CASE III.

W. D., aged 28, farmer, served under the R.F.A. and was demobilized as fit without asking for any medical board in June, 1919. I saw him on August 22nd, 1919, as he was complaining of great shortness of breath and severe pain over the spleen, which I thought after examination was due to an infarct. I found that his heart was about twice its normal size, extending to the left six inches from the mid-sternal line. There was marked aortic and mitral incompetence, with septic endocarditis. He had had myalgia in the army in 1916, and went back to his duties before he really felt well. He got "all right" afterwards, he thought, and never asked for a medical board or demobilization; but there must have been valvular disease then, and I advised him to claim for it. He died within four weeks of admission to hospital.

CASE IV.

F. W., aged 23, served throughout the war as stretcher-bearer in the R.A.M.C. He had influenza in May, 1918, but did not lie up with it. During the last twelve months of duty he found his heart thumping in a way it had not previously done. He was demobilized as "fit" in June, 1919, without going before a board. He was sent to see me in the following November; I found that he had an enlarged, heaving heart, rate 94, regular. There was a systolic murmur at the apex conducted into the axilla, and a to-and-fro murmur at the aortic area, the diastolic murmur being most distinct in the tricuspid region. He died the year after I saw him.

CASE V.

L., aged 17, examined for insurance in 1918, had an enlarged, regularly beating heart with forcible impulse. In the fourth intercostal space against the left edge of the sternum was a soft diastolic murmur. There was no other evidence of valvular disease. I reported that he had aortic incompetence and advised refusal of the policy. Two years later I was asked to review the opinion as he had been taken to a doctor who said there was no aortic disease. I found the diastolic murmur in the same situation, and my finding was checked by an independent examiner.

CASE VI.

B. F., aged 45, was known to have a faint systolic murmur at the aortic area, and I was asked for my opinion on the value of the case for insurance purposes. I found that the heart was enlarged, with good compensation, the apex being in the sixth space, five inches from the middle line. The rhythm was regular and rate about 88. There was a faint systolic murmur at the aortic area, but there was also a very definite diastolic murmur in the fourth interspace against the left side of the sternum.

CASE VII.

A lady, aged 25, a teacher of physical exercises in schools, who played hockey and looked quite healthy, was an apparently good life. On palpation I was surprised to find that the impulse was regular, forcible and slow (78), and extended four inches to the left from the middle line. The blood pressure was normal. The only auscultatory evidence of valvular disease was a distinct soft diastolic murmur in the fourth left intercostal space against the sternum, which was undoubtedly caused by aortic incompetence.

I can call to mind at least four other insurance cases, all men, in whom I unexpectedly found aortic incompetence with a murmur in the same situation and no other auscultatory evidence of valvular disease.

Conclusions.

When a heart is enlarged, and beating regularly, or fairly regularly, and at a moderate rate, and there is no increase of blood pressure, aortic valvular disease must be suspected and auscultatory evidence sought for, not only over the aortic cartilage but also down the left border of the sternum, and especially over the tricuspid region of the precordia where the earliest evidence of aortic incompetence is most likely to be found.

THE TREATMENT BY REST OF ACUTE INFECTION OF THE KNEE-JOINT.

BY

SIR JOHN O'CONOR, K.B.E., M.A., M.D.,

SENIOR MEDICAL OFFICER, BRITISH HOSPITAL, BUENOS AIRES.

A RECENT publication¹ in which active movement has been suggested during the acute stage of streptococcal infection induces me, as a surgeon who, in civil practice since 1896,² has opened and drained all cases met with of streptococcal (including pyaemic) joint effusions, to enter a protest against any form of movement in acute septic arthritis until the microbic fight has terminated. This period may be recognized by the cessation of "discharge," pain, tenderness, fever, and accelerated pulse; then, and not until then, I advocate, and for years have practised, encouraging the patients to move their knee-joint, gently, once or twice daily, and gradually to increase the number and extension of same.

In my opinion the main factor in this, as in most other acute septic problems, is to do everything possible to secure

what is the natural foundation of all rational treatment, rest, as expounded by our master, Hilton. And I maintain that thorough drainage is the natural corollary of Hilton's ideal in that it clears the "field" of the virulent debris of battle, and, if combined with irrigation by suitable antiseptics,³ rapidly destroys the headquarters of the enemy, thus affording the human cells a chance tranquilly to execute their curative function.

I do not hesitate to state that in case the drainage system adopted is so insufficient as to require voluntary traumatism on the part of the patient to expel pus from the recesses of his already belaboured knee-joint, the auxiliary virtues of surgery are sadly discounted by a half-hearted and inadequate operative method which is positively dangerous to life, in that a virulent articular pus bag is formed which is certain to receive further contamination from outside through bacterial trap-doors which do not admit of automatic drainage from within.

Drainage, like many other things, may be classified as good and bad; the former, if properly done, does not necessitate any violation of Hilton's law; but the latter may embrace anything—loss of reason, dismemberment, or death.

A very simple illustration will suffice to demonstrate the effect of voluntary traumatism in a very common septic condition. One sees a boil on the back of the neck time after time converted into a carbuncle by the patient's efforts to squeeze the pus out of it.

It is not an exaggeration to mention that a considerable percentage of my hospital work has been devoted to atone for the mentality of those who are lured to ignore the elementary principles which govern the natural process of repair by the transient complaisance of some temporizing finesse, which, as often as not, redounds to the anguish of their patients, to the detriment of themselves, and to the discredit of their profession. Seldom a week passes by without my being forced to ask myself the question: Why has Hilton's *Rest and Pain* been allowed to go out of print?—a classic which every English surgeon worthy of the name should take national pride in transmitting to posterity. It stands to reason that the greater the evolution in the science of operative surgery the greater becomes the facility for the application of its doctrine.

I am aware that there are different strains of streptococci and different degrees of virulence of each and of the same strain, and that a treatment which might be futile in the superlative might be effective in the positive; yet it is a duty, founded on long experience, to mark the fact that it is infinitely more culpable to mistake the former for the latter than vice versa, and I do not know of anything outside a grave abdominal crisis in which it is more imperative to order a "general attack" than in a pronounced case of septic infection of a knee-joint, remembering that in what is always a life and death struggle the surgeon merits congratulation who ultimately finds that his dispositions exceeded the necessities.

The plan⁷ which I adopt for such cases is as follows:

Ether by the open method is administered to the patient on an operating table heated by electricity. The limb is shaved, scrubbed with soap and hot water, thoroughly washed with alcoholic mercurial solution (1 in 1,000), and then mopped with acid mercurial lotion (1 in 2,000). A tourniquet is then applied round the upper third of the thigh. Two lateral $1\frac{1}{2}$ in. capsular incisions are made above the patella into the synovial pouch. A long pair of blunt-pointed curved scissors is passed upwards through one of the lateral wounds to the apex of the synovial pouch and a similar opening made. The scissors, again as guide, are passed diagonally downwards through each lateral incision behind the patella to the most dependent points of the inferior angles of the capsule, and the same length of incision is made through the capsule on either side.

The joint is thoroughly irrigated with warm hydrogen peroxide lotion (2 oz. to the litre), the tube is inserted in turn through each of the five openings, and this is promptly followed by a good wash-out with warm carbolic lotion (1/2 oz. to the litre).

Firm pressure is then made with large sponges all around the joint so as to make sure that no pockets of pus escape detection. If any suspicious fluid is seen exuding after firm forward pressure in the popliteal space, the patient is turned on his side and a posterior incision made into the capsule of the joint. The tourniquet is then removed, and spurting vessels seized and ligatured with fine catgut.

Wisps of ten to twenty strands of silkworm gut are then

drawn into the joint by means of a peritoneal forceps passed through from an opposite wound. Each wisp is fixed by a catgut stitch to the edge of the skin incision excepting the posterior opening, which is kept patent by a very thin roll of gauze.

A towel is momentarily applied to cover all wounds while a suitable splint is being brought into position. The towel being removed, dry gauze is applied to the posterior wound, and the splint is then accurately adjusted to the limb and bandages applied, independently, above and below to maintain immobility.

The whole exposed portion of the knee is then enveloped in a hot mercury perchloride fomentation (1 in 3,000), wrung dry, and sterilized wool with bandage applied.

On return to bed in an open corridor facing the sun the limb is suspended in a Salter's cradle, outside the bedclothes. A hypodermic injection of strychnine and digitalin is given every six hours.

Six hours later the irrigation programme commences: Four-hourly flushing is carried out through each of the anterior wounds with warm peroxide and warm carbolic lotions in the order and strength mentioned above, and a hot perchloride fomentation applied after each irrigation.

Even at the risk of boring my readers with detail I think it opportune to mention a few reflections of a twenty-five year innings in infected knee-joint surgery.

Heated Operating Table.

Many of these cases are admitted into hospital in the throes of septicaemia, and as it takes at least twenty minutes to complete the procedure just mentioned, I know of nothing more conducive to the diminution of shock than keeping the patient warm during operation. For this purpose I have for years used hot water tanks or hot water cushions, but recently I have found that an electric heating installation (fitted into the body of the table) is infinitely more satisfactory.

Posterior Drainage of the Joint.

It may have been noted that I make this contingent on the result of forward pressure behind the knee after the five anterior openings have been effected and joint well irrigated. My reason for adopting this course is that (except in the case of a foreign body penetrating or lodged behind the articulation or a direct septic wound) I have found that there is rarely any collection of infective material in this area if the joint has not assumed a decided flexed position prior to operation.

While writing this paper a desperate case of pyaemic infection not only helped to verify this conclusion, but yielded some information which may be of interest to record.

Judging from the general swollen condition, internal tension, and large quantity of "dirty liquid" escaping from the joint while anterior incisions were made, I felt certain that there was general infection of the whole sac, and, as time in this instance was vital, before irrigating and without the above test, I had the patient rolled on his side and (of course, with the limb extended) rapidly exposed and opened the posterior portion of the capsule. Not a drop of fluid exuded even when the edges of incised capsule were forcibly drawn apart by blunt hooks. With a 3 ft. elevation of the irrigator the tube was inserted into the joint, but no liquid was seen to escape through any of the anterior openings; as a matter of fact, it all ran back alongside the tube. Not being satisfied, I reversed the procedure and got two assistants to plug up four of the anterior openings with bibules while I inserted the tube through the remaining anterior one, and I succeeded in apparently distending the joint to its utmost limit, yet not a drop appeared in the posterior opening, although this was held patent by another assistant with blunt hooks. I was still sceptical, and instructed the sister carefully to note the daily condition of the posterior wound dressing, thinking that some of the four-hourly anterior irrigation would eventually percolate backwards. Five days later she reported: "I changed the gauze drain at back each day, but it was never wet." We gave it up, omitted the gauze pack, and, although generally forgotten, this wound healed up of itself aseptically. In parenthesis, I might mention, we saved the limb, largely due to the incessant care of Sister Knight.

My experience dictates that in infected knee-joints the dangerous zone generally lies directly in front of the anterior line of the articulation, particularly intensified in the external and internal inferior angles of the anterior portion of the articular sac, and, although the tension of anterior structures renders drainage of this region comparatively difficult, it must be deliberately and thoroughly executed, otherwise the rest of the procedure would be futile.

Drainage by Silkworm Gut.

Like other surgeons, I have had my share of difficulty in finding an efficient material, and although I am certain that

rubber tubes have, in the past, prevented thousands of catastrophes in my work, yet there is no denying the fact that, *per se*, they do very little drainage, and their beneficial use consists in keeping the wound open until tunnels have formed through which drainage takes place after their removal. A short time ago I substituted bundles of ten to twenty strands of silkworm gut, doubled in two, and ligated with a piece of fine silk about half an inch from each end (of double). From the reports of the staff, as well as from personal observations, the results have been most gratifying: they afford excellent drainage, do not become foul, and no tube of pyogenic membrane forms around their track irrespective of the time they are retained, without changing, in abdominal or other wounds. Their removal at any time can be easily effected by a few gentle rotations before they are drawn outwards. In some cases I place two such wisps in each wound, removing one on the first or second day to facilitate entrance of the irrigating tube, and retain the other *in situ* until the fifth or sixth day. Their insertion into the knee-joint can be most easily effected by passing a long forceps through an opposite wound, seizing one end, and liberating the grip of the forceps when the end of the wisp reaches the centre of the joint; a catgut stitch to skin secures its remaining in position.

Disinfectants.

The more I employ the "perchloride-peroxide-carbolic" combination in the treatment of grave septic wounds the more convinced do I become that it is the ideal antiseptic which does not cause any irritation of surrounding skin. It never produces toxic symptoms; it promptly gets rid of any smell; if used in the strength above indicated it does not mortify living tissue cells; and after the septic elements are removed it induces the formation of granulations of a vigour and normal living flesh colour superior to anything with which I am acquainted.

If one observes its action daily, for instance, in a large gutter wound of a femur or tibia in acute osteomyelitis, its fire-brigade order of procedure is truly remarkable; immediately following the primary irrigations the whole infected field assumes a grey, superficial, sloughy aspect due to the rapid chemical fixation of every particle of infected tissue. Such an appearance for the moment might be disconcerting if one did not visualize a concomitant decline in the temperature and pulse charts. Profuse discharge (the more the better) commences within a few days, and by the end of the first week some scattered bright dots of healthy granulations make their appearance. At the end of the second week, if drainage has been complete and pockets thoroughly exposed, the whole vista is transformed into a huge bright red sore studded here and there, in bold perspective, with isolated white islets of necrotic tissue, which promptly disintegrate and vanish. Within twenty days or so nothing septic-looking remains, except, perhaps, a few marooned black patches of necrotic bone, which in turn promptly become detached, leaving the camp clear for the "sappers" to fill up the breach with living vermeil bricks. As the discharge of pus declines the daily number of irrigations and fomentations is reduced, and the sore quickly heals under the benign influence of the best of all dressings for a post-septic wound, a perchloride of mercury fomentation (1 in 3,000), wrung dry, applied once or twice daily. No form of rubber tissue is ever used in these fomentations. The sterilized wool is placed directly over the impregnated lint and the bandage applied. A perchloride fomentation must not be used after disinfection of the skin with iodine until all visible trace of the latter has disappeared or has been removed by washing thoroughly with alcohol. Otherwise a sodden or irritable condition of the skin is likely to result.

Alcohol.

Some years ago the late Professor Nicolas Senn honoured me with a visit, and was much interested in the treatment adopted for railway septic cases. When I had concluded my explanation of the routine, he asked: "What do you do about alcohol in these cases?" I replied: "I generally give them something." "That is right," he said, "I pour brandy into them." Such a practice at the time struck me as somewhat unorthodox, but as years rolled by I gradually came to the conclusion that there was far more in Dr. Senn's statement than I was prepared to admit at that time. I am now convinced that it would be fatuous to withhold 4 oz. of brandy, with or without half a bottle of champagne, daily, while a previously healthy adult is quivering on the brink of eternity.

in a state of profound septicaemia, delirious, with a pulse of 120, dry tongue, and no appetite except for bits of ice or sips of water. If he can be induced to swallow diluted alcohol in some form or other, backing this up with serum injections and nutrient enemata, given previous sound surgical intervention, our feeling is "We shall win."

During the convalescent stage of any acute disease, while I am no partisan of the continued use of spirits, I have such a profound belief in the benefit of the daily administration of stout, beer, or wine with meals, and after the remarkable and rapid improvement which I have seen, times out of number, following its initiation, I can, in all truth, state that, "To doubt would be disloyalty, to falter would be sin."

Drop-Foot.

I cannot conclude without reference to a condition which affords us considerable trouble. Case after case of some joint or bone lesion of leg, treated for some time elsewhere, comes into hospital complicated with a drop-foot; usually, inquiry reveals that these patients have been for months in plaster or splints, and that the doctor in charge never thought of keeping the foot at a right angle, or impressing upon the patient the necessity of moving his ankle-joint once or twice daily. In some of these cases I have observed that trophic changes have taken place, with the result that when one attempts to correct this deformity, the slightest pressure of a pillow, splint or bandage wipes the skin off the foot, leaving a most intractable sore on instep or heel. This in itself constitutes a pretty delicate problem, not to mention the serious handicap such a condition of things entails as far as any rectification of the primary lesion is concerned.

Active Movement in Tuberculous Arthritis.

In the publication referred to at the commencement of this article I also observed that passive motion, under extension, has been suggested in tuberculous disease of the knee-joint, associated with the name of a very eminent surgeon whose personal results I do not doubt, and for whose work in general I have very great respect. With all deference, in this instance I must beg to differ in so far as to state that, even in the most dexterous hands, passive ("the damnation" ⁶) movement of joints should be consigned to the past tense, and that active movement should not be permitted until the x rays show a normal osteal condition, and *tumor* and *calor* have visibly and palpably ceased to exist in the affected joint.

After some experience in the treatment of this lesion, which has invariably taken the form of one to two years' absolute rest in a splint, with nutritious diet and continuous life outdoors, I can vouch that the result will be cure with normal articular movement in 90 per cent. of the cases who seek attention before disorganization of the joint structures takes place or advanced caseation and sinuses have formed.

In thirty years' hospital work I cannot recall a single instance in which a tuberculous hip- or knee-joint (that has been got in time) has become ankylosed after a treatment of two years' rest in splints. And, moreover, I have been frequently astonished to find what a remarkably slight tendency there is to the formation of adhesions, and short duration of same, even in cases in which the x rays, on admission, had demonstrated marked caries. The day after this article was passed to my typist the following coincidence arose:

A patient, aged 21, was admitted to hospital on September 13th, 1918, suffering from early, but well defined, tuberculous disease of the right knee-joint, for which he was treated out of doors by absolute rest in splints until August 20th, 1920. As the limb had now resumed its normal contour, and there was no extra heat on comparative palpation (verified by three different pairs of hands) I asked him (for the first time since admission) to move the joint. This he willingly complied with, and without the least hesitation moved the knee, painlessly, through a visible angle. Apparently no adhesions had formed, and the absence of even initial temporary stiffness after twenty-three months' fixation points an instructive moral. I saw him again, three days later, on a wheel chair in the garden, proudly demonstrating the increase in his range of daily active movement. The x rays showed a normal joint.

I cannot imagine a greater victory for Hilton's teaching than these phenomena.

REFERENCES.

- ¹ *Lancet*, July 10th, 1920.
- ² Traumatic Lesions of Knee-joint, *Medical Press and Circular*, 1896.
- ³ Treatment of Wound Infection, *Ann. of Surg.*, April, 1917.
- ⁴ Skin Asepsis in Surgery, *Ann. of Surg.*, April, 1918.
- ⁵ Dietetic Value of Alcohol, *Lancet*, March 13th, 1920.
- ⁶ Fixation of Simple Fractures, *Ann. of Surg.*, January, 1915.
- ⁷ Treatment of Wound Infection, *BRITISH MEDICAL JOURNAL*, December 2nd, 1916.

A CASE OF JEJUNO-COLIC FISTULA FOLLOWING GASTRO-ENTEROSTOMY.

BY

CLAUDE FRANKAU, C.B.E., D.S.O., M.S. LOND.,

F.R.C.S. ENG.,

SENIOR ASSISTANT SURGEON, ST. GEORGE'S HOSPITAL.

JEJUNO-COLIC FISTULA following gastro-enterostomy appears to be sufficiently uncommon to warrant record of the following case in detail. The patient was a man, aged 33, who was admitted into St. George's Hospital under my care in July, 1919, for abdominal pain and vomiting.

Previous History.

In 1914 he was operated on in a London hospital for duodenal ulcer, which had produced symptoms for two years and was demonstrated at operation. A posterior no-loop gastro-enterostomy was performed, as a result of which his symptoms disappeared and he regained his normal health. Pain, however, recurred some nine months later and continued in spite of medical treatment. He was accordingly readmitted into the same hospital in December, 1916, and submitted to further operation. During the operation difficulties arose with the anaesthetic and the investigation had to be abandoned; it was reported to the man's doctor that hard glands were present in the mesentery and that there were nodules in the peritoneum and the liver. He derived no benefit from this second operation, and for over two years had had persistently recurring attacks of pain in the right hypochondrium, with occasional vomiting. The pain had little or no relation to food unless anything solid was taken, when a severe attack came on in about an hour. On five occasions during 1918 and 1919 he had had attacks of haematemesis and melaena—the last attack in May, 1919, being of a severe character. He had been steadily losing weight and was unable to take anything but liquid food.

Condition on Admission.

He was a slightly built man, extremely poorly nourished and haggard from pain. The abdomen showed two soundly healed scars; there was no evidence of any enlargement of the stomach nor tenderness over it. Over the duodenum pain was elicited on light palpation and there was constant muscular rigidity. X-ray examination showed that the stomach emptied quickly and completely, the barium passing out both by the pylorus and the stoma. There was no x-ray evidence of an ulcer. The gastric juice contained 0.26 per cent. HCl.

Operation.

On July 9th, 1919, I reopened his abdomen and found as follows: The original anastomosis was quite satisfactory with no signs of ulceration in the stomach at the site of the anastomosis or in the jejunum; the liver and gall bladder were normal. On the antero-internal aspect of the second part of the duodenum there was a scar of an old ulcer, puckered and adherent to the pancreas. Half an inch proximal to this and rather more anterior in situation there was a second small active ulcer with considerable induration and hyperaemia around it. As the local treatment of the ulcers appeared to be impossible, the pylorus was clamped and divided, the two ends being closed with silk stitches. The abdominal wall was then sutured in layers.

The immediate result was satisfactory, and he was discharged from hospital four weeks later free of all symptoms. He was given careful instructions as to his diet, and in addition had an alkaline mixture to take after meals for three months. He remained well and without pain or vomiting for about fourteen months, during which time he increased considerably in weight. In October, 1920, after a surfeit of periwinkles, he had a sudden attack of severe abdominal pain followed by vomiting and diarrhoea. The pain subsided after a few days, but the diarrhoea, to the extent of eight to twelve evacuations a day, with occasional attacks of vomiting and eructations of foul gas, continued. He steadily lost weight, and eventually in May, 1921, applied for further treatment at St. George's.

Condition on Readmission.

He was greatly emaciated (weight 6 st. 5 lb.); his skin was earthy in colour; the pulse was small, thready and rapid, and a considerable degree of anaemia was present (haemoglobin 55 per cent.; red blood cells 3,500,000). Local examination of the abdomen was negative, except for some slight fullness above and to the left of the umbilicus. X-ray examination, after a barium meal, showed that a portion of the meal passed, after a very short delay, into the transverse colon. He was kept under observation for ten days, during which time his bowels acted, on an average, ten times a day, and he vomited from ten to thirty ounces in each twenty-four hours. The vomit and the material evacuated from the bowel were identical in appearance, consisting of a lemon-yellow, frothy fluid, of the consistence of thin porridge, acid in reaction, and with a smell which was usually sour, but at times slightly faecal. The condition being evidently one of gastro-colic or jejuno-colic fistula, operative interference offered the only chance of saving the man's life.