases has much interested me. I refer to traumatic cataracts, and I include among these soft cataracts which have been needed. I have no doubt that in many cases the process of absorption is decidedly promoted by massage. It should not be adopted until the eye is tolerably free from irritability. If the opening in the capsule is at all free, softened portions of lens can often be massaged out of the capsule into the anterior chamber, and any portions already there can be moved about in the aqueous. More recently I have made use of massage as a means of ripening

immature cataract, especially in cases in which Forster's operation for maturation has not produced such a rapid development as could be wished. In others the anterior chamber may be tapped before commencing the massage. My experience is too limited at present to speak as to its value in these cases.

Some years since I met in the street an old infirm patient who had undergone successful cataract extraction in one eye. I asked when he was coming to have the other eye operated upon. He replied he was "rubbing it off." When I desired him to come and see me when he had rubbed it off, I little thought that I should be advocating massage as a means for promoting absorption, at all events, of traumatic cataracts, or, as my friend would have called it, "rubbing it off."

The introduction of the electro-magnet⁶ for the removal of fragments of steel or iron from the eye may well, I believe, be regarded as one of the distinct gains in recent ophthalmology. It has obtained a firm footing in eye surgery, not only in our own country, but in all parts of the world. That its use has rescued many eyes otherwise doomed to destruction is positive, and equally certain we may be that, if its employment could in all cases be procured early after the accident, the number of failures would be very small. I do not intend to trouble you with details of cases in which the electro-magnet has been employed. I have already put on record thirty-eight such cases, and since then have had thirty-four additional ones, bringing the total up to seventy-two. Out of this number sixty-three fragments were removed from various regions—twenty-five from the vitreous chamber, one from the retina, six from the cornea, ten from the conjunctiva and sclerotic, eight from the iris and anterior chamber, three from the orbit and eyelids, nine from the lens and its capsule, and one from the lachrymal sac.

I am able to introduce to you to-day a man from whom a piece of steel was removed from the vitreous in September, 1880. He recovered perfect vision, and still retains his sight unimpaired. This was my first case in which an electro-magnet was employed. I can merely add that the nine failures admit of a ready explanation. The specimen shown is from one of these cases; it will be seen that the fragment of steel is firmly imbedded in the optic papilla. It is visible on the outer side also, at the point where the optic nerve has been severed at the time of enucleating the globe. It is needless to say that such a case was outside the range of usefulness of the electro-magnet. In the number of cases mentioned, no account is made of the very numerous probings in recent doubtful cases.

I cannot leave this subject without saying, as I have done on other occasions, that the electro-magnet has uses outside the confines of the eye and orbit. In general surgery cases do occur, in which its employment cannot fail to be of service. Mr. Lockwood, when house-surgeon at the Public Hospital, related before our Medico-Chirurgical Society a case in which with the electro-magnet he had removed a portion of steel from a man's urethra. At the infirmary again, Mr. Staniforth collected a large number of cases proving amongst the casualties its value, including portions of metal imbedded in different regions. I myself witnessed also, in a case of my brother's⁷ (Mr. J. Snell, Gargrave) its assistance in removing a needle imbedded for some time in the hand. The electro-magnet admits of adaptation to a variety of cases.

Before passing from eye accidents, I may mention that the treatment of sclerotic wounds by suture has in many cases led to the happiest results. I have before now pointed out⁸ that it is unnecessary and, for some reasons, undesirable to unite directly the lips of the scleral wound. It is sufficient to suture the conjunctiva, for the drawing together of this membrane, the thread, having been passed well under it on either side, pulls together the deeper wound and brings the scleral edges into perfect apposition. By this means, not only is puncturing the sclerotic avoided, but also that of the underlying choroid and retina; the loop of suture, a foreign body in the interior of the globe, and the disturbance incidental to removing such sutures are also done away with. Moreover, in most cases of large scleral wounds, a considerable quantity of vitreous has probably escaped, and the manipulations necessary to pass a needle through the sclerotic unavoidably tend to increase the loss. The conjunctival method obviates this danger considerably.

I am able to show you a youth, whom I treated five years ago, in

² Cocaine mydriasis passes off under ether or chloroform, whilst that dependent on atropine does not. Cocaine mydriasis must not be relied on for needling lens operations with chloroform.—*Vide* my note, JOURNAL, 1885, vol. ii, p. 153.

³ JOURNAL, 1887, vol. ii, p. 637.

⁴ Brighton meeting British Medical Association, 1886; *Ophthalmic Review*, 1886, p. 134.

⁵ Lanoline may be used as a base.

⁶ JOURNAL, vol. i, 1881; vol. ii, 1883, p. 937; vol. i, 1885; also *Electro-Magnets in Ophthalmic Surgery*, 1883.

⁷ JOURNAL, vol. i, 1886, p. 1147.

⁸ *Ophthalmic Review*, 1884, p. 300; *Trans. Ophth. Society*, vol. vii., p. 291.

the manner mentioned. The wound was situated above the sclerotic between the superior and internal recti. The loss of vitreous had been great, and it was still increasing; the eyeball had collapsed, the anterior chamber was nearly filled with blood, and was much deepened by the falling back of the iris and lens. Two months later vision equalled $\frac{2}{3}$, and as you see him now—tested shortly before being shown V = $\frac{2}{3}$, and he read J I easily—he possesses excellent sight, and to outward appearance the eyeball is equal to its fellow.

Such a case as this may well be considered a triumph for conservative ophthalmic surgery. I have selected it to relate, rather than a more recent one, partly on account of the severe nature of the injury, but also because of the length of time that has now verified the result at first obtained.

In conclusion, I will offer a few remarks on transplantation of flaps. Ophthalmic surgery is responsible for the introduction of non-pedicled flaps from distant parts. Dr. Wolfe,⁹ of Glasgow, has been particularly zealous in advocating this method, and with it his name has now become associated. It is certainly one that it seems to me that general surgeons might find serviceable more widely than has hitherto been the case. Recently Professor von Esmarch¹⁰ has recorded a series of thirteen cases. I have had satisfactory experience of its value in ectropion.¹¹ The case I am about to relate is not brought forward because of its success with this method, but rather because, in spite of its apparent failure, the result nevertheless was very satisfactory.

W. H., a little boy aged 6, was brought to me in February, 1888, in consequence of eversion of the right upper eyelid, which had resulted from an abscess some weeks previously. The eyelid was completely turned inside out, and the swollen, thickened, distended and irregular surface of the palpebral conjunctiva suggested an appearance very much like the crumpled outside of a tomato.

From a photograph (before operation).

For the purpose of setting the condition right, the following operation was performed:—On February 10th ether was administered, and the cicatrix which bound the edge of the everted eyelid almost to the brow was divided, and the dissection continued until the eyelid was able to be replaced in its normal position. The next step was to fix it in its place, and for this purpose the edges of the eyelids were vivified at their centres, and united to each other by two or three fine sutures. To fill the vacancy left by the restoration of the upper eyelid to its proper place, a flap was taken from the soft skin on the inner side of the boy's right arm. It measured $1\frac{1}{2}$ inch long and over half an inch wide. The areolar tissue was separated from the under surface of the flap. It fitted well into the vacant place in the eyelid. It was retained in position by fine sutures; and it was covered with green protective, and over that cotton absorbent wool. On the fourth day the flap looked well, and gave every evidence of vitality. During sleep,

however, the next night, the boy unfortunately rubbed off the dressings, and in the morning the flap was found turned up at the edges, and sloughing resulted. Later several small grafts were transplanted on the granulating surface. But, notwithstanding the boy's arms being tied, and every endeavour being made to keep the patient still, again he rubbed off the dressings. Fortunately, during the whole of this time, the adhesion between the eyelids held good. No little islet of new growth could be detected after the transplantation of small grafts, but it is impossible to say that they in no wise aided towards the formation of the thin cicatrix. The wound in the upper lid gradually healed, and as this progressed it showed no tendency to again become everted. The temporary ankyloblepharon undoubtedly in this case contributed most to the satisfactory result, and I think you will agree with me that if the original non-pedicled flap had lived, the result could hardly have been better. In all these cases therefore, it may be regarded as essential to join the eyelids together, for even by itself this temporary ankyloblepharon will, in some cases, no doubt be sufficient to effect a cure. In the case of this boy the adhesions between the lids became, after a time, just a band in the middle; the eye could be seen well, and he was also able to use it. It was not severed until ten months after the operation.

The transplantation of conjunctival flaps, in cases of adhesion of the eyelids to the eyeball, has rendered very great service. Here also, however, help may be gained in certain cases from distant parts. I have myself, and others have also done so, transplanted the conjunctiva from the rabbit; use for this purpose has also been made of the conjunctiva of another person, or from a recently enucleated eye. In February of last year (1888), a lady consulted me on account of a gradually narrowing socket, which compelled her time after time to procure a smaller artificial eye. The one she had, she could no longer wear, and she feared that soon there would be room for none. All this had resulted from

From a photograph (after operation).

the irritation consequent on continuing, after warning, to use greatly roughened artificial eyes. Examination showed that to one band in particular something could be done. When preparing to operate it was more evident than it had been before that to proceed as I intended, and to transplant or rather transpose the conjunctiva would be robbing Peter to pay Paul, and might possibly end unsatisfactorily. I obtained her ready assent to remove a portion of mucous membrane from the inside of the lower lip. Cocaine rendered this painless, as it did most of the operation in the orbit. The piece from the lip fitted beautifully the place in the socket. It was secured there by two fine sutures. The result was excellent, and she was able again to wear with comfort an artificial eye. I repeated the proceedings a little later in a boy with an extensive adhesion, after a burn, of the lower eyelid to the globe. Here also it was very valuable, as it has also been in other cases.

At the Dublin meeting of the British Medical Association (1887) Mr. Arthur Benson showed some excellent instances of the use of transplanting mucous membrane from the lip in the treatment of in-

⁹ JOURNAL, 1875; *Practitioner*, 1883.

¹⁰ JOURNAL, 1889, vol. I., p. 514; *Lancet*, 1889, vol. I., p. 113.

¹¹ *Lancet*, 1882, vol. II., p. 102.

growing eyelashes. This suggested to me the use of the mucous membrane in the cases I have related. I afterwards found, however, that it could hardly be termed an original proceeding,¹² for it had been performed previously in other lands, as also it has been since.

ABSTRACT OF THREE LECTURES ON TUBERCULOSIS IN SOME OF ITS SURGICAL ASPECTS.

Delivered at the Royal College of Surgeons of England.

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LECTURE I.

AFTER subscribing to the view that tuberculosis is a parasitic disease essentially dependent on the bacillus tuberculosis, the lecturer spoke of the various influences which bear upon the production of a fitting soil in which the bacillus may be developed, and continued:—

1. One of these is the influence of inheritance. This is universally recognised. I have notes of a family of four children whose father and mother both died of phthisis. Of these four, one died of caries of the spine, and the remaining three had hip disease, and were patients at different times at the Hospital for Sick Children. In all excision of the joint was performed, but in all the operation failed, as previous treatment had, and all these children ultimately died of the disease.

Yet, although such examples show how strong the influence of inheritance may sometimes be, its effect is often much exaggerated. I have frequently seen children who were descended from phthisical parents, and who have been attacked with tuberculous disease of the spine or a large joint, recover under favourable circumstances, and remain perfectly sound, the only noticeable features in their case being that recovery was slow, and that relapses were for some time very easily provoked. Indeed, if appropriate treatment is adopted in the early stage of these diseases, recovery so frequently follows, in spite of a strong family history of tuberculosis, that the fact that a patient comes of a highly tubercular stock need not prevent our anticipating a perfectly sound and permanent recovery. The two following cases will serve to illustrate this fact.

CASE I.—M. F., aged 8, several of whose relatives on the mother's side were consumptive, and whose brother had died of hip disease, had inflammation of her left hip-joint. She was at once confined on her back, and weight extension was used. At the end of six months the joint was freely movable in every direction. Rest was maintained for six months longer, twelve months in all, and she was then allowed to be up with crutches and a high boot on the sound side. The use of the crutches was continued for a twelvemonth. This was five years ago. There has been no relapse; the joint is freely movable, and the only evidence of the former disease is a scarcely appreciable limp, the result of slight muscular wasting.

CASE II.—F. M., whose brother died of spinal caries, whose mother afterwards died of phthisis, and of whose family several other members were tuberculous, had, at the age of 5, caries of the spine. The disease had been in progress about four months. She was placed in the horizontal position, and this was maintained without a break for twelve months, when it was advised that she should be allowed to get up. Her mother, however, being afraid of a relapse, kept her lying down for another year. At the end of this second year the disease had disappeared. There was no recurrence, and the patient, who is now 25, has been married for three years, has two children, and is in good health.

2. Anything which impairs the general health is well known to act as a predisposing cause of tuberculosis. Fortunately, the con-

verse of this is equally true—that, when conditions unfavourable to the general health are removed, sound recovery from tuberculous disease, if this is not far advanced, will often follow.

3. The influence of age deserves careful attention. A large majority of all cases of tuberculous disease of the spine, joints, cancellous bone, and lymphatic glands begin between the third and the eighth years of childhood, and, though they undoubtedly occur after this period, they become more and more rare as age advances. I am, moreover, convinced that, as a very general rule, the active period of these and similar affections is limited in duration, in other words *transitory*. It appears, broadly speaking, to extend, in different instances over from two or three, to five or six years, and to lie somewhere between the ages of 3 and 9. It is during this period that surgical tuberculosis most frequently sets in, and that it shows a strong tendency to advance. But when this time has elapsed, often no further outbreak occurs, and sound repair takes place. I may briefly relate two cases to make my meaning clear.

CASE III.—A boy, aged 3, was attacked with subacute tuberculous inflammation of his knee. For the next three years, during which the joint was mainly kept at rest, though he was sometimes allowed to walk on it, the disease slowly advanced. He then came under my notice. At this time the joint was enlarged, and there was also flexion combined with rotation outwards. The limb was now enclosed in leather splints, and the patient was kept completely off his feet. For the next two years the joint slowly improved, but from time to time relapses occurred, indicated by increase of swelling and of heat. During this period he suffered from enlargement of the cervical glands. This was at times considerable, but would then subside, and subsequently return. He was also attacked with disease of the left elbow. For this, leather splints were immediately applied, and the joint recovered, with unimpaired movement, in the course of six months. In the following year, that is when the boy was 9, and when his knee had been affected for six years, the joint improved remarkably, becoming fully extended and free from deformity, and perfectly free movement being regained. As I watched this boy, it seemed evident that his tuberculous period lasted for some five years, but that after this time it ceased, and then repair of the joint disease which had previously been delayed, because the tubercular process was still tending to advance, was enabled to take place. For the last four years this boy has been perfectly well, and is constantly on his limb. The joint is fully movable and free from any trace of relapse.

CASE IV.—A boy, whose father had himself suffered with hip disease, had disease of his right hip when he was aged 5. I saw him a year later. The limb was then flexed and adducted, and there was considerable thickening about the upper and outer part of the thigh, as if suppuration was impending. For the next four years he was constantly under observation. At first, weight extension was employed; but later, a Thomas's splint. Eighteen months after the treatment was commenced, he was allowed to be up, with crutches, and a high boot on the sound side. The joint slowly improved. But, between the ages of 6 and 8 he had several attacks of inflammation of the cervical glands, many of which suppurred. At the end of this time the enlarged glands had disappeared, and all mischief at the hip had subsided. The patient, who is now 16, has had no relapse; the joint is freely movable, and no trace of lameness remains.

This experience as to the transitory nature of the tuberculous tendency, although it does not often attract attention, is certainly by no means novel. Every surgeon is familiar with instances in which, even after long-continued and destructive disease of the spine, or of one of the large joints, the time has come when the tubercular process has ceased, and recovery, with firm ankylosis, has ensued, and the patient has remained years afterwards in the enjoyment of robust health.

There is a fact in connection with age, in respect to tuberculosis, which demands particular notice. It is that surgical tuberculosis and phthisis are prevalent at different periods, and are, speaking broadly, separated from each other by an interval of between five and fifteen years. Indeed it is remarkable that pulmonary phthisis and surgical tuberculosis very seldom occur together, or as complications the one of the other. At the Alexandra Hospital for Hip Disease, phthisis is very rarely met with, while, on the other hand, I am informed by Dr. Douglas Powell that at the Hospital for Consumption at Brompton, tubercular disease of the joints and caries of the spine are scarcely ever met with among the patients with tubercular phthisis.

¹² W. F. Smith. Knapp's *Archives of Ophthalmology*, 1888, p. 430, Meighan; *JOURNAL*, 1889, vol. i. p. 706.