An Address ON THE SURGEON AND THE INDUSTRIAL WORKER.

DELIVERED BEFORE THE STAFFORDSHIRE BRANCH OF THE
BRITISH MEDICAL ASSOCIATION.

BY

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I THANK you for the honour you have conferred on me, at the end of nearly a quarter of a century, in electing me once again as your President. It is one I greatly appreciate, and more especially as it affords me an opportunity of showing how the surgical instinct I took as my text before is as essential as ever to make a good surgeon.

It has become the fashion in recent years to belittle the work of those pioneers who laid the foundations on which modern surgical reputations have been built. The main object of my address now will be to indicate as briefly as I can the materials on which those foundations were laid; and it occurred to me I could not take a better text than the life-work of one of the most famous surgeons in this country a century ago—that of Astley Paston Cooper.

I can in my own experience look back for more than half that period; and, while I recognize with admiration the enormous advances which have been made, I feel that we ought not to lose sight of the magnificent work of those to whom we are so deeply indebted. When I was an apprentice fifty-five years ago one of the things which incited me to love surgery was a beautifully written copy of notes of Astley Cooper's lectures taken by my master, who lent them to me. Textbooks were less common then, and manuscript notes impressed one more vividly than any mere book could do. Hence I came to admire the man, and looked upon him then, as I have done since, as a model surgeon, whom it became my ambition to emulate and to worship as my surgical divinity. Nor have I ever had reason to regret this hero-worship, for it has proved an incentive to me throughout the whole course of my surgical career.

It has become customary in recent years to speak of surgery, surgical principles, and practice as a thing apart from the surgeon, as if it were a mathematical sort of science which anybody by a little calculation could successfully reduce to practice. I shall endeavour to show that the individual element occupies a more important place in surgical results than is commonly recognized.

The very interesting story of Astley Cooper's life, told by his nephew Bransby Cooper, is probably well known to most of you. If it is not it ought to be, for it affords an insight into the work of a great surgeon a hundred years ago, and well illustrates the difficulties with which he had to contend at that period. I shall have to draw largely on that history in what I am about to relate.

Astley Paston Cooper was born August 23rd, 1768, and was the fourth son of the Rev. Dr. Cooper and grandson of Dr. Samuel Cooper, author of the *Surgical Dictionary*. He was sent to be wet-nursed by a farmer's wife—a practice strongly denounced by Astley Cooper in after-life in these words:

If a woman be healthy, and she has milk in her breasts, there can be no question of the propriety of giving suck. . . . Shall woman, the loveliest of Nature's creatures, possessed by reason as well as instinct, refuse that nourishment to her offspring which no other animal withholds, and hesitate to perform that duty which all of the mammalia invariably discharge? Besides, it may be said truly that nursing the infant is beneficial both to the mother and child, and that women who have previously been delicate, often become strong and healthy when they suckle.

He was taught at home by his mother, who was a good and clever woman, while his father drilled him in Latin and Greek classics. Other subjects were taken by the village schoolmaster, whose pupil is said to have done him little credit. Of quick perception and keen intellectual powers, he preferred sports and boyish adventures. When-

ever any boyish enterprise was to be undertaken he was generally fixed upon to lead it, and the courage and intrepidity he then displayed became marked characteristics all through his life.

His first thoughts were bent towards surgery by an accident which happened to his foster-brother, whose thigh was run over by a cart, causing laceration of the femoral artery. Astley Cooper, by an intuitive knowledge, had the courage to bind his handkerchief tightly above the wound and stop the bleeding until the arrival of the surgeon. Surgical instinct came in where it had taken others years to arrive at the knowledge he displayed. He was at that time only 13 years of age. About two and a half years after this period, owing chiefly to the captivating influence of his talented uncle, William Cooper, who was then Senior Surgeon at Guy's Hospital, he determined to enter the medical profession, and became an articled pupil of his uncle. But he lived at the house of Mr. Cline, one of the best operating surgeons of the day, and much of the eminence Astley Cooper afterwards attained is attributable to the good influence Mr. Cline exercised over him. He was 16 years of age, an attractive boy with winning manners, which no doubt made him acceptable to those of similar age, many of whom preferred idleness to work. At the end of six months, however, he was transferred from his uncle to Mr. Cline as his pupil, and then began to work seriously and assiduously, and soon became one of the most proficient students in anatomy, a subject he pursued with earnest activity. During his second winter session the students recognized his ability, and by their influence secured for him the post of demonstrator. So keen was he in his work that he had his subjects for dissection brought to his own rooms at Mr. Cline's, where he also carried out numerous physiological experiments which would in the present ignorant age be termed "vivisection." There can be little doubt that the knowledge thus obtained, and the manual dexterity needed to carry them out successfully, helped to make Astley Cooper the surgeon he afterwards became.

It was at this period that the teaching of John Hunter deeply impressed him, and gave to his practical mind a scientific bias of immense value to him. It was customary then, as afterwards, for a clause to be inserted in apprenticeship indentures permitting the pupils to spend one or more years elsewhere. Of this Astley Cooper took advantage by going to Edinburgh in the winter of 1787. It is of interest to us that on his journey thither he paid a visit to the Potteries, where he stayed with Mr. Wedgwood, the potter, and took much interest in the manufacture. At Edinburgh he found his anatomical knowledge and the teachings of John Hunter of immense advantage to him at the Royal Medical Society, where he soon became a favourite with both students and teachers.

On his return to London he made rapid progress, and soon afterwards was married to Miss Cock. On the evening of his wedding day he met his class and delivered his surgical lecture as usual. This surely indicates a philosophical as well as a practical mind. After a visit to Paris, where he attended the practice of Desault and Chopart and met with some stirring adventures during the Revolution, he devoted himself entirely to professional work.

His method of teaching was to bring his cases before his pupils, pointing out to them the nature of the disease or accident, describing the appropriate treatment, and afterwards inculcating the theoretical views which indicated it—an inductive method very different to the dogmatic teaching of others. He combined with his systematic lectures a course of clinical teaching in the wards, where he sought the interest and opinions of the older surgeons for the benefit of his class. His one aim appears to have been to learn as much as possible himself, and impart all he could to those he had to teach—a course beneficial alike to both.

In 1800 Astley Cooper was elected surgeon to Guy's Hospital, and from that date the fame of the hospital became coincident with that of Astley Cooper. About the same time his famous servant "Charles" came to him, who proved a notable person in his subsequent career. What would any Jupiter be without his Satellite? This was how Charles asserted himself on Astley Cooper's busy days: "I am not at all sure that We shall be able

to attend to your master's wishes, for We are excessively busy, and Our list perfectly full for the day."

The means which Sir A. Cooper adopted to carry out his experimental inquiries I need not discuss. His association with resurrectionists and other doubtful characters led him often into serious difficulties and dangers; but we, in our day, have the satisfaction of knowing that it was all done in the pursuit of science and that seeking after truth which has left to us a valuable legacy in the works which he has bequeathed to his surgical successors. Happily the measures he was compelled to resort to are no longer necessary, and, however much we may disrelish them, we must all admire the moral and sometimes physical courage which they demanded. They were pursued with the sole desire to benefit mankind, and they have done so.

At the time I am speaking of it was the custom for every medical pupil to be apprenticed for several years—usually five or six—and most hospital surgeons throughout the country had the privilege of introducing their pupils to the practice of their own hospital. In this manner, unless very indolent or very incapable, every student was pretty well versed in the minor routine of professional work under the eye of his master, and it afforded opportunities of acquiring that practical knowledge of details which goes far to make a successful practitioner. You will find among the most eminent names in our profession those who, like Sir James Paget, ascribed their success largely to what they learnt during apprenticeship. It seems to me unfortunate that a system of teaching and cramming should take the place of it. Students nowadays are too much like babies—too much is done for them in the shape of mentally-peptonized food, which weakens their mental digestion in every way. In the old days students had very much to find out things for themselves, which tended to promote vigour and activity. A man nowadays learns half his anatomy from specimens carefully dissected for him; his histology he gets from sections beautifully made by his teacher, which must be well stained and prepared that he may easily recognize them—whereas in the old days he had to learn how to distinguish tissues without any special preparation or colouring at all. And he did it too.

So with regard to practical surgery. Nurses are allowed to do much of what the students and dressers formerly did, and house-surgeons who have a keen eye for aseptic surgery prefer not to allow any one to dress their cases in the wards. Casualty surgeons in the out-patient room do much which might properly fall to the lot of the dressers.

The tendency to specialize everything detracts from the making of an all-round sound general practitioner. The student is very apt to follow one or more of his favourite departments, to the neglect of what may really be of more future importance to him. The present high standard of examination does not necessarily produce better practitioners, and in the early days of practice other qualifications are needed which were formerly acquired intuitively during an apprenticeship—those little matters which help so much to make a *practical* man; "little nothings" perhaps they may seem, but none the less essential for success, for "trifles make the sum of life," says Dickens, and I agree with him. I know, if I were a patient, which I would rather have in a doctor: practical knowledge and little science, or much science and no practice. An old pupil of Sir A. Cooper, Dr. Edward Reynolds, used to write on his notebooks: "A pound of practice is worth a ton of theory." Many of the best teachers of to-day are fully alive to these facts, but the hide-bound regulations of the examining bodies compel them to keep silence on the subject.

To return now from this digression to Astley Cooper's work, which you will find handed down in a more or less distorted form in modern surgical textbooks. Concerning dislocations, Sir A. Cooper quotes two cases of dislocation of the thigh in which, after being reduced, a swelling formed, and the patient died a few days after. *Post mortem* he found pus all round in both instances. How came this about when there was no wound? The bacillus must have been present and brought into activity by lowered vitality in the part. In connexion with this subject, Astley Cooper speaks of bone-setters in these terms:

That in this enlightened country men without education should be with impunity suffered to degrade a most useful profession, and put to the torture those who have the folly to apply

to them, is a disgrace to our laws, and calls loudly for prevention. —*Essays*.

Alluding to the reduction of dislocations Astley Cooper strikes the keynote of modern practice when he says:

It is now generally agreed among the most eminent surgeons that force should be only gradually applied. Violence is as likely to tear sound parts as to reduce those which are luxated; it calls up all the powers of resistance to oppose the efforts made by the surgeon. But it is the surgeon's duty to produce gradually that state of fatigue and relaxation which is sure to follow continued extension, and not attempt at once to overpower the action of the muscles.

This was said at the time when pulleys and forcible appliances were in vogue. I have myself rarely failed to reduce a dislocation when following this excellent advice. The only feature of it which Astley Cooper does not allude to is to give the muscles fair play, so that they may act together in bringing the bone into position by their own action rather than the muscular action of the surgeon. We now have anaesthetics to assist us. Astley Cooper had only bleeding or tartarized antimony or such-like depressants; or, quite as effectual, the fainting of the patient. The latter I have often taken advantage of with good effect. His description of the varieties of dislocation of the hip-joint has hardly been at all improved upon since.

Astley Cooper, as we know, ligatured the abdominal aorta without any subsequent peritonitis, when the patient survived forty hours; and, in commenting on the case, Astley Cooper discusses the question whether the ligature should be left suspended in the wound or *cut off close to the vessel*, or some other material used. In the case he cites no peritonitis or other inflammatory symptoms supervened, although the operation was done, as such operations were then done, without any special regard to what we now term "aseptic surgery." Mr. Lawrence suggested cutting off the ligature close to the knot, so as to heal the wound over it. Astley Cooper says:

It has occurred to me that catgut would answer the purpose better. Catgut, being more of the nature of the animal matter in which it is embedded, will be more easily absorbed than silk, or, even if not absorbed, be less likely to excite irritation.

Then he describes an operation for popliteal aneurysm in which this was carried out, and the wound closed. In three weeks after the operation the patient was walking about the ward and the wound well healed. When we consider that this patient was 80 years of age, had no anaesthetic, and the wound healed at once without any hindrance, we cannot but recognize the boldness of the surgeon who adopted this then novel treatment. What better is to be seen to-day? Cooper quotes other instances of successful results where a silk ligature was used and cut off short, the wound quickly closing. How far such successful results in his day were due to the greater resisting power of the patients then, their sterner pluck, and possible immunization from septic influences is a point worth consideration. However that may be, the facts remain.

In describing exostoses, Cooper speaks of the true subperiosteal exostosis, and then refers to the medullary form, which he says is distinctly malignant in character, and indicates clearly enough the wisdom of amputating the limb in the latter form. He tried ligature of the artery experimentally, but it availed little; and, like an honest surgeon, alludes to such attempts "only to deter others from making them."

As is well known, Astley Cooper always maintained that bony union never occurred in intracapsular fracture of femur, and he relates an instance in which he met a practitioner who had encouraged his patient to hope for such union. He takes occasion to moralize on it as follows:

Young medical men find it so much easier to speculate than to observe, that they are too apt to be pleased with some sweeping conjecture, which saves them the trouble of observing the processes of Nature; and they have afterwards, when they embark on their professional practice, not only still everything to learn, but also to abandon those false impressions which hypothesis is ever sure to create, before they can be safely trusted. Nothing is known in our profession by guess. . . . There is no short road to knowledge; and observations on the diseased living, examination of the dead, and experiments upon living animals, are the only sources of true knowledge, and the induction from these is the sole basis of legitimate theory.—*Essays*, vol. ii, p. 29.

Here we see how Astley Cooper sometimes was led away from the truth by his reliance on his own investigations, which led him to be very chary of accepting any opinion others might have formed from facts within their knowledge, for it is, I think, an accepted fact that union of fracture of the neck within the capsule does sometimes, though rarely, occur; and cannot therefore be, as he deemed, an impossibility.

This is rather foreign to Astley Cooper's usual attitude, for, in speaking of dislocation of the ankle, he says:

I beg leave to express a hope that any of my friends who may have had cases under their care, which would throw further light upon the subject, will have the kindness to communicate them to me, whether they make for or against the advice I have given.—*Essays*, vol. ii, p. 181.

When we come to the subject of hernia (vol. iii) we find a valuable groundwork, for most of the best surgical work which has since been built on the foundations he laid. His accurate descriptions of the anatomy of hernia are accepted in the present day; and when we come to analyse them in the light of his practical application of them to the cases he describes, we find how clear his deductions were when based upon his own investigations.

In speaking of strangulation of the intestines within the abdomen, he describes most of the conditions now commonly met with, and he particularly refers to the vermiform appendix "entangling the intestine" among them. I have met with most, indeed I think all, of the conditions he describes; and I can recall one particularly, which was published at the time, of multiple strangulations caused by a twisted omentum which it was next to impossible to disentangle. Every surgeon now meets with these cases, and with the aid of anaesthetics is able to deal with them usually in a satisfactory manner. Unfortunately in former days these conditions were usually recognized in the pathological theatre, for Astley Cooper plaintively says:

As the precise nature of these cases could not be ascertained during the lives of the patients, no benefit could be derived from surgical aid.

How different is all this now!

Then, speaking of the division of tendons, he advocates only measures to keep the cut ends as nearly approximated as possible, but no suggestion is made of uniting the tendon by surgical interference—now a routine practice. Not only so, but a surgeon is rightly held to blame if he neglects to secure immediate union by suture if necessary.

With regard to fractures about joints, Cooper calls attention to the necessity for early passive motion, which is fully in accordance with present-day teaching. But I am quite sure that the present method of dealing with fracture of long bones is responsible for the numerous instances one meets with of non-union or serious deformities. To see a foot everted or inverted after fracture of the thigh, simply because fixation is looked upon as needless or not fashionable, is not creditable to the surgeon. Better have a stiff limb temporarily than a permanent deformity.

Astley Cooper, as I have mentioned, disbelieved in bony union of fracture of the cervix femoris within the capsule, and advises that any attempt to ensure it is futile. But I have met with cases of undoubted intracapsular fracture when good union (whether bony or fibrous one cannot say) has taken place, and I always advise that an attempt to obtain it should be made. If it fails, the patient is no worse off, while, if it does succeed, his after-life is far more happy and useful.

In fractured patella I have seen complete union take place in patients over 70 years of age, where suitable fixation has been employed from the first. One prominent citizen of Hanley, who met with this accident several years ago, now well past 80 years of age, walks without a limp, and the fracture is indistinguishable. There are cases however, no doubt, in which wiring is demanded, but in the majority it is not needed now any more than in Cooper's time. Malignant hooks are likewise out of fashion, but I have seen excellent results obtained by his method without the slightest risk. If fixation is adopted, a plaster-of-Paris bandage is the most efficient mode of obtaining a successful result in my experience.

Dislocations of the jaw are, I fancy, much less frequent than they used to be. Is it because people gape less, and yawn less frequently than they did formerly, or laugh less heartily than of yore? I can suggest no other reason.

Throughout Astley Cooper's writings and lectures are to be found numberless references to incidental matters which indicate his acutely observant mind and his great resourcefulness, but I can refer only to a few of them. In dealing with compound fractures he endeavoured, as some of the fourteenth century doctors did, to convert them into simple ones by applying some sealing liquid, such as friar's balsam, which was allowed to dry on. At the present day this is, I believe, considered the best surgical method, whether it be by collodion, iodoform varnish, or some other application. In operating for a very large umbilical hernia he cut away the omentum, ligatured the vessels, closed the wound, and the patient did well. He considered that the cases which did worst, especially in amputations, were those "loaded with adipose matter." This no doubt is often so, but I can recall 2 cases of the fattest women I ever saw outside a "fat woman" show, who were both in my surgical home at the same time, one weighing 21 st. and the other 23 st., each having an enormous umbilical hernia, and both recovered without any untoward symptom. Their great desire was to compare notes with each other on the weight question! It is not, I think, so much the presence of fat as the condition which leads to it—healthy fat is right enough.

Astley Cooper points out that in tapping for ascites it is often preferable to allow the patient to lie on the side, as we do now. Again, in using a catheter, it will, he says, often succeed if the patient stands up when it fails with recumbency.

It is quite evident that many procedures it was in his mind to carry out were rendered impossible when no anaesthetics were available. In spite of this drawback, however, we find that he successfully ligatured the external iliac artery for inguinal aneurysm in 1841. He was the first to demonstrate the possibility of tying the abdominal aorta in a living subject, the first to tap a spina bifida and to puncture the membrana tympani; the first to divide the perineal urethra for stricture rather than tap the bladder; the first to remove exostoses by paring off the periosteum investing them, as a preliminary. On one occasion, although he knew little of the science of medicine, he ventured on a medical opinion with which most of us will agree—that in persons disposed to insanity "constant occupation should be found for such persons." This applies to many others, I fancy, likewise in our day.

Sir Astley Cooper's ideas of medicine were comprised in calomel and castor oil, a few other simple drugs, and he says in his lectures (vol. i, p. 68): "The means by which I preserve my own health are temperance, early rising, and sponging my body every morning with cold water"—an excellent practice, no doubt.

W. Hey relates some interesting cases of operations without anaesthetics about Astley Cooper's time. One of a young lady on whom he operated for caries of the tibia with abscess, where he "trephined the bone and removed various portions extending to every diseased spot. . . . The operation took over two hours, yet the young lady bore it with the utmost patience and fortitude."

He gives an instance of a man in whom the posterior tibial artery was wounded by a pickaxe, in which with his saw he removed a piece of fibula and then tied both sides of the artery. The patient, he adds, "recovered without any bad symptom."

Astley Cooper did not hesitate to mention his failures, as, in one instance, where a patient died suddenly, from haemorrhage after amputation of the thigh, "from his imprudently taking off the tourniquet." Some of the most useful people in the world are those who make occasional mistakes and show others how to profit by them. Great men are never afraid to do this. The greatest danger to the patient lies with those surgical angels who "never lost a case" and, like the good little boy in the song, "never, never told a lie." The best nurse I ever had used sometimes to say to me, when in my haste I did make some surgical mistake in word or deed, "Now let that be a lesson to you," and I am bound to say it usually was.

Statistics are, I know, awkward things, as they are said to be capable of proving anything, and are supposed to belong to the mental species of lies. In spite of this, I am compelled, in order to support my contention, to quote some which will afford matter for reflection. When I went carefully into the subject twenty-five years ago,

I took certain operations as affording a fair basis for estimating results, and chief among these were amputations, as they are perennial and have a sort of definite value. In the tables I submitted then we find the following figures:

Amputations, Injury, and Disease at the North Staffordshire Infirmary.

	Total.	Deaths.	Mortality.
From 1888 to 1907 inclusive ...	428	31	Per cent. 6.86

And, if we divide this period and take it as two of ten years each, we get:

	Total.	Deaths.	Mortality.
From 1888 to 1897 ...	203	8	Per cent. 3.94
From 1898 to 1907 ...	235	23	9.78

This is a much higher rate than the average recorded for fifteen years prior to 1888, and when we come to still more recent times and take the two years, 1908 and 1909, we have the following figures, which are taken from the annual reports, and are, therefore, presumably correct:

Amputations, North Staffordshire Infirmary since 1907 (Two Years).

	Amputations.	Deaths.	Mortality.
1908 ...	35	3*	Per cent. 8.67
1909 ...	48	4	8.33

* Δ disease.

For the last two years, therefore, a mortality-rate of $8\frac{1}{2}$ per cent.

Thus we have 8.50 per cent. as against an average rate of 5.50 for the preceding thirty years. It seems somewhat remarkable when we are assured by some surgeons that no appreciable mortality occurs with modern amputations.

Bearing upon the subject of amputations, Mr. Frederick Page wrote in 1884 that:

Allanson, a century before, in the Public Hospital, Liverpool, performed thirty-five amputations of the thigh and leg without a death. Mr. Syme had twenty amputations for disease in the Edinburgh Royal Infirmary, dressed with dry lint, and no deaths. . . . Is the explanation of the success of the various methods of making and dressing wounds, which has attended the practice of these surgeons, to be found in the care bestowed individually by them in personally carrying out from beginning to end the details of their treatment?

I believe it is.

Of radical cure of hernia we have:

In 1908, 139 cases with one death.
In 1909, 136 cases with no death.

Whereas in the cases of operations for strangulated hernia, there are:

In 1908, 38 cases and 10 deaths.
In 1909, 31 cases and 10 deaths.

This is as nearly as possible the same average as recorded by me in 1887 for many years up to that date.

It is therefore evident that considerable ignorance still prevails on the subject of the dire necessity for early operation in all strangulated cases, while, at the same time it serves to emphasize the teaching many of us have advocated as to the wisdom of operation in all suitable cases without waiting for strangulation to occur. Mr. Hey very sagaciously said in Astley Cooper's time, "I have often had occasion to lament that I had performed it too late, but never that I had performed it too soon" (1814).

In Sir Astley Cooper's day the question of effecting a radical cure in cases of hernia was decided by his contemporaries adversely, but there can be little doubt that the light he was able to throw on the whole subject enabled later surgeons to approach it with greater confidence, although little was done for many years after to bring the operation into good repute. We find the opposition to it came principally from the metropolitan surgeons, and it was not until John Wood especially demonstrated that such an operation could be done safely and successfully that any advance was made. It was denounced at that period at every teaching hospital

in London, with the sole exception of King's College, until about thirty-five years ago, when Sir William Banks brought the subject prominently forward. It was freely discussed and soon widely practised by some method or other, and the results soon convinced even that remote corner of the surgical world I have alluded to that it was a good thing; and it was not long before those who had so freely denounced it sought to father this illegitimate child upon themselves. But they failed, for in this respect it may be considered a bastard still.

Sir W. MacCormac in 1893 gave an account of a large number of operations for radical cure of hernia, but records none of his own before 1883, and only 15 in all before 1890, and in his total list of his own 80 cases there were 2 deaths. Whereas, in John Wood's list of 339 at the same period, there was a mortality of only 2.06 per cent. Of my own operation he makes no mention, except the inclusion of 48 cases performed by Dr. Neve without a death. He gives in his whole list of 2,400 cases a total mortality among all such operations of 2.01 per cent.

In the Royal College of Surgeons of England Report for 1908 we find a remarkable confirmation of the change of opinion which has taken place since the period I have referred to, when every London hospital surgeon, except J. Wood, condemned the operation:

XV.—HERNIA.

The advice of the Council having been asked by the City Council for Organization of Charity upon certain questions concerning the treatment of patients for hernia, the following reply was sent:

"The operation for radical cure of hernia has been much improved in recent years, is more often done than formerly, and gives a very large percentage of successes in suitable cases."

So at last it has received the official sanction of the Council of the Royal College of Surgeons, in spite of the narrow opposition which so long prevailed after it proved eminently successful in the hands of provincial surgeons.

Treatment of simple surgical matters deserves more attention than is commonly given. Take, for example, a simple wart. Many people dread any active treatment, such as cautery, and I have found in such cases the constant application of rubber plaster will cause its entire and painless disappearance. A lady wrote to me recently where this had been done for a very large wart on the fore-finger which quite crippled its use: "Now it is hard to find where the wart was, so perfect is the cure." This, I am well aware, is not heroic enough for the modern young surgeon. I may give another instance where simple treatment may succeed when more elaborate fails. A gentleman was sent to me by a practitioner on account of an extremely painful state of myositis in the muscles at the back of the neck caused by going to sleep with the head hanging over the back of a chair. I simply advised the application of a few leeches applied three days in succession. It completely cured where a multitude of previous remedies had failed to give the slightest relief. For the simple relief of local pain nothing equals the application of leeches. But these, again, are out of fashion. I am told; so much so that they are not always obtainable.

As a further illustration of the value of trifles in surgical practice, I would refer to some cases I published of bladder irritation in young girls. Three instances came under my notice about the same time. I was consulted about a little girl who had great bladder irritation without any evident cause. Micturition was very frequent, and the urine was occasionally stained with blood. Simple remedies were useless, and, suspecting calculus, I examined her under an anaesthetic. Nothing was found, but in the urine next passed I found a mass of woolly shreds. These were examined, and found to consist of fibres of wool identical with a new set of combinations she was wearing. The sounding dislodged the mass. The garments were then discarded, and diluents freely given, with complete and permanent relief. Asked to see the patient's sister, I suspected and found a similar condition, which was cured at once by the same simple treatment. No doubt the fibres had wormed themselves along the urethra and so caused all the trouble. It is a point worth bearing in mind in doubtful cases.

Now is it not a very significant fact that in those operations where manual surgical skill comes in the results are little, if any, better than they were half a century ago? And this, too, in spite of anaesthetics and all modern

appliances. The careless surgeon now—the man who depends on outside protection rather than his own personal skill and knowledge—gets no better results than his despised predecessors. This brings me to say a few words concerning the cult of cleanliness.

The Cult of Cleanliness.

This seems to me as yet but imperfectly understood even by the very advanced aseptic and antiseptic practitioners of to-day. We are told some harrowing tales of what the surgeons of a hundred years ago used to do—but are they really worse than some which may be observed at the present day? I ought, perhaps, to except the ultra-aesthetic who instruct us not to cough or speak, and cover up everything and everybody in a species of mummy wrappings, and trust more or less implicitly to such aids to secure success. I have known of others who belong to this advanced class who will dare to operate on a highly septic case first, possibly because it is more urgent, and afterwards proceed to tackle his clean ones. Surely this

unite. On the twenty-ninth day after he died suddenly, and *post mortem* a large aneurysm of the aorta was found to have burst suddenly.

Then we have also the influence of the mind on the body, and I agree with what Astley Cooper says concerning this, that grief often causes disease and retards recovery, and he thinks it is responsible for cancer sometimes. I have certainly seen instances of latent, that is, quiet, cancer spring into activity with amazing rapidity on the occurrence of some grave mental shock or injury. To anger or fear, and worst of all jealousy, he attributes even more evil influence. All these, and many other like conditions, have to be well weighed when we come to estimate the chances of a patient's recovery, apart from the gravity of the accident or disease. I verily believe that if anaesthetics were to be abolished now half our patients would from sheer want of pluck succumb under any severe operation. It is perfectly lamentable to see a big, strong man without enough physical courage to allow the slightest surgical procedure unless some form of anaesthetic, local or general,

L. S., aged 41, hollowware presser. Fourth finger of left hand caught in cage. Seven months after doing no work. Objects to losing finger. A, Ankylosed; been fractured.

A. B., aged 15, collier. Second and third fingers taken off by planing machine. Attended cottage hospital. No proper covering, so finger ends left raw, with rough bone and very sensitive granulations when seen three months after. Quite unfit for work.

Girl aged 15, tile presser. Crushed in press. Ought to have been amputated at the time. Now both phalangeal joints stiff, with serious disfigurement. June, 1911: This girl has had her finger operated on at a cottage hospital, and is now almost ready for work, thus creditable alike to her and her doctor.

E. W., aged 19, stilt maker. Fourth finger (left) caught in press. Three months after still stiff. A, Stiff.

T. P., aged 50, scavenger. First finger of right hand cut with glass. As seen two months after—flexed, necrosed, and useless (worse than useless).

M. S., aged 28, tile presser. Left forefinger crushed by fall of press. Removed at last joint. Eleven months after still a sinus with fragments of bone coming away, and unable to work.

might be obviated by keeping the great principles of cleanliness in view. Septic germs, depend upon it, are not such innocents as to let such an occasion pass to assert their power. To my mind it is absurd to rail at the rough methods of the period I have spoken about of a century ago, when you see a young gentleman dressing a wound while smoking a cigarette with the ashes dropping on his patient, and his fingers well saturated with salivary eigarette. Where does aseptis come in any more now than then? And if better results do follow in minor surgery, which I take leave to doubt, it may be attributed to the more careful preparation of dressings, the more thorough cleansing of the patient, and the recognition of the principles of rest, than to any superiority on the part of the surgeon over his predecessors.

Influence of Disease on Injuries and of the Mind on Disease.

The influence of disease on injury is important in view of liability under present industrial conditions. Astley Cooper quotes an instance, which will illustrate this point, of a man who had a fractured humerus which would not

be used. Women are far more courageous than men in this respect, and for that reason probably they frequently make the speediest recoveries from injury. I am a great believer in British pluck, and after reading the annals of surgical history, one cannot but conclude it has sadly degenerated from what it was a century ago.

Operation in Relation to Occupation.

Modern antiseptic methods have done much, true aseptic methods which date back to the world's remotest history have done more, to render modern operative surgery safe so far as saving life goes. They have, however, tended to engender a spirit of over-confidence on the part of the operator, and lead him to disregard or ignore the fact that he needs an ample anatomical knowledge of what he is about to undertake before he can really succeed in his work. It is not sufficient to lop off a limb or a small part of one without killing his patient. He must carefully consider, not what is safest for him to do, but what is best for the future welfare of his patient. It will be needful to inquire into and consider the patient's occupation. In many cases it is worse than useless to preserve—for

example, a finger with an ankylosed or distorted extremity, where it would be infinitely better to remove it at the joint below. So, in other cases, especially young women and clerks, the preservation of the bed of the nail, on which a nail may ultimately grow, is important, even if the bony phalanx itself has to be taken away. No doubt many of you have seen and I could quote a large number of cases in which the treatment has been simply to preserve as much as possible, quite regardless of a long train of bony exfoliation preventing work for weeks and months, and

would be the natural fate of those whom these mental quacks pretend to treat. He wisely supplements this by saying—

The wound that must be cut,
No wise physician will attempt to heal
With incantation, elegy, or song.

We cannot mend this now.

All this tends to show that, after all, individuality is what makes a surgeon. Astley Cooper was a great surgeon because "his mind went directly to the leading points of the

Miner aged 24. Right thumb crushed in pit; treated by nurse; seen by doctor, who advised amputation. This was then refused. Took nine months to heal. County court fourteen months after, still not working.

J. H., coal carter. Knocked by coal. Been fractured through joint; ankylosis now. Finger always in the way. Refuses amputation.

H. T., aged 15, apprentice pattern maker. End first finger taken off by saw. Nurse completed the amputation (?) with scissors. Attended eight weeks; never seen by surgeon. End of finger worse than useless, because tender and painful; conical stump with insufficient covering. At end of three years judge reduced the award. A. Ought to have been amputated properly here.

leaving a useless member when all is done. A surgeon wrote to me concerning one of the cases I have illustrated as follows:

"Dear Sir,—You will see the extent of the bearer's injuries. I did no typical operation, but cut according to the cloth at my disposal, in order to save as much as possible."

This well indicates the prevalent practice.

The accompanying diagrams from my notebook illustrate various examples of what I mean—of worse than useless fingers.

This is usually the outcome of unripe experience and want of thought, and the sooner more attention is devoted by the younger practitioners to this point the better it will be for their own reputation and the future earning capacity of their patients. I trust our younger members will allow me to ask them to devote a little more individual attention to what may appear to them rather trivial cases.

W. B., aged 50, glostplacer. Middle finger of left hand crushed; many weeks on a splint, then quite stiff, and remains so. Cannot work because stiff finger prevents any grasping. Seven months after.

Side view.

Euthanasia.

There is another subject I should like just to touch upon, though

it is, I know, a very delicate one—that of euthanasia, which is properly associated with so-called Christian Science. Guy de Chauliac (A.D. 1500) described the Christian Scientists of his time (for they flourished then as now), who referred the sick to the Saints, as "consisting of women and many fools," and in this again it seems to me little advance has been made during those 400 years; while the euthanasia they have in view is well expressed by Sophocles in these words: "It is better far to die than, hopeless still of cure, to languish under sore disease," which

case before him, neglecting all the minor details which perplexed and misled minds of smaller capacity; and as a result his practice was simple and decided" (Horrocks). He knew his work, he knew how to do it, and others saw this and admired the man who did it. Hence his brilliant success. No man who is the victim of surgical fashion could do what Astley Cooper did, and his life-work served to show that with sound knowledge, and strong convictions based upon that knowledge, a man may rise above the mists which surround him, and attain a height not only of success, but of perfection in his work which commands the admiration and respect of us all. His confidence in himself, his sympathetic tolerance of the failings of others, and his whole-souled devotion to his profession, combined to make his life-work an example which we should all strive to emulate and to follow.

Sir Astley Cooper died on February 12th, 1841, in the 73rd year of his age, having been a strenuous worker almost to the last, and leaving behind a record which, if he

C. T., aged 26, collier. Crushed. Quite stiff from X, and unhealed three months after accident.

Side view of same seven months after. Refused operation.

could have seen it, would have convinced him that he had not lived in vain.

The art and craft of surgery in some respects has not progressed during the last century as markedly as the science of surgery; for we find, for example, few novelties and still fewer improvements in the manipulative surgery of the face and extremities. The trunk seems to have received most attention, inside and out, and in this direction the advance has been as marked as it has been rapid. Here anaesthetics have opened up a new era; a very tempting subject, but time forbids me to enter upon it

now. One can but marvel how the surgeons of a century ago managed to perform the operations and secure the results they did.

Human knowledge has its limits, and unless we can prove that man's brains grow larger as the world around him becomes more highly developed, our advance now simply means that we rely more on extraneous aid than in the greater perfecting of men's individual powers. Conversely, it is quite possible that mere mechanical development may have the opposite effect, and the brains shrink as they become less necessary.

In the practice of the art of surgery, as well as in that of medicine, I have often been struck by the clear diagnosis which those who possess a good ear for music often make where others have failed for want of it. Others having mechanical gifts will improvise an apparatus, while another man is wondering how soon he will be able to get an appliance from an instrument maker. In the matter of drawing, again, one who has a good eye for it will usually make a neater, if not a better, operator than the who has not; his lines will be more accurate, and the ends of his incisions will meet at the proper point, and his whole work will be more perfect. So, again, with the sense of touch; this requires a long education, but some never seem to acquire any delicacy of touch—their fingers are "all thumbs," and often they will endeavour to discover by force what can only be made out by the utmost gentleness in manipulation. For example, a movable kidney or other easily displaced tumour can often be made out only by a "surprise touch," and escapes at once from observation with any rough handling. A keen sense of touch is invaluable to the surgeon; a gynaecologist especially is very much dependent upon it for success.

Invaluable as these mechanical aids are, they deal only with one aspect of our work. Medical practice does not consist solely in prescribing medicines and binding up wounds and broken limbs; it has to deal with those in health as well as those suffering from disease and accident; it has to do with moral diseases, moral wounds and weaknesses; and oftentimes the treatment of these is referred to the doctor in preference to that of the pastor—and *a fortiori* that of the legal adviser.

With such cases we have to deal tenderly—it may be a threatened "broken heart" in a daughter, it may be a wasted young life in a son—and in each instance some gentle advice from a trusted medical adviser may save a soul from ruin or reclaim a blasted life. To know how to give wise counsel in such matters can only come by ripe experience. For my own part, I know of nothing in which I feel more satisfied with having lived long, and taken an active part in the world, than that of having been able to give such counsel in matters of the utmost delicacy and difficulty. Spiritual confessions arrive at this, no doubt, earlier but in a different way. They court and seek for the weak side of human nature: with us the weak side is usually the first to present itself, apart from any seeking of ours, and we deal with it as it comes fresh to us, openly, frankly, and fearlessly. We offer advice combined with our sympathy for the weak and erring, our unhesitating condemnation of the wrong-doing, and such advice must command respect. They who fail in this lose the confidence of those who would trust them, and lower the dignity of the profession to which we belong.

REFERENCE.

¹ Hey's *Surgery*, 1814.

THE Mission to Hop-pickers, which originated in a desire to minister to the spiritual needs of the strange multitude who annually journey from the East End of London to the hop fields, chiefly in Kent, affords another instance of the close relation which exists between the work of the medical profession and the Churches. The mission, on behalf of which the Rev. F. G. Oliphant, Rector of Teston, Maidstone, has made an appeal, has found it desirable to provide temporary hospitals and dispensaries for the benefit especially of children. Last year the Kent Nursing Institute lent two nurses to reinforce the work of many volunteers. One of the temporary hospitals is "The Little Hoppers' Hospital," established in a disused roadside public-house at Tudeley; another at Watlingtonbury is in a cottage; others, it would appear, are carried on in tents, but the annual report is not very explicit on this head.

AFFERENT FIBRES IN VENTRAL SPINAL ROOTS.

By LEONARD J. KIDD, M.D.

(Preliminary Communication.)

I HAVE already collected a large amount of evidence—surgical, experimental, histological, and embryological—which seems to me to lead to the inevitable conclusion that afferent fibres, in some cases algetic, in others reflex, exist in the spinal ventral roots of man and many other vertebrates. I hope to publish this work, together with much other work that is connected with it, in the course of a few months. But the practical surgical aspect of this subject is sufficiently important to warrant the publication now of this necessarily incomplete preliminary note.

The operation of division of the dorsal root for intractable pain was first performed by R. Abbe in 1888, and recorded by him in 1896.¹ The records show that in some cases pain is permanently and completely relieved, but G. W. Jacoby² found that in five out of thirteen cases, in which the ultimate result was recorded, though there was improvement, relief of pain was incomplete. E. W. Hey Groves³ has stated recently that in 75 per cent. of cases pain was not completely and permanently relieved by dorsal root section. In one case of his own there was persistence of pain in the areas which the operation had left permanently anaesthetic to all forms of objective stimuli. To my mind this virtually proves that some of the afferent fibres pass centripetally up the ventral spinal roots. We cannot dismiss such findings as his as being due entirely to psychical pain. I hold that these ventral root afferents are few in number, and are probably distributed to muscles, viscera, glands, and (in some lower vertebrates) to skin.

It will be noted that in the case recorded by Chavaunaz,⁴ cited by Groves,³ of severe left intercostal neuralgia which persisted in spite of excision of the corresponding intercostal nerves, a subsequent resection of the left first to fourth thoracic dorsal roots gave only amelioration, but failed to cure. I explain this failure as being due to the fact that the nerve division left the visceral fibres intact, and even the later dorsal root division left some of the afferent fibres—that is, those in the ventral roots—also intact. Therefore the second operation relieved the pain, but failed to abolish it.

In my opinion, we ought to divide ventral as well as dorsal roots in cases of intractable pain, except in the case of the third and fourth cervical ventral roots; here division would cause motor palsy of the diaphragm on the side of section; but, in connexion with this, we must remember that unilateral phrenic palsy in man and laboratory animals does not usually cause danger to life. It is, of course, true that ventral root division for pain would always cause some motor palsy, but the patient would probably almost always prefer this disability to a continuance of his pain. The fact that in some cases dorsal root division does abolish all pain suggests that it may be only in some regions of the spinal cord that any afferent fibres pass up ventral roots to their endo-neural ganglionic groups of cells. I arrived at this provisional opinion many months ago.

Certain experiments appear to me to suggest in the clearest manner that the ventral cervical roots of the pigeon, and the ventral roots of the cauda equina of the dog, contain afferent fibres which supply the reflex component of the muscle-tonus of the wing muscles and the tail muscles respectively. (See on the pigeon, Trendelenburg,⁵ and on the dog, Merzbacher.⁶)

The origin of these ventral root afferents in the spinal cord region, whether cervical (pigeon), thoracic and lumbosacral (man), or sacro-coccygeal (dog), is entirely from endo-neural afferent ganglionic cells, situated, I believe, in (1) the smaller cells of Clarke's column, (2) the solitary cells of the dorsal horn, (3) some of the "middle cells" of the cord, and possibly also (4) some of the cells of the nucleus cuneatus of the bulb. (This special point is one of several which I shall subsequently discuss at full length.)

Readers of my four papers in the *Review of Neurology and Psychiatry*⁷ will be in a position to see that, although I did not discover what I have called the endo-neural