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PART I.

ORIGINAL COMMUNICATIONS.

ART. XXIV.—*The Surgical Treatment of Tubercular Consumption, and of some of the Tubercular Affections frequently associated therewith.*^a By THOMAS SINCLAIR, M.D., F.R.C.S., Eng.; Surgeon to the Ulster Hospital, and Assistant-Surgeon to the Royal Hospital, Belfast.

THE growing disposition manifested by physicians to enlist surgical aid in diseased states, hitherto regarded as purely medical, is attributable, partly to the failure of internal medication in many of these states, notwithstanding the flood of light recently thrown upon their pathology, and partly to the startling successes achieved by surgeons in operations of great magnitude and brilliance. The wave of confidence which now flows in the direction of Surgery, on account of the leading position latterly assumed by it, is of greater dimensions than the progress directly ascribable to surgery appears to warrant. Much of the recent surgical advance is due to the more exact knowledge of the causation of disease, and to the more accurate interpretation put upon signs and symptoms by physicians, leading them to form wonderfully correct estimates of the site, extent, and nature of many affections usually subjected to medical treatment only.

Professional attention is too much diverted from the sister art of Medicine at the present. Even physicians, notwithstanding

^a Read before the Ulster Medical Society, as an introduction to a discussion on the Treatment of Consumption, on February 2nd, 1887.

the generous rivalry between the two branches in the treatment of disease, are prone to undervalue the influence of their own discoveries in ætiology and pathology in rendering justifiable, not to say inspiring, many new surgical undertakings.

There is in this resort to surgical assistance a tacit acceptance of the modern view that many diseases classed as constitutional are local in their inception, becoming general by dissemination, and are amenable to treatment calculated to remove the affected parts, while as yet the disease is strictly local.

It is just possible that surgery, with its improved methods, protectives, and dressings, may become too presumptuous, and feel encouraged to attempt the cure by surgical means of diseases not adapted for such treatment. It is to be feared that, if it do not wait a little for pathology and internal medicine, it may bring upon itself no little discredit by its new departures, rather than add to its present laurels. The questionable benefit following wholesale extirpations of the thyroid body will serve as a striking illustration of what is meant, and the fate of surgical interference in phthisis, tuberculosis of the kidney, and other vital organs, is yet to be determined.

The surgery of the lung, which is yet in its infancy, includes the operations of—1, pneumonectomy, or excision of a portion of a lung; 2, pneumotomy, or the incision of lung tissue with a view to drainage of a cavity; 3, the injection of absorbent or antiseptic solutions into pulmonary consolidations or cavities.

All of these have been applied in the treatment of tubercular consumption—1. With regard to the ex-section of portions of a lung, it should be borne in mind that Biondi, of Naples, has performed the operation with invariable success in sheep, dogs, and cats. Parts of one lung or both apices were thus removed. Even the extirpation of an entire lung proved fatal in only half the experiments on these animals. Later, the same observer injected parts of the lungs with tubercle in similar animals, and after several weeks, when signs of tubercle had appeared, extirpated the affected portions—none of the animals dying of tuberculosis. The operation has been carried out on only one human being, with a rapidly fatal result (Druitt), and possibly most will hold with Dr. Douglas Powell that pneumonectomy “cannot yet be considered within the range of practical surgery.” Nevertheless, one cannot but admit that the removal of a diseased portion of any tissue the seat of tubercle, which may destroy life by its local

ravages, or by general infection, is sound in principle, and in consonance with the modern doctrine of tuberculosis. What fails is our knowledge of the cases suitable for such heroic treatment, and the manner of performing the operation so as to offer some prospect of recovery.

2. The second operation, that of pneumonotomy, though by no means so disastrous as pneumonectomy, has not had a very encouraging record when applied to tubercular cavities. This operation does not appear to have caused death *directly*, though the hæmorrhage incident to incisions in lung tissue, when deep, is usually copious. The benefit accruing from pneumonotomy has not been striking. The class of cases of lung cavity offering any inducement for its performance are those of unilateral disease presenting one large cavity, situated near the lung periphery, with adherent pleura, with difficulty of coughing up the putrid contents, and smart feverishness. Basal cavities appear more favourable than apical, possibly because they are more suitable for drainage; apical cavities, by the aid of gravity, inclining to empty themselves by the respiratory passages; and possibly, also, because the basal are more frequently examples of pneumonic phthisis, while the apical are usually true tubercular. Further, the probability of overlooking the existence of other cavities besides the large one subjected to operation is very great, and the not remote possibility, that the disease is not confined to a single lung, forces one to conclude that the general application of the method must wait upon more exact diagnosis as to seat, extent, and number. At any rate, the decision is one to be made by the physician rather than the surgeon, and, recollecting that cavities have a tendency to discharge by the bronchi and heal in many cases, the plan is not to be hastily adopted. As Dr. Powell remarks, "excavation is a conservative process, in so far as it results in the removal of morbid materials that are far more injurious than vacuity; and it often is the prelude to changes of a healing kind."

If we admit a general resemblance between the processes of tuberculosis and pyæmia, recognising in the retained putrefying tubercular pus a source of septic matter for absorption and consequent fever, then the free drainage of such a lung cavity should to some extent diminish this absorption and fever by removing the source. But it is just here, it seems to me, that the measure is not thorough, for it is not practicable to roughly scrape the interior of such a tubercular cavity in the lung and get rid of the

really active and growing tubercle round its walls, as is possible in the treatment of a tubercular abscess in bone, in subcutaneous tissue, in lymphatic glands, or by the scraping or excision of a tuberculous joint.

Moreover, those who have examined, *post mortem*, many tuberculous lungs must have observed how seldom, even when only one cavity is presented, the surrounding pulmonary tissue was free from small secondary tubercles, scattered to distances beyond reach or calculation, which would defeat the operation.

The occasional pointing of such cavities through the thoracic walls, with discharge of their contents through sinuses, is suggested as an additional inducement to treat them by pneumonotomy, in imitation of nature.

The operation presupposes a very exact estimate of the size and site of the cavity, which should be marked by a circle on the skin. The incision is made along the lower margin of the space which crosses the centre of this circle, though in some cases it is better to resect one inch of rib at this spot. It is also of importance to indicate by a larger circle the surrounding area of dulness. Should the pleura not be found adherent at the time of operation, this must be carried out in two stages, with a three-day interval, during which adhesion takes place, facilitated in some of the recorded cases by suturing. Up to this point the strictest antiseptic precautions are adopted for fear of violent pleuritic complication. The pleural cavity being shut off, a fine aspirating needle, under slight vacuum pressure, is thrust in, it may be in several directions, till the cavity is found; a large trochar and cannula are then thrust in, and the cannula left in position. Mr. Gould introduces a drainage-tube through the cannula, and withdraws it also. Another plan is to incise the lung with a bistoury along the needle as a director, and then to introduce a pair of forceps, and tear a hole sufficient to admit the finger, after the manner suggested by Hilton for opening abscesses. Koch, of Dorpat, thrusts a thermo-cautery from the axilla, after resection of a rib, into the lung to a great depth, boldly, washing out the cavity with an antiseptic solution, and reports favourably in two cases.

It is, however, in bronchiectatic cavities and those of fibroid phthisis that the operation is likely to prove useful, marked improvement as regards cough and the amount of sputum generated having been noted in some cases of the former condition. Having regard to the chronicity of both these states, without medical or

surgical help, it is not irrational to anticipate some good from the proceeding, and it remains to be demonstrated if really any prolongation of life can be achieved in such cases. In abscess in the lung in localised gangrene and hydatids a still more successful future lies for pneumonotomy.

3. The injection of medicated solutions next requires notice:—The plan of injecting tubercular cavities during hæmoptysis with tannin has been tried by Dr. Theodore Williams. Dr. Mosler, of Greifswald, in three cases injected permanganate of potassium, through a very fine syringe, and in a patient with hæmoptysis a weak solution of perchloride of iron. All that can be said as to his results, however, is that none of the subjects were injured.

Dr. Pepper, of Philadelphia, has also three cases to his credit, and reports favourably upon one case. He employed 4 to 10 m of Lugol's solution (liq. iodi., B. P., 4 m—3i.), introduced through No. 1 aspirating needle under local anæsthesia at the moment of completed inspiration. Dr. Pepper recommends the same treatment for solid caseous infiltrations.

Professor Lepine and M. Truc, of Lyons, have given an extended trial to a tincture of creasote, 2 or 4 per cent., in similar cases, with the result that in 15 cases no improvement has been noted, but on the other hand no harm was done, though the amount of the solution used was, in a few instances, 20 cubic centimetres.

I think it is necessary to a calm judicial inquiry into the value of operative treatment of tubercular consolidations and cavities in the lungs, to recognise the more hopeful prognosis that seems warrantable from the revelations of the *post-mortem* room. I have myself performed many examinations of this sort in subjects dead from a variety of causes, and have examined large numbers of lungs when engaged in the dissecting-room of Queen's College, Belfast. I have been struck with the frequency of apical and other cicatrices, indicating the cessation of destructive action long previously. Moreover, in cases of senile phthisis, which is commoner than I was inclined to suppose, there were frequently cicatrices to be found, suggesting the likelihood of the disease, so late in life, having resulted from recrudescence of obsolescent tubercle, the deposit of which dated in all probability from early life. At this time it was active for a little, then ceased, and, after a long interval of dormancy, broke out afresh from some new stimulus.

Again, the ætiological theory favoured by Dr. Hermann Weber,

and very extensively assented to, that tubercle depends upon something received from without, the operation of which is at first local, becoming general later on, dictates that the extirpation of the part first infected, while as yet the disease is local, offers some prospect of radical cure. Whether this something be the *Bacillus tuberculosis*, or some other *materies morbi*, need not here be discussed. In support of this doctrine may be cited the fact that children of parents saturated with tubercle are rarely, if ever, tuberculous at birth, but develop the disease in some part of their anatomy at a later period, after exposure to some external exciting cause—the hereditariness of tubercle resolving itself, therefore, into a transmitted receptivity, which requires a stimulus from without to develop the malady, in this respect contrasting with syphilis, a transmitted disease. The stimulus may be climatic, or arise through employment, social conditions, &c. The infectiousness from person to person is not here specially insisted upon. The acceptance of this doctrine, and the evidence of the *post-mortem* room already cited, together with a not inconsiderable number of clinical facts in reference to the curability of tubercular states, warrant a suspension of judgment upon the surgical treatment of phthisis, and at the same time license further trial in this direction. The stricture passed by Dr. Hughes Bennett in Reynolds' System is too absolute and premature when he says, "The result of all these efforts has been—what an intelligent consideration of the pathology of the disease might have anticipated—a uniform failure." The keynote of modern teaching in this relation is that there is a tendency to repair in tubercular affections under favourable circumstances—the lung cicatrices, the ankylosed joints and spines, the closure of abscesses pointing to more painstaking treatment and more cheerful prognosis.

A word or two respecting pleurisy and empyema of tubercular origin.

At the outset it is necessary to distinguish between the pleurisy produced by the irritation of tubercle in the lungs or bronchial glands and tubercle of the pleura. What follows has reference to the latter condition. It is difficult to be certain that a patient is the subject of primary tubercle of the pleura, but the occurrence of pleurisy, without ascertainable cause, of a patchy character, its occurrence on both sides, associated more with evening rise of temperature than with copious effusion, point in this direction; but until lung signs are superadded it is not easy to decide. And

the indecision is greater where a hitherto simple pleurisy *becomes* tubercular—a not uncommon development.

As a feature in general tuberculosis its treatment need not be considered. Most authorities are of opinion that operative measures had better be avoided in tubercular pleurisy and empyema, but the uncertainty in diagnosis, it appears to me, favours its employment; otherwise simple pleurisy and empyematous cases may be allowed to die where an operation, of no great gravity in itself, would have saved them if they had not been mistaken for tubercular. Dr. Clifford Allbutt recommends that in tubercular pleurisy aspiration should be done when the fluid is embarrassing, just as in simple cases. The temporary relief is very great and justifies the proceeding, though cure is not anticipated, even when purulent aspiration may be done tentatively, to see if the lung will not suffer by complete removal, but as soon as possible an intercostal space should be opened and the pleura drained. Excision of a rib is probably unnecessary in tubercular cases, as a cure is hardly to be expected, and the necessity of providing for drainage for long periods is not apparent. Difference of opinion prevails as to the use of antiseptic syringings. Dr. Clifford Allbutt objects to them, believing that perfect drainage is everything; Guttman uses a glycerinic suspension of iodoform; Mickulicz, small sticks of iodoform dropped into the cavity every 24 hours; others employ weak iodine, salicylic or boric lotions, or Condy's fluid. Having regard to the extremely offensive character of the discharges and the high fever in tubercular empyemata, I think some non-poisonous, non-irritating antiseptic, like boric lotion, is indicated, more particularly as *comfort* rather than *cure* is contemplated. Posterior (or, better, postero-lateral) openings are to be preferred. The recent suggestions of Professor Marshall to open empyemata in front at the 5th costo-chondral or 2nd costo-chondral junction, for the reason that if left to Nature they point here, have not met with approval.

In pneumothorax there should be no hurry in evacuating the air, or air and fluid, as its pressure on the burst lung favours healing of the rupture and happily of other lung cavities as well.

In tubercular laryngitis radical extirpation is not to be thought of, and tracheotomy in such cases is generally condemned. If ever resorted to, it should only be in those instances where an acute inflammation is engrafted upon a tubercular laryngitis that has not exhausted the patient's powers, where a prospect of living a considerable time is seen. Cases of this kind, where the dyspnoea

would warrant tracheotomy, are infinitely rare, if, indeed, in such the dyspnœa ever reaches such a height; and for advanced ulceration the operation should never be done. The less the parts are touched the better; hence it is more advisable to employ insufflations of morphin or cocaïn, combined with iodoform or boric acid, and diluted by tragacanth, applied by insufflators with apertures on the convexity, concavity, or sides as the ulcers may require, aim being taken for the ulcers by laryngoscopic illumination, thus avoiding injury by the beak of the insufflator. The mechanical irritation of brushes, sponges, &c., is to be condemned, though the application of a 20-grain solution of nitrate of silver *at times* deadens the pain in a very marked degree.

Tuberculosis in the Alimentary Canal.—The extensive subjects of tubercular enteritis and peritonitis I must be content to dismiss with the remark that their surgical interest is not yet apparent, while their treatment by medical means is not at all encouraging. I limit myself to the beginning and end of the alimentary tract—to tubercular ulceration in the mouth and to fistula in ano.

In some cases of pulmonary or laryngeal phthisis, ulcers of a tubercular character are occasionally met with on the tongue, on the palate, and sides of the mouth. They are rare, and always secondary to these phthisical states. They are best treated by scraping with a Volkmann's spoon and subsequent dressing with iodoform or nitrate of silver. Excision, it is stated, is sometimes but very rarely needed.

Fistula in Ano.—The ætiological relation between this affection and tubercle elsewhere is not satisfactorily established. It occurs in about 5 per cent. of phthisis cases, and almost invariably in males; and if due, as some suggest, to the swallowing of tubercular sputa, why does it not occur in females as often as males? and why does it occur in some instances before tubercle of the lungs? and lastly, why does it occur in non-tuberculous people? The discussion of its surgical treatment, I think, necessitates the arrangement of fistula cases in three categories:—

1st. Those unconnected with tubercle, wherein the value of operative interference cannot be questioned, but which do not concern us now.

2nd. Those chronic fistulæ, simple for a time, but which become tuberculous later on, leading probably by infection to the development of tubercular consumption. It is worthy of note that in the walls of such fistulæ tubercle bacilli have been frequently found.

In this group early cutting and clearing away of the indurated tubercular lining of the fistula is certainly indicated, and may be followed not only by local healing, but secondary tuberculosis of the lung or other vital organ may be obviated. The method by ligature does not commend itself here, as it affords no opportunity of radically removing the tuberculous tissue of the walls.

3rd. The largest group comprises cases occurring in the course of phthisis, which has abundantly declared itself by signs and symptoms referable to the lungs. Here fistula is a subordinate feature, and should not be operated upon, unless the symptom of pain is so marked as to demand treatment of a symptom. The objections to operating on such subjects are:—1st. The risk of non-healing in diseased tissue; 2nd. The risk of exciting renewed activity and fever in lung cases, though it has occasionally been observed that the opposite effect has followed—viz., the slower progress of the process in the lung for a time following the operative treatment of the fistula.

The success following operations upon the kidney in the human subject, such as nephrectomy and nephrotomy in conditions other than tuberculosis, has directed inquiry towards settling the question whether either of these proceedings is applicable in tubercle of the kidney. Here, as elsewhere, surgery is as impotent as medicine in general disseminated tuberculosis; but when caseating tubercle is confined to one kidney and its pelvis, constituting what is known as scrofulous pyelo-nephritis, the operation of nephrectomy is recommended by Mr. Henry Morris, who ranks at the moment as our authority in renal surgery. Twenty cases are on record with twelve recoveries—in other words, a mortality of 40 per cent.—showing that very great encouragement is given to attempt the prevention of a fatal disease. This record contrasts very favourably with pneumonectomy. It is essential that the other kidney be free and competent. Now it is no easy matter to determine this point, although of much greater moment here than in malignant tumour or stone, where the chances are in favour of its immunity. Bilateral disease occurs just about as often as unilateral, and the younger the patient the greater the chance of its being bilateral. The absence of signs referable to the other kidney, and the presence of the normal amount of urinary solids, go far to attest its freedom.

A large renal abscess from irritation of tubercular deposit is to be treated by nephrotomy and drainage, as also a perinephritic

abscess due to the bursting of a tuberculous pelvis, seeing that these measures offer the only prospect of prolonging life for a time. The prospect of complete cure is not so great as the removal of the entire deposit would ensure, and the only deterrent from nephrectomy is the fear of the other kidney being unsound. However, a small single abscess has been cured in a few cases by nephrotomy and drainage; but multiple abscesses had better be treated by nephrectomy, particularly in the adult cases, wherein the disease is more commonly one-sided. Tubercle of the bladder and prostate develops usually in association with renal tuberculosis, and accordingly in treating of this obscure affection of the bladder I do not dissociate it from the kidney.

I saw at various times, during an illness of twenty months, a young man, aged twenty, belonging to a tubercular family, who illustrated the course and effects of treatment in tuberculosis of the urinary tract, more particularly of ulceration of the bladder. His symptoms at first suggested stone; but the absence of this was over and over again proven. Inability to retain urine; pain at head of penis; pain and tenderness on deep pressure in the perinæum; passage of large quantities of flaky pus; occasional blood-clots and shreds of blood-stained tissue floating in albuminous urine; slight evening rise of temperature, and progressive emaciation, complete the list. No lung disease developed throughout, and he died of uræmia. The passage of sounds, and even soft instruments, caused great pain and spasm at the neck of the bladder. There was no stricture or gonorrhœa. The diagnosis was confirmed by the surgeons of St. Peter's Hospital for Stone, and by many English and Irish surgeons. He was at various times under hydropathic, homœopathic, and allopathic treatment without avail; Turkish baths, sitz baths, hot fomentations and cold packs had their day; the cystitis drugs were exhausted; a pure milk diet followed; next blistering the perinæum; then a course of washing out the bladder, which was attended with the most rapid advance of the disease in the whole history. Early in the disease, before the diagnosis was established, I found that a 20-grain solution of nitrate of silver gave great relief, and enabled him to retain water for two hours at a time and obtain sleep. I had the opportunity of applying it only twice when he was transferred to the country.

I mention these facts in the treatment less for the purpose of recommending them, than for the striking accord in which they stand with Dr. Powell's observation as to the value of strong silver

nitrate solutions in laryngeal phthisis, and for the illustration the course of washing out the bladder affords of Sir Henry Thompson's remark—that the less instrumental help is used in tubercular cases the better.

Tuberculosis of the testicle frequently is primary, but in a larger number of cases is secondary to tubercle of the lungs, kidneys, bones, or joints. It may also form a part of general tuberculosis.

When primary, its commencement will commonly be noted in the epididymis, from which it spreads to the testis, and, more important still, along the vas deferens to the vesiculæ seminales and bladder, not to mention the frequent infection of more distant organs, especially the lung. The primary cases must be dealt with decisively if no infection of distant organs has occurred. Castration should be done at once. Should both testes be affected simultaneously, and the disease be limited to them, remove both. The same remark applies to recurrence of the disease in one organ after the removal of the other some time previously. The urgency is due to the rapid implication of the bladder or lung in many examples of tubercle of the testis. Operative interference in secondary cases, or in those primary ones where the lungs or urinary tract have become involved, should be reserved for suppuration in the testis, and should then take the form of incision with scraping away of the tubercular matter and subsequent packing with iodoform. Castration should *not* be performed unless it be a lighter undertaking than that suggested in any given instance.

Tuberculosis of the eye-ball next claims attention. Passing over the form of ophthalmia, or more correctly keratitis, usually called strumous, as not presenting histological evidence of tubercle, however closely associated with struma, and tubercle of the iris, the treatment of which is also mainly medical, I pass on to tubercle of the chorioid, its favourite seat. Beginning in the deeper layer thereof, its presence is not at first detected from the non-implication of the retina. It might be thought that early excision could be practised in a non-vital part like the eye with advantage in primary tuberculosis of the chorioid, but several considerations act as deterrents—viz., 1. The disinclination on the part of a patient to lose an eye which has still some vision and gives him little pain. 2nd. The possibility of taking a syphilitic for the much rarer tubercular chorioiditis, and excising an eye which should have been left alone. 3rd. The rarity of finding tubercle in the eye of size and distinction to justify diagnosis and excision, without there being

tubercular meningitis or other contra-indicating tubercular affection in some part of the body.

In the specimen exhibited under the microscope, showing a section of one-quarter of a globe filled with caseous tubercle, there could be no doubt that excision should have been done—the case treated, in fact, like a melanotic sarcoma of the same membrane, and for the same reason—viz., to prevent general infection by removing a focus.

Contrasting in a marked degree with the progress of tubercle in those organs furnished with mucous membranes, from which general infection arises with greater ease and frequency, suggesting heroic treatment, are four other tissues from which infection is decidedly exceptional. These tissues are the lymphatic glands, bones, joints, and skin; and the fact above alluded to, coupled with the tendency to arrest shown by tubercular diseases of these four tissues, justifies a more conservative handling of them. The surgical treatment of bone and joint diseases is much more satisfactory and successful than formerly, arising from the value attaching to absolute rest of the affected parts. Perhaps the impossibility of securing this rest for organs like the lungs, kidneys, and alimentary canal, with vital functions to perform, accounts at once for the greater tendency of tubercle in these to advance to a fatal termination, and for the frequent unsuccess attending the medical and surgical treatment thereof. Be this as it may, conservative treatment is indicated in the four tissues named, although this statement is apparently at variance with the local view of the pathology of tubercle already expressed, and which would lead to attempts being made to remove localised tubercle at the earliest possible moment. Here pathology must be qualified by clinical experience, and hence the recommendation of the expectant plan.

As the intention is to confine the present discussion to the treatment of phthisis and to those tubercular affections more frequently associated therewith, rather than to diseases of the four tissues indicated, I must dismiss these with a few brief general remarks.

In this connection I probably use the term “tuberculosis” with greater freedom than many observers, who are guided chiefly by clinical experience, may be inclined to permit. I shall assume that clinical observers have yielded to pathologists in the matter of the identity of scrofulosis and tuberculosis, since it is beside my present purpose to present numerous arguments for or against this identity. The modern view, of which we take Professor

Volkman as the exponent, assumes three tests for tubercle to be conclusive as to its presence. Even two may be depended on—viz., the inoculability of the products, the presence of giant cells and tubercle bacilli. It is in reference to the four tissues named that very many medical men manifest a lingering regard for the term “scrofula,” seeing that secondary infection of the vital organs so rarely results in the history of the chronic diseases of these parts. They accordingly infer that the contrast between tuberculosis in other parts when compared with these justifies a separate pathology.

But the discrepancies in the clinical history of tubercle of joint-structures and glands and tubercle of the lungs may be otherwise accounted for, and that tubercular processes may occur in bone, synovial membrane, and other structures, the microscopic specimens exhibited go far to prove. Further, giant cells and bacilli are found in diseased joint-structures, bones, and glands, and the products in such cases are inoculable.

Why does phthisis so seldom arise by infection from tuberculous glands? Volkman teaches that the glands act as interceptors, in a manner comparable to the bubo of non-infecting syphilis. Should the poison escape the glands, its entrance into the thoracic duct means diffusion and general infection, which has been noted in a considerable number of cases.

My personal experience of excision of glands extends to three cases; in one the removal of three non-suppurating glands in the neck was not only easy but followed by a satisfactory result; in the other two instances, also in the neck, suppuration had occurred, and the boundaries were obscured by the inflammatory matting of the tissues. The healing, I believe, was promoted by the removal of the glands, as far as they could be recognised and followed; still one could not be sure of the number affected, or the completeness of the removal. The opinion I formed leads me to endorse the view that excision should be reserved for very chronic cases, wherein two or three large superficial non-suppurating glands are affected, and it should be done more for cosmetic than for clinical reasons.

When general infection arises from tubercular osteitis or arthritis, it takes the form of tubercular meningitis oftener than pulmonary phthisis.

Phthisis, secondary to disease of bones or joints, is met with in only 2 per cent. of the joint cases, and, when it occurs, is said to be favourably influenced by the removal of the bone or joint focus,

provided this be carried out in the early stage of the lung trouble. I have before my mind at present an instance of hip excision wherein this was exemplified; but very slight reparative action took place at the hip. The disease in the lungs extended but little during many months, and the patient died from amyloid degeneration and exhaustion, rather than from the lung trouble. Lest we should be tempted, in consequence, to operate frequently upon such material, it is well to qualify this statement with König's observation that general tuberculosis in joint and bone cases is usually met with in those *recently operated* upon; hence, an adverse influence might be exerted in some cases upon the lung disease by an operation on a joint or bone. It cannot be too much emphasised that operations on bones and joints should not be undertaken during activity of the tubercular process. While this is actively progressing new tubercles are invading the neighbouring parts, and are liable to be left behind in a scraping operation, causing a recurrence of the disease.

It is to be borne in mind that spontaneous cure in joint and bone diseases, however fortunate it may seem, yet renders the patient more liable to recurrence upon a renewed stimulus being applied than if a radical extirpation of the local tubercle had been effected. This is due to tubercle, in a now quiescent state, existing still at the old site. Hence, it is safer to perform an osteotomy near an ankylosed joint than to disturb the joint itself.

In regard to the influence of injury in causing tubercular disease of bones and joints, a curious fact has been lately pointed out by Volkmann—viz., that a slight injury, productive of a *low* degree of inflammation, is much more potent than a severe injury. The severer injury produces an acute inflammation, which does not provide a favourable soil for tubercular seed.

In endeavouring to account, on the other hand, for the greater frequency of general infection from lungs, alimentary canal, and genito-urinary tract, as compared with glands, bones, joints, and skin, Mr. Makins points out that "the entrance of tubercular matter into canals or cavities with mucous lining, where stagnation is possible or actual length renders long contact possible, favours general infection."

The important observation of König—that general tuberculosis, following disease of joints, occurs commonly in patients who have recently been operated upon—suggests that tubercle may enter the system by open veins.

When an imperfect operation on joints and bones fails to entirely remove the tuberculous matter, at the same time that a cut surface with open veins is provided, quite equal to a mucous surface for absorption, then a closer resemblance may, in some instances, be brought about between the course of tuberculosis of lung, alimentary canal, and urinary tract, and scrofulosis in joints and bones, which may help to establish the identity of scrofula and tubercle.

The outcome of all this reasoning is, that conservative surgery is indicated in joints, bones, glands, and skin; but when operative interference is called for it should radically extirpate the local tubercle; otherwise, if half done, it favours general infection more than when left untouched.

ART. XXV.—*Pylorus Resection*.^a By J. S. M'ARDLE, F.R.C.S.I.;
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As evidence of the importance of this question of pylorotomy, I desire to call attention to the following figures, which show how frequently cancer of the stomach is confined to the pyloric end:—

Habershon collected 79 cases of cancer of the stomach, and of these 41 were of the pylorus, 11 of the lesser curvature, and 10 of the cardiac end; the remainder being examples of diffuse carcinoma. Brunton collected 360 cases—219 of the pylorus, 38 of the lesser curvature, and 36 of the cardiac end. The greater curve, anterior and posterior surfaces, each were attacked in 11 instances, while in the others the disease was widespread. Gussenbaur and Winiwarter examined, in the Pathological Institute of Vienna, 903 cases, and of these 542 were of the pylorus, 65 of the lesser curvature, and 58 of the cardiac end; in the remainder the disease appeared as scattered nodules, or as a general implication of the stomach.

Thus we see that in more than 50 per cent. of all the cases of cancer of the stomach the disease was confined to the pylorus. Of this number more than half will come within reach of surgical aid, for, as shown by Gussenbaur and Winiwarter, of 542 cases of cancer of the pylorus only 252 were complicated by enlargement of glands, infiltration of neighbouring tissues, or adhesion of the tumour to adjoining viscera. Thus, one-fourth of all the cases of cancer of

^a Read before the Surgical Section of the Academy of Medicine in Ireland, Friday, February 18, 1887.