An Address

ON

AFFECTIONS OF SOME JOINTS AS MET WITH IN GENERAL PRACTICE.

Given before the Kensington Division of the Metropolitan Counties Branch.

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THE first difficulty in connexion with the preparation of an address for a meeting of a society such as this is the choice of the subject. In my case, however, this difficulty was removed before it existed by the title being fixed by your Chairman, Mr. George Eastes, and in doing this he has relieved me of much anxiety and responsibility. I confess that I should have hesitated to suggest such a subject as "Affections of some joints as met with in general practice"—Have not the last words been said upon it? Is it not commonplace, worn, and threadbare? And could I hope to bring it before you in a manner worthy of your reception? *Difficile est proprie communia dicere.*

In a paper such as this it is out of the question that one can deal with every kind of joint disease: I shall, therefore, leave out all mention of such chronic affections as osteoarthritis and others which are due to disorder of the nerves. And I shall also pass by without further reference that quiet syphilitic affection of the knees in children which is so apt to be mistaken for tuberculous disease. This last, indeed, is a fit subject for a paper to itself.

Upon the important subject of disease of the hip-joint I shall say nothing. And in this I feel sure that you will deem me wise as well as thoughtful—wise, because if I once began it I should be apt to wander on until I was at last left with scarce a listener: thoughtful, because I thus show that I have some regard for your Chairman, who alone might feel himself bound to hear me out, politely sacrificing himself upon the altar of his Division. Hip disease, however, differs in no way in its pathology from other forms of tuberculous arthritis, though a want of thoroughness and promptitude in its treatment is apt to cause it, or, at least, to allow it to run unchecked, a tedious, and a very unhappy course.

I shall venture to begin with a remark which will almost certainly arouse your attention; and it will probably also stimulate you to answer me back in the discussion which will follow. The statement is this, that if there is one branch of his practice in which the family doctor falls a little short—and, mind you, I say *if*—it is in the early recognition and prompt treatment of diseases of joints. And unless a joint disease is recognized quite early, and dealt with at once and thoroughly, there is something more to be regretted than a mere loss of time. Pathological changes do not wait for the diagnosis to be made; they hurry along whilst the surgeon is hesitating, and the stern chase is apt to become a very long chase. May I delicately hint that the general practitioner is sometimes apt to be just a little casual in his dealings with a case of early joint disease? His attention is probably first directed to it merely by accident, as it were, or in an off-hand sort of way. Is it not often thus:—"Oh, Doctor, now that you are here, I wish that you would look at Johnny; he says that his knee hurts him"? The parents evidently do not regard it as at all serious, but the doctor should not allow himself to adopt their view. Johnny does not want to run the risk of having his liberty and his pleasures lessened, and the doctor, on his part, does not want to make a needless fuss about what may be, after all, a very slight affair. So, at the end of a somewhat cursory examination of the knee (which has been made bare by the boy letting down his stocking and pulling up the leg of his knickerbocker) the doctor is apt to content himself with saying that he does not find much wrong, but that the boy is "not to run about"—which is so vague a bit of advice that it attracts no notice and serves no purpose. Next week the mother says, "Johnny's knee is not right yet,"—as if four or five days of, perhaps, a little less vigorous running about ought to have cured it. Once more the knee is made bare, and again there is not much to be seen amiss with it, though perhaps there may be a slight local swelling; for which clearly something must now be done.

And here I come to a very delicate matter. As a clinical

historian I feel in duty bound to say exactly what is done, and yet I scarcely like to do so. But if in a mean and cowardly way I shirk this responsibility, I may fail to make good the gentle accusation with which I started. Well, here it is: The knee is painted with tincture of iodine! I am not suggesting that this would be done by any member of the Kensington Division of our Association, but I can assure you that the painting of the skin over a chronic affection of a joint, or a gland, is almost the routine treatment in other parts of what is known as the Metropolitan Area. When the white surface is marked by the deep yellow stain people see and know that "something" is being done, and that the case is not being allowed to drift on uncared-for. But the doctor might, as a great divine said on a different occasion, just as well have stroked the dome of St. Paul's to please the Dean and Chapter.

As regards outward applications, two of the greatest impostors in our pharmacopoeia have been the tinctures of arnica and iodine. The former, however, has slowly been stripped of nearly every shred of its ill-earned reputation, and now has scarcely a friend to say a good word for it; but the tincture of iodine has still, as I well know, a host of admirers.

DIAGNOSIS.

If there is anything wrong with a joint, a thorough examination must be made, and this cannot be done, if it is the knee, for instance, by a boy merely letting down his stocking and pulling up his trouser-leg. He ought to be asked to take off boots, stockings, and trousers, so that the two knees could be looked at, and duly compared, at the same time.

One of the most interesting signs of joint-disease is the wasting of the muscles which control the movements of the joint, and this wasting begins to come on quite early. It is not caused simply by a want of use of the limb, though that, no doubt, has something to do with it. It is due to the fact that Nature arranges on her own part, and without any help from the surgeon, to obtain needful rest for the joint by taking all the energy out of the muscles; and this she does by cutting off a good deal of their supply of food. In other words, she tames them by starving them.

The nutrient supply of the muscles, the bones, and the joints is under the care of fibres (the trophic nerves) which come out from the cells in the anterior horn of the grey matter in the spinal cord, and they run in company with the fibres which take to the muscles the power of movement. When a joint is in trouble a message is sent up from it to the grey matter in the cord to the effect that all is not going on as it ought to go, that things are not working smoothly, and that the movements are giving rise to pain. All that Nature can do is to decrease the vigour of the muscles by putting them on lenten fare. And so the limb wastes. This is well seen in the poor condition of the muscles of the shoulder-blade and of the arm when the neighbouring joint is inflamed, and still better in the smallness of the thigh when the hip-joint or the knee is in trouble.

Wasting of the limb is an early and valuable sign of joint-disease, but it can be seen and apprized only when the two sides of the body are clearly brought into view at the same time. Whatever be the joint in trouble, the surgeon must have the boy stripped naked before he begins to examine him. And he ought to take a good general look before he begins to examine the part about which he hears complaints.

In the case of a fat child it may be impossible to be quite sure that there is any wasting of the muscles by merely casting the eye over the two limbs, and if the surgeon takes a tape measure and puts it around them, he may still be unable to assure himself of actual wasting. But let him grasp the limb with fingers and thumb, making firm pressure upon the soft tissues as he encircles them, and he will feel that the tips of the finger and thumb will meet and overlap on the damaged side, or that they are nearer meeting on that side than upon the other, or, which is equally to the point, that the muscles are wanting in firmness, or are quite flabby.

When the surgeon begins to examine the boy with his fingers he ought always to start by overhauling the *sound* side first. The watchful mother at once calls out, "It's not that joint; it's the other side." But in this way the surgeon gets the confidence of the little patient who then lets him do almost what he likes. The surgeon may, by chance, make some useful discovery by looking at the "good" side. He may find some strange birth-defect, or some lurking disease. At any rate, he learns the state of the sound joint, feels the outlines, the muscles, and the range of movements, and he then turns to the bad joint with a clear standard in his mind

by which to judge it. The first thing that he should do is to place the hand flat over the joint and see if the skin is warmer on that side than on the other. Of course, if the joint is deeply hidden amongst muscles, like that of the hip or shoulder, he may not find a difference in the surface heat, but it would almost certainly be manifested in the case of the knee, the elbow, or the ankle.

Why should the skin over the knee be hot because the joint is inflamed? This question may be answered by another, "Why should the cheek be flushed and heated because a man has an aching tooth on that side?" When one throws a stone into a pond the fading ripples reach the margin, and if the splash was a big one the waves are very noticeable. If the pulp of a tooth is inflamed all the blood-vessels in the neighbourhood are in a state of unrest and alarm, and this is shown by a vaso-motor paralysis and a flushing which may spread far from the actual seat of trouble. This is very interesting from a pathological as well as from a surgical point of view; it is a small part of that great scheme of inflammation without which it would be impossible for the surgeon to carry on his work. "But that," as the modern writer says, "is another story."

In finding out if the skin on the one side is hotter than that on the other, the same hand should be used. It is a mistake to feel one joint with the right hand and the other with the left, for the two hands may not be of the same temperature to start with, nor equally clever at measuring surface-warmth.

If the patient is a young or shy child, the surgeon had better keep on talking to him all the time that he is examining the joint, asking him childish questions and getting him to answer them, so as to take his thoughts away from the sore part. And whilst he is gently pressing about for tenderness, and seeing how much movement is allowed, he should also keep a watchful eye upon the child, so that he may learn in an instant by the look of his face if he is hurting him—for a patient should never be made to suffer when a joint is under examination.

IS THE AFFECTION TUBERCULOUS?

It sometimes happens that when a surgeon is looking at a painful joint, and almost before he has had time to make up his mind as to the exact nature of the trouble, the mother blurts out a question which has evidently been for some time uppermost in her thoughts and can no longer be kept in: "Is it tuberculous?" She will not be put off; she must at once have an answer, "Yes" or "No."

It is a good plan, when a surgeon does not want to give a direct answer to some searching question, to ask one for himself; and this time a useful one to put is, "Why do you ask me such a thing?" Then, by watching the manner in which the mother answers his question, he can see how he may best deal with her's. If she says, "Oh, because such and such members of our family have had tuberculous in one form or another," he has got from her a valuable bit of information without having roused her alarm by asking for it, and he may not mind telling her just what he thinks. Whereas, if her manner clearly shows that she has a horrid dread of the very sound of the word which she has just used, he will feel that it would not only be unwise, but actually unkind, for him to confirm her fears. For it cannot possibly do any good that a nervous parent should be told that an affection of a joint is due to tubercle; and as in this world of uncertainties not even a surgeon has the right to be "cock-sure," he may well shelter himself behind a hedge of ignorance, and give to the parent the full benefit of the doubt.

There is no denying the fact, however, that the bacilli of tuberculosis have a very marked fondness for the synovial membrane of children's joints. And if anything has happened to lower the power of resistance of the joint, lurking germs will scarcely fail to seize upon it. There are two ways in which the resisting power may be diminished—namely, by the lining of the joint being hurt by a sprain or a blow, or by the state of the person's health being lowered, as by an attack of measles, influenza or what-not, or by the general surroundings.

It is almost certain that when the joint of a child or young adult is the subject of a quiet, lingering inflammation the cause is a tuberculous infection. A few years ago such a statement might have been traversed through and through, and cast out of a gathering of medical men such as this with ridicule. The chief reason brought forward against it would have been that, if the joint were properly treated, it would

almost for certain get quite well; whereas every practitioner knew that tuberculous diseases were amongst the most incurable of all those to which flesh is heir. The explanation of this difference of opinions is that tuberculous disease of a joint used not to be recognized as such until it had reached an unmistakable form. But by patient work with the microscope, and by experiments in the laboratory, the pathologist has now cleared up the question once and for all, and in the direction which I have pointed out. Personally, I think the pathologist has sometimes gone a little too far. He has been apt to over-state his case, and to do something more than hint that unless the surgeon made a clean sweep of every germ in a case of tuberculous infection, the outlook was very bad or even hopeless. But the pathologist was not always a practitioner, nor was the patient's body an incubator; and certainly the delicate tissue of a bone or joint is not exactly the same thing as a drop of beef-tea or a film of gelatine. Beyond all this, there is a something in the living patient, a spirit or force—call it what you will—a something which the pathologist could not see or appreciate—that faithful friend of the medical man, the *vis medicatrix Naturae*.

When the practitioner is called to see a joint which is giving pain or discomfort to a child or young person, the first question which should occur to him is whether the affection is likely to be the beginning of a long tuberculous trouble; and if he keeps this before him it will make him all the more energetic and thorough in his dealings with the child and with the joint. If after a few weeks' treatment the disease entirely clears up, at least his prompt measures should be allowed to share some of the credit. But if it does not clear up, he at least will have no cause to reproach himself with a want of thoroughness.

I do not believe that I am overstating the case when I say that, in almost every instance, chronic disease in a child's joint is due to the germs of tuberculosis having found a resting-place in the synovial membrane. And when there is a strong history of heredity in connexion with the patient, the parents as well as the medical attendant should keep the thought ever before them.

TREATMENT.

It makes no difference what the joint is; if it is inflamed it must be kept at rest. There may be nothing wrong with the joint so far as sight or touch can make out; but from the moment that advice is sought the limb must be put at rest.

I have heard it confessed by a medical man that because he could discover nothing wrong with a joint which was said to be the seat of pain, he had not thought it needful to rest it; but that he had, rather, let the patient go on using the limb, in the hope that signs might become marked enough to warrant his taking serious measures with it, or that, by good luck, the trouble might wear itself out. In fact, he had allowed himself to play the part of what our neighbours call an *agent provocateur*—encouraging a somebody to run a wicked course in order that he might have something clear with which to deal. This, we are bound to say, was very wrong. A case should not be allowed to drift on because the surgeon is unable to find out exactly what is the matter. After all, treatment is far more important than diagnosis; so, without waiting until he could make up his mind as to what is amiss, the doctor would do well in every case to send the person at once to bed, or, at any rate, to remove him from his active life whilst a splint and bandage are being got ready—for I take it that something of this sort will be wanted. When a joint is in pain there is nothing so good for it as a well-fitting splint.

If the trouble is in the shoulder the arm must be fixed to the side by a broad roller bandage, or by a binder, and the patient must not thrust his hand through his coat sleeve until all pain and tenderness have passed away, though it may not be necessary to keep him in bed. If it is a child, however, bed is the best place for him for a time, so that he may understand how needful rest is thought for his bad arm. If a child is up and about, there is no saying what he may do; and certainly, until he has learnt that he must be "very careful," bed is the best place for him.

If it is the elbow that is in trouble, the forearm must at once be bent to a right angle and the limb secured in a splint. And for splinting there are few things more handy for the purpose than a square of common house-flannel cut into pieces of the proper size and shape, dipped in a creamy mixture of plaster-of-Paris, and fixed in place with a bandage of butter-cloth muslin. The house-flannel splint is put on next to the skin, without any cottonwool, and it should be long enough to

reach three-quarters of the way up to the shoulder and almost down to the wrist, for a splint which occupies only about the middle third of the limb does not suffice to keep the joint quite quiet.

I am glad to turn aside here to say that the surgeon who has learnt to use house-flannel and plaster-of-Paris finds his knowledge coming in usefully in all sorts of cases. It makes him ready to deal with a broken limb or an inflamed joint at a moment's notice, and without having had to keep in store a selection of splints suitable for all sorts of cases. If, as dresser or house surgeon, he did not learn the art of putting on a plaster splint, he can easily pick it up by seeing it once done. There is, however, a good deal of knack in it. The flannel having been duly cut into shapes and laid ready, an inch or so of water is poured into a basin and fresh plaster is shaken into it, out of the paper bag, until it forms a little island in the middle; then, as quickly as may be, it is stirred into the water until a creamy mixture is made in which the flannel is to be soaked. It is well to have two pieces of shaped flannel on each side of the limb, one of which has a surface which is daubed with the cream on one side only, the dry side being placed next to the bare limb. A nurse, or some other assistant, holds the pieces close against one side of the limb whilst the surgeon quickly fixes them in place by a few turns of a wide muslin roller. Without any loss of time the other side of the limb is similarly treated, only in this case the splints are put on outside the muslin bandage which held the other pieces in place. If the splints have been put on nicely there will be a space running up the front of the limb between their borders which is covered in simply by muslin. Almost in less time than I have taken to describe the business the splints have become as hard as boards. And then, or next day, the surgeon may run the scissors up the narrow gap, take off the splints, trim their edges and loosely reapply them.

A dresser of mine was once about to put up in plaster side-splints a broken leg which had just come into St. Mary's Hospital. He had shaken out the plaster into a basin and was just going to pour water over it when the patient said: "If I was you, sir, I should put the water in first and then shake in the plaster." "Will you kindly mind your own business?" said the dresser. "That is my business," retorted the man, "I works in plaster."

There is one great advantage with regard to the house-flannel and plaster splints, they can be made of any length. It may happen that if they are being fitted on a tall man, or a very large limb, the first side will not be finished off before the plaster in the basin has become as hard as a rock, so that a second mixing will be needed. That, however, is a small matter.

The old plan of winding plaster-laden bandages round and round a limb, without any provision for their prompt removal in case of need, has quite given place to that of the side-splints which I have just mentioned.

But of all ways of fixing at rest an inflamed joint, there is none so good as that of leather side-splints. These splints are made of undressed cow-hide, shaped to a paper pattern, and then soaked in hot water and vinegar. Thus treated, the leather becomes as limp as wet brown paper, and after being bandaged on to the limb in this state, in two side-pieces, it is left on to harden. It thus becomes as stiff as need be, and it may afterwards be lined with wash-leather, and supplied with straps. I dare say that there are people who can make and fit leather splints as well as it is done by Spratt and Brooke, of 48, New Bond Street, but I am quite sure there are not any who can do it better. I show some splints made by them; one is for a little boy's tuberculous knee, another for a chronic inflammation of a wrist joint, and so on.

Whilst upon the subject of splints for inflamed joints, I will say that, as a rule, they are not made nearly long enough. For instance, if a knee is to be kept at rest, a splint which reaches only a third of the way up the thigh and a third of the way down the leg does not answer the purpose. If you try it for yourself, you will see that so short a splint does not prevent the knee from stirring. To do its work thoroughly the splint should go nearly up to the groin and almost down to the ankle.

In connexion with the long imprisonment of a limb because of inflammation in a joint, the question will very likely be asked if massage or electricity, or the two together, might not be of service. But inasmuch as a limb cannot be subjected to massage unless it is taken out of a splint, handled and moved about, massage must not be advised so long as a remnant of inflammation is left. If there is truth in what I said, that

Nature begins her treatment of a diseased joint by starving the muscles into a condition of feebleness and inactivity, a surgeon would evidently be flying in her face, as it were, by having them roused and excited by any means whatever. But when it is found that the inflammation has quite passed away, the help of these useful measures may well be sought. And that will be the time also for alternate douchings with hot and with cold water, for gentle, passive movements, and for the carrying out of well-considered exercises, either in or out of a gymnasium.

SPLINTS AND STIFF JOINTS.

A general practitioner once said to me, in reference to a case of tuberculous knee which we were treating together:—"It is all very well for you to come in every now and then, take off the splint, and say that things are going on right. That is easy and pleasant enough. But the drudgery and worry of the case are for me, and on me are piled the questions. And the question that is for ever being put, either openly or in disguise, is whether this long rest of the limb in a splint may not leave the joint for ever stiff." The question is, after all, not an unreasonable one for a layman to ask. He knows that the quieter a split chair-rail is kept after it has been glued, the more solid is the join, and with this in view he may fix and steady the wet splice by wrapping a piece of card around it, lashing it with a string. From his boyhood also he has known that the surface of a pool which is sheltered from the wind more readily yields a coat of ice than that which is stirred by ripples. "And so," he says to himself, "it seems to me that if a knee-joint is long fixed up in a splint there is a great risk of its being stiff for ever." The answer to be given to such question is that it is the inflammation and not the rest which leaves a joint stiff, and that the first thing necessary towards getting rid of the inflammation is to obtain perfect rest for the joint. That if a limb were, by mischance, kept at rest for an indefinite time after the inflammation had passed off, the worst that could happen would be some fibrous adhesions in and around the joint, which could easily be broken down and got rid of later. But that, if the inflammation continued, a steady growth of granulation-tissue would destroy the softer part of the joint, and in due course find its way into the ends of the bones themselves. That if then, by good chance, the state of the patient's health happened to be vigorous enough, these granulations would grow into solid bone, soundly knit the ends of the two long bones together, and weld them into a single mass.

Through the whole field of surgery runs the unvarying principle that the first thing necessary for an inflamed organ is to rest it. The inflamed breast is rested by the child being weaned; the inflamed eye is rested by the light being shut out by Nature or by Art; the inflamed larynx is rested by the call to silence; and for the inflamed joint, whether it is in a gouty great-toe, in a golfer's elbow, in a cricketer's knee, or a child's hip, rest is the one thing needful.

WHEN MAY THE JOINT BE SET FREE?

After a joint has been for some time fixed in a splint, and all cause for alarm has passed away, the question arises as to when the patient may have free use of the limb once more. If the surgeon was wise at the beginning of the treatment, he made no promise as to just when the joint should be set free, and he is, therefore, less likely now to be hurried into doing something which he might afterwards find cause to regret. He takes off the splint and has a good look at the joint, which, because of the wasting of the muscles, may now, perhaps, seem strangely large. I will take it that everything has been going on well, and that there is no one spot about the joint where bulging has taken place. A bulging might mean that the joint still held some "water," or, worse, that a cold (tuberculous) abscess was forming in it.

As I said a little while back, if the joint is inflamed the skin over it is hotter than it should be, and the first thing that the surgeon does is to place his hand over the joint to see if the skin is still warmer on that side, not forgetting, of course, that if a splint and bandage have only just been taken off, the skin is sure to be warmer. He gives it time to cool down, therefore, and afterwards satisfies himself that there is no unnatural warmth.

Then the surgeon carefully presses upon those parts of the joint which are nearest the surface, or gently squeezes them between his finger and thumb. As a rule, the tender places are in the grooves between the two bones forming the joint. In the case of the knee the tender spot is almost for certain over the internal semilunar cartilage, a spot which is found by

gently bending the leg and feeling for the hollow beneath the front of the internal condyle. If there is no finching when this part is pressed, it is unlikely that any inflammation is lingering in the joint.

In the case of the hip the surgeon makes gentle pressure upon the front of the capsule, which he remembers is placed in the crease of the groin behind the femoral artery.

Any remaining tenderness in the shoulder-joint would be found out by pressing on the synovial membrane around the globular head of the bone beneath the acromial process. And in the elbow it would be best made out where the synovial membrane comes close up to the skin around the head and neck of the radius, just below the outer condyle of the humerus.

The wrist-joint is examined by pressing with the finger and thumb sideways between the styloid processes of the radius and ulna and the first row of the carpal bones. This is sure to find out any tenderness in the radio-carpal joint, and a gentle squeeze through the middle of the wrist reveals inflammation in the large synovial membrane of the carpus.

Granted, then, that the skin is not warmer than it should be, and that there is no bulging about a joint, and that no tender spot is to be made out by pressure, the chances are that the trouble has quite passed off, and the limb may be gradually set free again, and movements restored to the joint. But this return to freedom and activity must be gradual. It would not do to say, "Now you are all right; throw away the splint and use the joint." Such cheerful advice would be more than likely to invite a prompt return of the inflammation. At first the splint should be left off only at night, after the person has got into bed, and it should be put on again before he gets up in the morning. Then, if all goes well, it may be taken off in the evening and not put on again till next day. Then it need be worn only when the patient is going out of doors, and so on, a little more freedom being allowed each week, and the surgeon keeping his eye upon the joint the while.

During this time judicious massage will be helpful in bringing back tone and strength to the muscles of the limb. And, perhaps, day by day, a little movement may be given to the joint, so as to help on the return of activity and freedom; but this should be done with much care and gentleness. No risks must be run: far better would it be that the limb should be allowed to "shake itself loose," as Hugh Owen Thomas used to say.

Of course it is possible to overdo the rest treatment of an inflamed joint, as it is possible to overdo every kind of good treatment. Thus, Epsom salts are good for a gouty man, but one does not feed him on them. Still, as regards rest, "better the excess than the defect," and it is very sad to hear that a joint which one has been carefully tending through a long course of tuberculous synovitis is ignorantly handed over to a trial by "bone-setting," or sent to struggle in accomplishing painful tasks in a gymnasium.

It is more than likely that after a splint has been on for a week or two (and greatly to the comfort of the wearer), the surgeon is asked how much longer it will have to be worn. The answer to this question should be, "until the joint is quite well—and a little longer than that." There is a great deal behind this question; it is full of meaning. The parents have been talking to some ignorant, meddling, well-meaning friends, who have told them to be careful that the joint is not kept too long in splints, lest at last, when the splint is taken off, the joint be left stiff. They will have told the anxious parents that they have known this happen more than once. They may have spoken of the case of a girl who had a bad hip and was kept in a splint for two years, and walked lame ever after because her hip-joint had become "set"—all because of that splint! They have also heard of a boy who was never able to move his elbow-joint after having had it fixed in a splint for "an absurdly long while," and they say that, though they would be the last people in the world to interfere with a doctor's treatment, they would just like to ask the parents to beware of the long use of a splint.

They will also tell of a young fellow of whom they have lately heard who went to a "bone-setter just in time to be saved from a life-long stiffness of the knee." And the scene will very likely end by these meddlers saying how wonderful were the ways of those "bone-setters," and what a pity it was that doctors were so jealous of them!

And, gentlemen, the saddest part about it all is that those who talk like this are not the poor, and the uneducated—people whose ignorance could be understood and forgiven

—unfortunately the higher people are in the social scale the more they seem to give themselves over to quackery.

THE SHOULDER-JOINT.

I think that I am right in saying that inflammation of the shoulder-joint is more apt to escape being found out than inflammation in other joints. In the first place, it is by no means a common affection, and, therefore, one is not so likely to be on the look-out for it. For a single case of shoulder disease how many cases of hip or knee disease are seen? Then it is less easy to make out disease of the shoulder than of the hip, because the shoulder-blade moves so freely on the surface of the ribs, and arm lameness is not nearly so noticeable as leg lameness. Directly the hip is attacked with inflammation the joint becomes stiff, and the person walks with a limp which is so marked as almost of itself to show what is wrong. And then come those complaints of "pain at the knee," which, from the earliest days of his work in the wards, the medical man has learnt to regard as the stormy petrel of hip disease. But, in the case of the shoulder, disease may be far advanced before it is found out, because the movements of the arm appear to be but little, if at all, decreased, and the dull, aching pain is more likely than not to be put down to "rheumatism."

On the first mention of pain at the shoulder the surgeon should have the upper part of the trunk laid bare, and, placing himself behind the patient, should take a general view of the back whilst the arms are hanging down by the sides. The first thing which he will then notice is that the spine of the scapula and the acromion process stand out with unusual clearness, because of the wasting of the supraspinatus and infraspinatus muscles and the deltoid, and he will also see that the arm is much wasted. Then, when the patient slowly raises his two arms to the level of the shoulder, he will notice that the angle of the scapula of the bad side begins to move with the humerus long before the other. That is to say, the humerus has become so fixed in the joint that it cannot be raised without the scapula following its movements. And this is just as much an evidence of shoulder-joint disease as fixation of the thigh is of hip disease.

For further proof of disease the surgeon will then fix the scapula with one hand and try gently to move the humerus with the other; he will meet with little success, and if he continues with his efforts they will cause pain. Lastly, he will find that on squeezing the joint between the finger and thumb there is a good deal of tenderness. Most likely the disease will be of tuberculous origin. Certainly so much wasting, stiffness, and tenderness could not be found in any rheumatoid affection.

Supposing that the disease is advancing or that the person is likely to meet with difficulty in keeping the arm quite quiet, even though he has the elbow and hand in a sling, it will be well to protect the shoulder from all chance of disturbance by moulding on a leather shield like that which I show. You will kindly notice that it covers the region of the deltoid and the upper part of the chest, front and back, and that it comes a good way down the arm. Nothing could be better for the purpose.

INFLAMMATION OF THE WRIST.

Considering how apt the hand is to be hurt in one way or another, how it is at the front of everything and liable to be suddenly called upon to do all manner of rough work, and to bear all manner of strains, it is quite wonderful how rarely the wrist-joint gets into trouble. One reason for its so happily escaping from damage is the great freedom of movement which it possesses, to say nothing of the protection given by the readiness with which violence at the hand is received and dealt with at the elbow. But when the wrist of a delicate person is inflamed the result is apt to be very serious, and I do not think that there is a joint in the body which is as badly cared for in time of trouble as is the wrist.

The wrist is so thickly surrounded by tendons that, unless the inflammation is intense, the bulging of the synovial membrane and the flushing or heat of the skin, are apt to pass unnoticed. Having a good deal of pain in the hand the patient thinks that he must have sprained his wrist, and, knowing that sprains are sometimes very troublesome, and are a long while getting well (which, indeed, is quite true), he says little or nothing about the hand, "saving" it as much as he can, and using his fingers with great gentleness. His doctor tells him that he must take care of it, and perhaps tells him also that he had better wear it in a sling. But if, as is more likely than not, it is the

right hand, a sling alone will not be enough to keep the hand quiet. The man will be often taking it out to give a greeting, to write a letter, or to button a collar. And three or four times a day he has it out for washing. Half-measures of this sort will not be of much avail, and I am sure that no other joint in the body would be so carelessly treated. If it is said that it is so awkward to lose the use of the right hand, and even of the fingers, that it is wanted for hundreds of little services, many of which can be done without the least effort or force, I shall reply that for this very reason the hand and fingers should be placed beyond the reach of temptation, and this can be done only by fixing the hand in a splint as well as by carrying it in a sling.

A wooden splint is not the best sort to use as it shifts its place, and the bandages get loose, dirty and untidy. Nor does plaster-of-Paris serve well, as it is hard and uncomfortable, and is apt to become cracked, soft and soiled. Nothing does so well as a moulded splint of undressed leather. It can be made to fit as close as a glove, and if it is covered with black kid it may be made to look quite smart. A proper splint for the wrist should be long enough to reach from halfway up to the elbow down to the middle of the fingers, for if the fingers and thumb are left free the hand cannot get its full measure of rest, and unless this is secured the trouble may be never-ending.

In bringing these somewhat desultory remarks to a close, the fear comes home to me that you will think I have not made the best use of my time, that I have said nothing new, and that the old things which I have brought before you might have been brightened up a little, somewhat better clothed, and set before you in a more orderly and pleasing manner. And in this criticism I would be the last to join issue with you. Still, if they should by chance have the effect of making any one see more clearly the importance of giving his very best care and his highest skill to a troubled joint in the earliest days of its trouble, the time will not have been altogether wasted.

The Milroy Lectures

ON

INDUSTRIAL ANTHRAX.

Delivered before the Royal College of Physicians of London.

By T. M. LEGGE, M.D. OXON.,
H.M. Medical Inspector of Factories.

LECTURE III.

[ABSTRACT.]

ANTHRAX IN RELATION TO THE WOOL AND WORSTED TRADES.

THERE is interest in comparing the facts now known of the incidence of anthrax in wool and worsted as regards type of the disease, class of persons attacked, supposed dangerous material, and other circumstances, with those brought to light a quarter of a century ago, when the disease was first brought prominently into notice by the report of Mr. John Spear in 1881.¹ Internal anthrax, he wrote at that time, "is the form of the disease which is the much more common one—at all events the more commonly recorded one amongst wool sorters." During the six years 1899-1904 only six cases of the internal form have been reported, and there would thus appear to have occurred a remarkable change in the type of the disease prevalent in Bradford, the external and internal forms having changed places as regards frequency of appearance. As to the diminution of internal anthrax there is no doubt. Dr. Bell, who supplied Mr. Spear with much information as to the clinical symptoms of this type, and has had under observation hundreds of cases of anthrax since then, is sure of it. Some explanation of the change may be found in the more frequent diagnosis of external anthrax now, but this is insufficient to explain the very great reduction in cases of true wool-sorters' disease. Moreover, mild or rudimentary attacks of the constitutional form of the disease are never reported now.

Several of the cases investigated by Mr. Spear followed on manipulation of seriously infected van mohair. More recent cases of internal anthrax in 1898 and 1899 similarly followed one another quickly on manipulation of gravely infected Persian wool. With our knowledge of the greater virulence of the bacillus under certain conditions it is not unreasonable to assume that variations in type may be due to this cause,

and that at some future time there may be recrudescence of the severer form.

The principal circumstance, however, which has altered since the time when Mr. Spear wrote, is that under which the manipulation of the wool takes place. Now, in addition to regulations requiring care in the opening of the bales and removal of the damaged wool or hair, fallen fleeces, and pieces of skin, none of the dangerous specified wools—alpaca, pelitan, cashmere, Persian, camel hair, and mohair—may be opened or sorted except at a place where a constant draught of air maintained by a fan carries the dust away downwards. Instances could be cited in which occurrence of anthrax seems to have followed as cause and effect on cessation or impairment of action of this fan exhaust. Changes in type of the disease, therefore, may be due to these altered conditions of working.

Twenty-five years ago Mr. Spear insisted also on the fact that "with rare exceptions only those suffered who were employed in the first manipulation—in the sorting process,"² qualified, however, by the statement that "the power of the wool for mischief cannot be said to be exhausted here, for in the combing room the material may possibly prove infective."

Now, cases are more frequent in the rooms where the carding and combing processes are carried on. I say rooms advisedly, because personally I believe some, perhaps most, of the cases are due to infection from unwashed wool, because though combing and carding and spinning are the principal, they are not the exclusive operations carried on in these rooms. The wash bowl occupies a portion of it, or is connected with it by a passage, and along this a current of air may pass from where the unwashed material is being treated. This explanation is insufficient, however, to account for all the later process cases. In the year 1904, for instance, two persons at least were attacked in factories where no raw material, but only finished noils tops (probably of Persian wool) were used. These tops must have passed through all the various stages of cleaning, washing, and the minute separation of one fibre from another in the combing machines at one factory before they were conveyed to the other where infection occurred.

Although the disease was first noticed after the introduction of alpaca and mohair as textile materials in 1837, and occasional sudden deaths occurred in later years (1867, 1868, and 1874) from alpaca,³ the danger from mohair (introduced about 1863) seems to have overshadowed that from other material—such as Persian wool—at the time of Mr. Spear's inquiry. He gives the following list of foreign wools in the order of their apparent noxiousness as it was at that time considered to be: (1) Van mohair, (2) Persian, (3) camel hair, (4) alpaca, (5) Turkey mohair, (6) pelitan, (7) Cape mohair, (8) cashmere. Now the order would be: (1) Persian, (2) Turkey mohair, (3) van mohair, (4) East Indian, (5) camel hair, (6) alpaca, (7) pelitan and cashmere. Possibly the disappearance of van mohair from the position of greatest noxiousness is due to the fact that van mohair alone is required by the regulations to be washed and sorted while damp, if at all. The explanation why Persian wool is so largely in demand arises from the fact that this breed of sheep is one of the few in which the wool is naturally of a black, brown, or fawn colour.

The absence of anthrax from manipulation of the immense supplies of Australian and New Zealand wool I attribute to comparatively small incidence of the disease in animals in those countries, and to the precautions taken to prevent its spread and to proper disposal of the carcass. To the existence of similar precautions may also be attributed the rarity of cases in connexion with wools from the Argentine, where anthrax amongst animals is common.

To make manipulation of wool and horsehair from Asia safer, washing the sheep prior to shearing, willowing the wool free from dirt and dust, and discarding the fallen fleeces in the country of origin would be the next best thing to disinfection of the material, were that possible, by means of steam. This is what some manufacturers would wish to see done, and in March, 1903, the Chambers of Commerce of Bradford, Halifax, and Kidderminster addressed a circular letter urging that persons consigning Persian wool should endeavour, first, to keep out of the bales extraneous matter, and, secondly, to pack locks, fallen wool, and skin in separate bales. Any loss on locks sold at lower prices would be more than recouped by higher prices obtained for honestly-packed bales.

All the evidence shows, however, that wool is washed less