moderate amount of pus, with numerous vesical cells, and both the stained films and the cultivations made from the centrifugalized pus showed staphylococci and bacilli of the *xerosis* type, but no gonococci.

The first point of emphasis is that the gonococci had entirely disappeared at this stage, the infection being kept up by the other bacteria which had been present in the original discharge. If I may judge from the frequency with which requests to search for gonococci accompany material from old urethral discharges, etc., and from the comparatively small percentage in which these can be found, the idea is fairly prevalent that sequelae to gonorrhoea are, at any rate in part, due to the gonococcus. In probably a majority of cases this is not the fact.

TREATMENT.

Acute cystitis is a bacterial infection of the wall of the bladder, in the damaged surface of which the bacteria reside and multiply; from it the damaged epithelium is discarded, and from it pus exudes in greater or less quantity, covering the damaged surface with a film which gets washed into the urine and evacuated, whilst fresh exudation from the lesion keeps up the supply. The whole picture represents an inflammation, and probably in most cases an ulceration, situated in the bladder wall.

When an infection occurs in any animal, certain symptoms and signs become apparent, and these will vary according as the bacteria or the patient's resisting power is the stronger. But in all cases these signs and symptoms are manifestations of the patient's "reaction" to the infecting agent, or of the failure of this reaction. In a typical case of bacterial infection of limited duration the reaction must be considered as good, and it is in such a case that we have sure indications of what may be called Nature's method of cure, the problem before us being to find the true and rational method of cure from observation of a typical case. In other words, we have to translate the signs which we can see into pathological processes the details of which we know from experiment.

In typical acute cystitis the marked symptoms are frequency of micturition, with usually more or less tenesmus after the act, and their appearance should be welcomed as an indication of a strong and healthy reaction to the bacteria. In seeking an explanation we must consider in more detail what this mechanism is. To this question physiology and recent pathology together have provided a clear answer. When the bladder wall contracts it thereby not only expels the urine and discarded pus, but also accelerates and flushes the local circulation of blood and lymph, bringing up a fresh supply of opsonins and phagocytes. Tenesmus, by its spasms, reinforces these efforts, continuing the process over a longer period, probably carrying some bacteria into the blood stream, where they will act by auto-inoculation and eventually increase the power of immunity, and at the same time enabling undiluted fresh pus to act on the bacteria with full effect.

The second point of emphasis, therefore, is that frequency and tenesmus are part and parcel of the process of cure, and should never be treated symptomatically. Drugs which will relieve the pain and irritation, if successful, only put a stop to the natural process of cure, and are positively harmful from a remedial point of view. When cure is effected the symptoms will cease naturally.

The third and main point of emphasis is that the tenesmus can be almost entirely, and the frequency partly, controlled by the simple expedient of controlling the amount of liquid taken by the patient. This is easy to understand if we consider that it is the irritation produced by the bacteria (or their products) contained in the pus which causes the symptoms. Consequently, as the irritant is more or less diluted in the bladder, so are the symptoms ameliorated or increased respectively. A large intake of water is, in fact, the simplest method of washing out the bladder, and can be made to act over an unlimited period by keeping up the supply; but in the treatment of acute cystitis this must be considered only as a temporary and entirely palliative measure. On the other hand, abstinence from drink, if the bacteriotropic power of the blood has been previously raised, can be used to bring practically undiluted fresh pus to act on the bacteria both in and outside the lesion—surely a more efficient *rational* than the use of antiseptics.

In the case under consideration full use was made of the principles enunciated above; the vaccine was used practically to supplant auto-inoculations as being easier to control, and the supply of drink controlled so as to lessen reaction when there was risk of a "negative phase" of immunity, and to increase the reaction when a "positive phase" might be expected.

As a palliative measure, while the bacteria were being isolated and a vaccine prepared from each, a sufficient quantity of water was drunk to keep the bladder contents well diluted both during the day and at night, with the result that the symptoms were considerably ameliorated. As soon as the vaccines were ready active treatment was commenced by the subcutaneous inoculation of a dose of 50 million staphylococci and 25 million bacilli. Twenty-four hours later it was considered that any negative phase probable from this dose would have passed and that the bacteriotropic power of the blood might reasonably be expected to be increased; accordingly drink was withheld entirely from 4 p.m. with a view to increasing the frequency and producing tenesmus. This result was attained, and in about four to five hours the symptoms were marked. After a final unpleasant half-hour, in which the writer sat with the patient, one pint of water was given, followed in about twenty minutes by half a pint; the result was that the previous state of comparative comfort was entirely regained. This procedure was repeated at forty-eight and at seventy-two hours after the inoculation, as much water as was required to relieve the symptoms being allowed between times.

On the fourth day a second dose of vaccine was given containing 100 million staphylococci and 50 million bacilli, and forty-eight hours later drink was withheld for four to five hours, and for the reasons and with the result as noted above. On the following day the symptoms, judged from the patient's feelings, were markedly improved; the urine could be held about three hours; but drink was withheld that evening again, without, however, producing much discomfort. The day after this—the eighth day from the commencement of active treatment—the symptoms had apparently disappeared altogether, the urine being held four or five hours with comfort and passed in the ordinary way.

A third dose, of 150 million staphylococci and 75 million bacilli, was inoculated on the evening of the eighth day in order to make assurance doubly sure. From that day, now over three years ago, there has been no recurrence nor any sign of trouble, and the urine examined on that day was found to be free from pus and bacteria, and has been normal ever since.

A SIMPLE SPLINT FOR FLAIL ELBOW.

BY

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THE recent use of a simple and effectual splint, enabling an otherwise destitute patient to earn a living, impels me to publish the case for the information and benefit of those interested.

The patient, a woman, has been off and on under my care for about forty years. She was born at Deptford about 1856, her father being the captain and owner of a sailing craft on which her parents usually lived, and her mother had gone ashore to be confined at some lodgings while the vessel lay at anchor in the Thames. When 5 years old the child fell down a staircase, her left arm being caught in the banisters and badly broken near the elbow. The vessel put into Liverpool, where she states that on account of deformity re-fracture was performed, and that a Liverpool surgeon was consulted, advising amputation, which her mother would not permit. Hitherto she had been attended in private practice, but the death of her father about this time left her mother without means, and both were admitted into the Liverpool Workhouse Infirmary. Here the elbow was excised, and after a time she was moved to the Kirkdale Industrial Schools, a children's branch of the workhouse, to which my father was surgeon. She came under my notice in September, 1870, the elbow being tender, not extensible

beyond an obtuse angle, feebly movable in flexion and extension, and the limb of little use except at the shoulder and fingers. The back of the elbow showed the scar of an H incision.

FIG. 1.—Flail-like left arm, with leather splint held in right hand.

The foregoing life-history is given because besides being very sensitive to pain, she was bright and intelligent beyond other inmates of the institution, which numbered chiefly the lowest class of the community. Her parents were of superior intelligence, had sailed all over the world, and she had lived in comfort until left destitute by her father's death.

In December, 1870, January, 1872, and March, 1875 (this time at the Stanley Hospital), I exposed the ends of the bones through a linear incision, with the view of improving their connexions, with this effect on each occasion, that, on wearing a hinged splint of iron,

with attached leather laced or bandaged round the arm and forearm, she could use the limb in domestic work for her living; but left to itself it became a helpless flail.

In 1878 she was admitted under my care, and remained three months, in the Liverpool Royal Infirmary for great swelling of the abdomen due to distension of intestine, which gradually subsided under thin beef-tea diet followed by enemata.

In February, 1885, she was fitted with a splint of iron and leather fixed at an obtuse angle, and this answered perfectly for a time.

She was then lost sight of for twenty-six years, and in January, 1911, became an inmate of Mill Road Infirmary of the West Derby Union, Liverpool, owing to the flail-like condition, which came in her way after the wearing out of her splint and her inability to get another. The superintendent, Dr. Nathan Raw, told me of my old patient, and I went to see her. She could not get a situation, as the uncontrollable state of the limb and its uncanny wobbly state made people refuse to employ her. It then occurred to me to make for her the splint shown in Fig. 1, which also displays the "flail" condition. A piece of softened sole-leather, reaching the whole length of the upper arm, was roughly trimmed and bandaged over the bandaged arm. When dry the splint was further trimmed and fitted with a couple of straps and buckles so that she could apply and remove it herself with the other hand.

The back of the splint reaches well below the false joint, preventing over-extension, and far enough at the sides to prevent lateral deviation. The corners in front are cut

away to permit flexion, which can only be done passively by the aid of the other hand. But when the lame hand is brought up to her head she can "do her hair" and many other acts when once she gets hold with her fingers. In the extended position she can carry a bucket, as shown in Fig. 2, and was once more, at the age of 54, able to do domestic work. Dr. Raw tells me that she is a good cook, and I am indebted to him for the illustrations 1 and 2, taken by Mr. Joel, an official who does the photography at Mill Road Infirmary. In Fig. 2 unfortunately the light failed somewhat.

FIG. 2.—Splint on left arm, thus steadied to hold bucket (or other things, like long brush, etc.).

About 1880 I made a similar splint in a case of false joint resulting from compound comminuted gunshot fracture above the condyles of the right humerus in a young woman in the Liverpool Royal Infirmary. The condyles became ankylosed to the ulna, but a convenient false joint formed above; and to prevent lateral movement, while permitting firm hinge action at the elbow, a leather splint was moulded to the arm, its lower ends at each side being continued past the elbow as rounded wings. The arm was then fit to work a broom and do all domestic work. She was a strong, well-favoured young woman, who, after a couple of years or so as a servant, became married and comfortably settled in life.

On April 25th, 1913, the former patient, while a scullery maid at an hotel, fell and broke her right leg. While recovering from this, and still lame, she came to see me on July 30th on ordinary single-pole crutches, which she had difficulty in grasping, especially with the weak short arm. Moreover, the pressure of her weight on the axillary nerves had benumbed both arms. So I got other crutches with double supports, with cross-handle to them, and added a second handle to each, to fit her unequal arms, as shown in Figs. 3 and 4. This alteration I made myself on August 2nd before leaving home. The effect is quite satisfactory,

FIG. 3.—Crutches with handles adapted to long and short arm. The latter passively bent in the splint.

FIG. 4.—Crutches grasped by hands so as to lessen dead weight in axillae. Feeble left arm steadied by leather splint.

and the axillary nerves have since recovered from the effects of the previous pressure. On August 15th Mr. Thurstan Holland at the Royal Infirmary kindly ordered an x-ray photograph of the leg, which showed fracture, united, high up in the fibula. On September 15th he also kindly permitted the photographs Figs. 3 and 4 to be taken by his assistant, Mr. Woods, and developed by Miss Irven. This patient is blind of the left eye owing to cataract, but can see well with the right. She is living in lodgings on the proceeds of her insurance compensation until able once more to seek a situation. It will be seen that her life is a difficult one, and that her perseverance deserves encouragement.

Memoranda :

MEDICAL, SURGICAL, OBSTETRICAL.

TREATMENT OF TUBERCULOUS PERITONITIS.

In two apparently hopeless cases of tuberculous peritonitis in children I found the administration of the following mixture very beneficial:

R. Calcii carb. (precip.)	...	128 grains
Ol. creosoti	...	32 minims
Mucil. tragacanth, q.s.	...	
Potass. iod.	...	16 grains
Saccharini	...	8 grains
Ol. menthae pip. vel anisi	...	5 minims
Aq. ad	...	8 oz.

Dose.—5ij every four hours for a child of 5 years.

Tincture of opium or compound tincture of camphor may be added for the relief of pain and diarrhoea if present.

The cases were two boys, aged 3 and 5 years respectively. The younger I saw more than three years ago. He had large, easily palpable masses in his bulging abdomen, and all the other symptoms of this wasting malady well developed. He had been ill for a long time, gradually getting worse, and his parents had been informed that there was little or no hope of recovery. The elder I saw eighteen months ago; the intestines and peritoneal glands were matted into one mass about the size of a small football, somewhat irregular in outline, and not only palpable but observable under the abdominal wall.

I at once put him on the mixture; but as there were present attacks of severe colic with partial obstruction and vomiting, I sent him to a consulting surgeon in Manchester, who recommended laparotomy as being frequently beneficial in such cases, and a lateral anastomosis for relief of the intestinal obstruction. His prognosis, however, was so hopeless that the parents decided against operation, and the boy continued to take the mixture, supplemented by petroleum emulsion recommended by the consultant. A diet of easily digested food, principally of milk, was prescribed.

The first case, who took cod-liver oil emulsion along with the mixture, began at once to improve, and in two months the abdominal tumours had disappeared and his general health vastly improved. There has not been any recurrence, and to-day he is a fine specimen of a strong and healthy boy. The second case, like the first, began to improve directly he came under treatment, and in two months the abdominal mass had shrunk to the size of a Tangerine orange, and all the other symptoms, such as fever, pain, and diarrhoea, disappeared. At the end of another month I failed to detect any lump at all, and his general condition was much improved. He has continued in good health for over a year, and is a bright and healthy looking lad.

I may add that I have found this mixture, with and without opium, very beneficial in phthisis, particularly in less acute cases.

HUGH LAWRIE, M.B., C.M., D.P.H., M.O.H.
Ramsbottom, Lancs.

RIGHT SHOULDER PAIN IN PERFORATED DUODENAL ULCER.

THE case here recorded is, I think, of interest, first, because of the acute pain referred to the right shoulder, secondly, because of the association of appendicitis and duodenal

ulcer, which has been pointed out by Drs. Mayo and Patterson.

W. C., a bricklayer aged 62, while at work on August 22nd, at 5 p.m. was taken with sudden and violent pain in the abdomen, and vomited once. He was driven home about two miles; on arrival he was somewhat collapsed, was put to bed, and vomited again. I was sent for at 9 p.m., and found him groaning with pain, which, he said, was in his right shoulder and abdomen. On touching the abdomen lightly he shouted out with pain in the right shoulder. The muscles on the right side of the abdomen were tense with board-like rigidity; the most painful spot was over the region of the duodenum, but he complained very much more of the pain in the shoulder than of that in the abdomen. The temperature was 99° F. and the pulse 85. There was a history of many years of indigestion, which had been worse of late; the pain had awakened him a few nights previously.

I thought that he was probably suffering from a perforated duodenal ulcer, and had him sent into the Worcester Infirmary. He was there operated upon by Mr. Gostling (who has kindly allowed me to publish the case); a pin-point perforation of the duodenum was found and was sutured. The perforation was covered with lymph, and was only found when this was cleared away. The appendix was next examined; it was found to be inflamed and was removed. The patient made an uninterrupted recovery.

Upton-on-Severn.

C. P. BURD, M.R.C.S., L.R.C.P.

Reports

ON

MEDICAL AND SURGICAL PRACTICE IN HOSPITALS AND ASYLUMS.

DERBYSHIRE ROYAL INFIRMARY.

A CASE OF EMBOLISM OF THE SUPERIOR MESENTERIC ARTERY.

(By FRANCIS L. A. GREAVES, F.R.C.S., Surgeon to the Infirmary.)

On the afternoon of September 20th, 1913, I was called to the Royal Infirmary to see a man, aged 28, admitted for acute intestinal obstruction.

The history was as follows: Five days previously he was seized with colicky pains in the abdomen; this was at first not very bad, but becoming more acute he had to leave work. The bowels acted that night. His own doctor was summoned in the early hours of the following morning. From this time until admission there had been no evacuation of the bowels, except that two days before admission an enema was administered and a small result was obtained; no flatus was passed, however, and the symptoms were not relieved. There was no blood in the motion. Vomiting commenced about twenty-four hours after the pain was noticed, the vomit became a dark-coloured fluid before admission, and was regurgitant in character. There was no previous history of any abdominal trouble.

On admission he looked profoundly ill; he was a thin man, with rather a pale, sunken face. His pulse was feeble (80), respirations rapid (28), temperature 98°. He did not complain of great pain, but the whole abdomen was tender on palpation. His teeth were carious, his tongue furred but moist. The whole abdomen was distended enormously, there was no visible peristalsis, and the distension appeared uniform. On palpation the anterior abdominal wall was uniformly rigid, but not board-like, and as already mentioned tenderness was everywhere present. On percussion, well-marked shifting dullness was detected in both flanks and in the hypogastric region.

The provisional diagnosis of chronic tuberculous peritonitis, which had become acute, was made, and he was prepared for operation.

Operation.

An incision was made below the umbilicus in the middle line, and on the peritoneum being opened a very large amount of dark-green fluid, with a faintly faeculent odour, was liberated. The pelvis and flanks were full of this