with removing a large window in the compact bone, and this window should be as wide as the bone in question, but the medulla should not be gouged out. If the medulla is scraped out the endosteal membrane is removed, and the compact bone, already stripped of its periosteal blood supply, is more likely to die and form a sequestrum (Nichols). If the medulla is diseased, then the compact bone must be removed as far along the shaft as the disease has spread and a little further, and the diseased medulla gouged out. Where the medulla is gouged no overhanging ledges of compact bone must be left: they impede dressing, and usually form sequestra. In the lower end of the femur the periosteum is nearly always stripped off the posterior wall, and this posterior wall should be removed if sequestra are to be avoided.

Where the shaft is found completely, or almost completely, stripped of periosteum, a primary diaphysectomy may be done, or the whole medulla must be widely exposed and gouged out. If the patient's general condition is bad, a diaphysectomy is preferable, as it can be more rapidly done. If, on the other hand, the patient's condition will stand it, the chiselling away of one aspect of the entire shaft with gouging out of the medulla will leave enough compact bone to act as a splint. When the periosteum has formed enough bone to retain a good shape, a secondary diaphysectomy should be done. If the patient's condition is very critical, probably a primary amputation is the most rapid efficient operation, and should be done. It should, however, seldom be necessary.

In this series primary amputation was performed three times, with one death. In the case which died the toe was amputated for osteomyelitis, and at the *post-mortem* examination osteomyelitis of the ileum was found, which was probably primary, osteomyelitis of the phalanges being very rarely primary, though often secondary. This case also had general pyaemia with purulent pericarditis.

If, after efficient initial treatment, the case continues to go downhill, secondary diaphysectomy is worth trying, and if this fails, secondary amputation should be done.

The existence of pyaemic abscesses in either bones or soft tissues is no contraindication to amputation, as in these cases the patient often begins to get the better of his pyaemic foci as soon as the primary focus is removed by amputation. Secondary diaphysectomy sometimes gives very good results, as in a case reported by Scudder,¹⁰ and in several cases here. It is well worth a trial before proceeding to amputation, and may save a useful, though often unsightly, limb. After diaphysectomy, the periosteum should be stitched so as to draw it loosely into position over gauze packing. If, as is usually recommended, it be sewn to the skin, the newly formed bone when it grows is apt to be four or five times its normal width, as a result of the spreading out of the periosteum when the skin retracts.

The chief hope of reducing the mortality centres in early and radical operation. Possibly in the future vaccines may be instrumental in reducing the mortality. In this series only a few cases were treated with vaccines, but the results in these few cases have been anything but encouraging:

Mortality.	
General mortality of the series	... 34.6 per cent.
With vaccines, 7 deaths in 16 cases, or a mortality of	... 43.7 "

If the cases in which the bone was thoroughly opened up from the first be considered separately, one finds:

Group I.	
Without vaccines, 39 deaths in 123 cases, or 31.7 per cent. mortality.	
With vaccines, 2 deaths in 6 cases, or 33 per cent. mortality.	

If the cases in which at first only the periosteum was opened be taken, one finds:

Group II.	
Without vaccines, 50 deaths in 139 cases, or 35.9 per cent. mortality.	
With vaccines, 4 deaths in 7 cases, or 57 per cent. mortality.	

That the mortality is not higher in the whole of Group II. is due to the fact that in many cases the bone was opened up at a second operation. Possibly the very high mortality of cases treated with vaccines in this group may be due to vaccine treatment having been allowed to replace, instead of supplementing, the more important surgical measures

In conclusion, I must express my thanks to the surgical staff of the London Hospital for their permission to use the notes from which these figures have been compiled. To Mr. Walton and Mr. Benians I owe my thanks for many suggestions.

The tables on the previous page show the bone, age, and sex incidence in 298 cases.

REFERENCES.

- ¹ H. L. Barnard, *London Hospital Gazette*, February, 1903.
- ² Trendelenburg, quoted by Albee, *N. Y. Med. Journ.*, lxxxvii, 1077, 1909.
- ³ Thompson and Miles, *Manual of Surgery*.
- ⁴ Dolbey, *London Hospital Gazette*, Clinical Supplement, 1906.
- ⁵ J. E. Moore, *N. Y. Med. Journ.*, xci, 431, 1910.
- ⁶ Albee, *N. Y. Med. Journ.*, lxxxvii, 1077, 1909.
- ⁷ Ollier, *International Encyclopaedia of Surgery*.
- ⁸ Cabot, *Clinical Examination of the Blood*, 1897.
- ⁹ Ironside Bruce, *System of Surgery*, edited by Choyce, vol. i.
- ¹⁰ Scudder, *Surg., Gynec., and Obstet.*, Chicago, vi, 169, 1908.

APPENDICITIS IN PRIVATE AND PUBLIC HOSPITALS FOR THE INSANE.*

BY

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My excuse for a communication on this physical affection is an attempt to prove, from its rarity in private and public asylums for England, Wales, Scotland, and Ireland, that it is preventable. In the ten years from 1902 to 1911 there are recorded 75 deaths from appendicitis, typhlitis, or perityphlitis, ascertained in the majority of cases by *post-mortem* examination, among the insane detained in all the asylums of England and Wales. It would be instructive to know how many of the 75 were affected before admission into the respective asylums, and how many could have been saved by operation. For the statement that appendicitis is a rare malady in private and public hospitals I have the support of several well-known mental specialists; not only do these give me their assistance, but moreover I have the help of the pathologist to the London County Asylum at Claybury, who states, "I do not believe there has been a single case of appendicitis on the *post-mortem* table at Claybury since I have been pathologist. Consequently, in more than 2,000 *post-mortem* examinations there has been no case." The comparison of the Claybury hospital for the insane with the teaching hospitals of St. Bartholomew's and Guy's for the sane is reliable. For instance, at St. Bartholomew's Hospital 1,645 *post-mortem* examinations were made between 1909 and 1911, and 69 were designated cases of appendicitis. At Guy's Hospital in 1900, of the first 500 *post-mortem* examinations 12 were recorded as appendix cases. I find that at the same hospital there were 8,588 admissions in 1910, and of these admissions 306 were subjects of appendicitis, 187 being under the care of surgeons, while 119 were under the care of physicians. In connexion with the statistical tables from the Lunacy Boards of Scotland, it is believed that formerly death from appendicitis was usually returned as death from peritonitis, but these diseases had no separate heading in the boards' tables of causes of death, and are not yet separately notified. If a case of death from appendicitis were returned it would be placed in the table under diseases of the digestive system; but it has been ascertained that no death in a Scottish asylum has been returned during the past five years as due to appendicitis. In the report of the inspectors of lunatics for Ireland, 1911, typhlitis is grouped among the causes of death; but this table contains no return of the complaint for that year, and there were only 11 cases of peritonitis. The Secretary of the Office of Lunatic Asylums, Dublin Castle, sends me the returns of deaths from typhlitis during the period 1902 to 1910 as follows: 1902, 0; 1903, 1 (male); 1904, 0; 1905, 1 (female); 1906, 0; 1907, 1 (male); 1908, 2 (male and female); 1909, 0; 1910, 0—namely, 5 cases in nine years. The cause was ascertained by *post-mortem* examination, except in one case. The death-rate from appendicitis, as chronicled in the Registrar-General's Report for 1909, shows a slight gradual increase from 1901 to 1909.

The caecum, with the bud of the appendix, as stated by Quain, grow out together from a straight uniform piece of intestine at the sixth week of intrauterine life. The appendix is an abdominal and persistent anatomical arrangement in the plan of the permanent anchorage of the

* Read at a meeting of the Winchester Division.

intestines. At first a movable piece of intestine of the same structure, the appendix eventually comes to a standstill; and, for all we know to the contrary, is of little further use, for its cavity exhibits a tendency in 25 per cent. to become obliterated. And when we review the anatomy of the outer circle of the intestines, we can imagine that mesenteries here and there—natural stays—are very advantageous. Do they not break off into sections the peristaltic movements of the colon at certain points? Thus the concentrated faeces are carried onward to the outlet by not only a circular squeeze, but also by a detrusor push of contraction similar to the action of micturition. We see in the normal abdominal cavity bends here and turns there, and, if a physical kink can excite an insanity, I am sure there is also associated a neuropathic kink.

It has yet to be ascertained whether short-circuiting of the intestines is as scientific a line of action in constipation and general diseases as the old fashioned aperient treatment, unless it has to be resorted to as a radical line of treatment. Undoubtedly aperients drive muddled ideas and delusions into the closet. No one who has lived in a hospital for the insane for a length of time can contradict me. And that, too, is the reason why I conceive appendicitis is uncommon among the institutional insane. If foul products can be readily expelled from the body by the skill of the asylum physician, how is it the outside physician in charge of the sane population has not yet learnt his lesson of teaching the public the first principles of healthy life to be attained by education rather than by operation?

It is my purpose in this brief communication to emphasize the poisonous consequences of decomposing food, detained and brought to an anchorage in the fermenting vat of the cesspool at the last portion of the intestinal canal. If it is a difficult matter to keep the mouth of the intestinal canal free of septic matter, it is not a difficult operation to rid the tubing of poisonous germs that multiply there. We all know that Epsom salts might answer our object. Now civilization has taught us many things in the medical world; it has certainly taught us comparative pathology. For example, the horse, which persistently has his faeces of a characteristic odour, one day evacuates a foul motion. The teeth are found at fault, and require filing, so that they may meet properly as grinding instruments. The faeces return to their usual odour after this operation, and the balls of motion do not now contain fermenting, half-digested, swollen grains of oats. The domestic fowl emaciates, its feathers droop, and offensive diarrhoea succeeds when there are no teeth in the gizzard from an absence of grit in the run. And in man convulsive seizures, such as epilepsy, are best managed by suitable dieting, rather than by the use of the bromides and other sedative drugs of the *Pharmacopoeia*, which, as chemical restraints, have been stated to encourage degenerative changes.

Of all hospitals I know none where so much attention is given to the action of the intestines as in an institution for the insane. Moreover, the food that is taken into the stomach of an insane person in these hospitals is chiefly of the order consistent in quality and amount with health. The food, too, is of excellent quality, simple and wholesome; not least, it is well prepared by cooking. It is carefully macerated and divided beforehand, and given in this condition to those patients who will not feed themselves; while, on the other hand, it is spoon-fed to those who are without teeth, or who are accustomed to bolt or scramble their food. The indifferent feeders are always personally superintended at meal times. Constipation is never permitted in asylums, and this is the reason why the caecal appendage is less often affected by inflammatory attacks.

If medical men outside insane hospitals could guarantee the condition of a person's bowels beyond hearsay evidence, they would be hideously surprised to find how ignorantly is this essential factor of life carried out. We know of the patient who suffers from noises in the ear and deafness, who quickly returns to normal hearing after two or three days' application of oil and the skilful use of a syringe; and the case of the patient with symptoms of delusions, inclined to mania, in whom the cloud readily begins to lift when a good pill and a smart Epsom draught are given. How readily, too, does he respond to treatment; it is discovered that his rectum was blocked, and before admission we hear that he had been under restraint with such

sedatives as chloral, bromides, hyoscin, paraldehyde, sulphonal, and the like.

The voice of the dentist is carrying weight with medical officers of health to an extent that "toothbrush drill" is becoming a custom in schools. If the mouth of the intestinal tract is often foul, let us imagine what must be the state of affairs lower down. Again, gynaecologists tell us how easily the peritoneum absorbs fluids. Thus auto-intoxication and appendicitis may be explained when intestinal stasis has been prolonged; and especially must inflammation arise when decomposing matter is bottled up in the piece of the intestine called the appendix, just as it occurs in the knuckle of intestine pursed up in a strangulated hernia. Therefore, from an educational point of view in physical hygiene, "intestinal drill" in the school is just as important as "scalp drill" or "toothbrush exercise." If it is difficult to deal with the septic mouths of the insane it is not found difficult to keep their cesspools clean by education. The technique of "intestinal drill" in hospitals for the insane is very judiciously observed, and the mental nurse can notify the condition of the faeces, their odour, colour, appearance, and consistence. Thus the chemistry and bacteriology of the faeces in private and public hospitals for the insane can be made to correspond with the practice of urine analysis. At Earlswood Hospital for Idiots "intestinal drill" is a feature in the management. The operations for chronic constipation or for appendicitis may be very fascinating in the eyes of the surgeon, but to prevent them by "intestinal drill" is the physician's achievement.

GASTRIC ADHESIONS AS A CAUSE OF SUDDEN DEATH.

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THE following case is of interest on account of the curious pathological conditions which the autopsy revealed, and partly on account of its relation to the Workmen's Compensation Act. The patient, a coal miner, aged 34, was the subject of an accident on November 30th, 1908. While he was lifting, on that day, a large piece of coal into a truck, it slipped and knocked him backwards against a timber prop, injuring his back and left side. He was quite unable to resume work, and so was immediately taken home in a conveyance. There I attended him about two hours later.

State on Examination.

I found him lying on his back on a couch, with his legs drawn up. He complained of "pain in the stomach and across the back below the shoulder blades." He did not look seriously ill. His pulse was 98, temperature 97° F., and respirations 20. There was no vomiting nor hiccough.

There were no marks of injury on the abdominal wall, it moved well with respiration, and there was no distension. On palpation there was some tenderness in the umbilical region, but no rigidity. Percussion revealed nothing abnormal, and there was no evidence of free fluid in the abdominal cavity.

On his back there were some scratches and a bruise 2 in. in diameter immediately below the inferior angle of the left scapula. No ribs were broken, nor was there any injury to the spinal column.

Careful examination of the circulatory, respiratory, urinary, and nervous systems revealed nothing abnormal. It was carefully explained to the patient and his wife that although there was no evidence of serious injury then, yet there might be some internal injury of which symptoms would appear later. On these grounds the patient was strongly advised to come into the colliery company's hospital, so that his case could be properly watched, and have surgical aid if necessary.

Progress.

This advice was not followed, and he was attended at his own home for the next four weeks. At no time during this period were any untoward symptoms or signs detected, and apparently the case was pursuing an entirely favourable course. At the end of this period the man was very anxious to return to work, but my advice was against his doing so. Nevertheless, in six weeks from the date of his accident he returned to work of his own accord.

Result.

In the course of his first morning at work he told his companions that he "felt better than ever before." Shortly after mid-day he suddenly fell down dead. I was hurriedly called to see him at the pit, but on my arrival found life quite extinct.

This man had received compensation during his period of incapacity, and the question now arose, Was his death