ileo-caecal valve is not occluded by any growth or foreign body, the appendix is also patent, nor is there any concretion or polypus either in it or the ileum.

Kelly and Hurdon in their work on the *Vermiform Appendix* (1905) draw attention to the rarity of intussusception of the appendix, either alone or associated with other intussusceptions, and also to the fact that such an occurrence usually takes place in children, for in only one of the 19 collected histories was the patient an adult. These authors divide the cases into three groups:

1. Those in which the appendix is carried along incidentally with the intussusceptum.

2. Those in which the intussusceptum starts at the appendicular junction portion of the colon.

3. Those in which there is an inversion of the appendix either with or without inversion of gut.

The case now recorded falls, I think, into the third class; that is to say, the appendix was partially inverted, or to be more accurate, it was turned inside out at its base, and for some distance, and travelled thus up the ascending into the transverse colon, maintaining its position at the apex of an intussusceptum, which was composed of inverted caecum and ascending colon.

Battle and Corner also allude to the condition in some detail in their work on *The Surgery of the Diseases of the Appendix Vermiformis and their Complications* (1904), and Mr. E. M. Corner deals with the subject in an article in the *Annals of Surgery*, November, 1903, p. 708.

In my case it is probable that the appendix became invaginated first, and that the caecum and ileo-caecal valve followed; the partial inversion of the appendix having excited the caecum to contract, the caput coli being then drawn in, blocking the ileo-caecal valve, the colon eventually taking action, seizing the mass and carrying it forward, assisted by the peristalsis in the small intestine resulting from the more or less blocked valve. The fact that the appendix is in the van lends support to this theory, though there is no evidence as to the nature of the *vis a tergo* inciting the primary appendicular invagination; but it may be that the invagination of the caecum occurred first, and that vigorous contractions of the colon took the mass onward; this latter being swollen and unable to recede, the squeezing process may have produced the inversion of the appendix, complete turning inside out being prevented by its thick short mesentery. Again, it is also possible that the ileo-caecal valve may have entered the colon first and carried with it the base of the appendix (Gerlach's and Nanninga's folds), and the subsequent squeezing, moulding, and turning inside out process may have thrust the inverted appendix to the front.

This last might have happened, as it seems that the distance between the ileo-caecal and appendicular openings is perhaps less than usual (3 cm.), and consequently the appendix would be readily conveyed with the valve. It is not possible to express a decided opinion as to the extent to which the other factors—long mesentery, irregular peristalsis, etc.—usually assigned as causative of the process of invagination contributed to the result. It will be clear that the caecum must have been freely movable, and its absence from the field at the early stages of the operation gave a semblance to a case of undescended caecum.

REFERENCES.

Of the following 30 references, making in all 27 cases, 20 are found in the works of Messrs. Battle and Corner and Kelly and Hurdon. The additional cases have been discovered with the assistance of the librarians at the Royal College of Surgeons of England, British Medical Association, and Royal Society of Medicine. In examining the reports of all the cases, whilst in most inversion of the appendix is clearly indicated, yet in others it is not certain that anything more was found than mere enclosure or invagination of the appendix in a depressed pouch of caecum.

1. McKidd: *Edinburgh Medical Journal*, 1858-9, iv, 793.
2. Treves: *Intestinal Obstruction*, 1899, p. 181.
3. Chaffey: *Lancet*, 1888, ii, 17.
4. Knight: Case of Acute Intussusception of Caecum and Appendix, *New Zealand Medical Journal*, Dunedin, 1890-1, vol. 4, pp. 106-8.
5. Greig Smith: *Abdominal Surgery*, 1896, vol. ii, p. 678.
6. D'Arcy Power: Case mentioned in a discussion, *BRITISH MEDICAL JOURNAL*, 1897, i.
7. Harrison: Case of Intussusception of the Vermiform Appendix, *Treatment*, London, 1897, i, pp. 415-18. (This appears to be the identical case reported by Mr. Waterhouse.)
8. McGraw: *BRITISH MEDICAL JOURNAL*, 1897, ii, 956.
9. Pitts: *Lancet*, 1897, i, 1602.
10. Waterhouse: *Pathological Transactions*, London, xlix, p. 108; *Lancet*, 1897, ii, 1319.

11. Wright and Renshaw: *BRITISH MEDICAL JOURNAL*, 1897, i, 1470.
12. Lees: *Lancet*, 1898, i, pp. 1400-1.
13. Rolleston: *Edinburgh Medical Journal*, 1898, N.S. iv, 21-26.
14. Colman: *Trans. Clin. Soc. Lond.*, 1898, vol. xxi, p. 227.
15. Enderlen: *Munch. med. Woch.*, 1900, July, 1901.
16. Monsarrat: *Liverpool Medico-Chirurgical Journal*, 1901, xxi, 68-78.
17. Haasler: *Archiv für klinische Chirurgie*, 1902, Band lxviii, Cases 3 and 9, pp. 823, 836.
18. Bishop: *Chironian*, New York, 1902-3.
19. Ackermann: *Beiträge für klinische Chirurgie*, 1905, xxxvii, 579.
20. Corner: *Annals of Surgery*, 1903, xxxviii, 708.
21. Haldane: *Scottish Medical and Surgical Journal*, 1903, xii, 4, p. 333.
22. Hogarth: *BRITISH MEDICAL JOURNAL*, 1903, i, p. 850.
23. O'Connor: *Lancet*, 1903, ii, p. 600.
24. Westermann: *Witblad van Nederlander Tydschrift von Geneskunde*, No. 24; also abstract in *Beitr. f. klin. Chir.*, 1903, vol. iii, p. 585.
25. Battle and Corner: *Diseases of the Appendix*, 1904.
26. Baldwin: Intussusception of Appendix Vermiformis, *American Medicine*, Philadelphia, 1905, ix, p. 556. (This is not a record of a case, but a criticism of Dr. Brewer's case.)
27. Brewer: Intussusception of Appendix Vermiformis, *American Medicine*, 1905, ix, p. 67.
28. Kelly and Hurdon: *The Vermiform Appendix and its Diseases*, 1905.
29. Grisel: Two cases quoted in *Maladies du tube digestif*, Debove, Achaud, Castaigne, 1908, vol. ii, p. 333.
30. Back: A Case of Acute Inflammation of an Appendix invaginated into the Caecum, *Proceedings of the Royal Society of Medicine*, vol. iii, No. 1, November, 1903.

ACUTE MASTOID SUPPURATION AND SUPPURATION IN THE NECK

TREATED WITH STAPHYLOCOCCUS VACCINE.

By JAMES SCOTT, M.D., C.M., B.Sc. (PUB. HEALTH),
D.P.H., ETC., EDINBURGH.

THE case is that of a man, aged 56, who has always enjoyed excellent health, never having suffered from any serious illness.

On September 11th, 1908, while on holiday, he caught a severe chill, followed by acute pains in the right ear and right side of the neck. Hot fomentations were applied and the ear syringed, but the pain was not relieved until the tympanum burst on September 13th (two days after the chill), when pus was freely discharged.

On September 26th he returned to his home in Edinburgh, and on examination pus was then observed coming from the middle ear through the perforation in the tympanum. The ear was syringed with boric lotion and powdered boric acid insufflated daily, but the discharge continued. Mercury perchloride lotion—1 in 2,000, then 1 in 1,000—was tried; this had no effect in diminishing the pus.

On October 23rd a slight swelling appeared over the mastoid region, which gradually enlarged and extended downwards behind the sterno-mastoid and backwards towards the occiput. It was evident the mastoid cells were involved and that operative interference was necessary. Dr. Logan Turner, Ear Department, Royal Infirmary, Edinburgh, was consulted, and he advised operation.

Operation.

On November 4th Dr. Logan Turner, assisted by myself, opened into the mastoid cells and the antrum, which contained a considerable quantity of pus; close to the tip of the process and upon its inner aspect the bone had given way, forming a Bezold perforation, through which the tissues of the neck had become infected. A second incision was made along the posterior border of the sterno-mastoid on a level with the angle of the jaw; on passing a pair of dressing forceps behind the muscles, pus escaped freely. Drainage tubes were inserted into both wounds, which were dressed with aseptic gauze every second day. Pus ceased to come from the ear on the fourth day after operation, but continued to flow copiously from both wounds. Gradually it diminished, and the wounds were healed by December 15th.

The patient went to the country from January 4th to January 16th, 1909, with the intention of taking a rest before returning to duty on January 18th; while there a small abscess formed in the wound behind the ear; it burst, and pus began to run in small quantities. I syringed the abscess with perchloride lotion and dressed it with iodoform gauze, but it soon became evident that pus was burrowing its way backwards towards the occiput and downwards behind the sterno-mastoid. Dr. Logan Turner was again consulted, and he suggested that the abscess should be opened. On March 2nd, 1909, three incisions were made—one behind the ear, a second over the occiput, and a third over the tip of the mastoid; a large quantity of pus escaped from the three openings; drainage tubes were inserted, and the wounds dressed daily for a week, then every second day; pus ceased to come from the posterior and inferior openings a fortnight after operation, but continued from the one behind the ear; it diminished for a time, but then began to flow so copiously that it saturated the dressings and ran down the neck so that I had to dress it daily. On April 11th I made two plate cultures; a loop of pus was spread over one plate, and the glass rod, after spreading the first plate, was drawn over the second. In twenty-four hours there were seventy-two colonies on the first, and

seven on the second. The organisms were then separated and grown in tubes, and were found to consist of:

1. *Staphylococcus pyogenes albus* (largest number of colonies).
 2. *Diplococcus pneumoniae* (Fraenkel).
 3. A bacillus whose specific nature was not determined.
- The amount of pus was increasing daily, and as it seemed to be caused principally by the staphylococcus, I determined to try a vaccine against the staphylococcus alone, and if the other organisms did not disappear, to use vaccines against them later.
- On April 17th, 50 million staphylococcus vaccine (Wright) was injected into the left flank. For three days the pus diminished in amount, but gradually increased until on the sixth day the amount was as great as before injection.
- On April 24th, 100 million staphylococcus vaccine was injected, and every tenth day a similar dose was given until he had had altogether eight injections. After the fourth dose there was no discharge, and the wound healed beautifully.

Before injecting the vaccine I consulted with Dr. James Ritchie, Superintendent of the Royal College of Physicians' Laboratory, Edinburgh, as to whether a mixed vaccine should be given. It was decided to try the staphylococcus vaccine, and you will observe how successful the results have been. There was never any rise of temperature after the injections, and the patient has not felt the slightest inconvenience; he has been regularly at work since January 18th, with the exception of a fortnight after the second operation, and now feels as strong and healthy as ever he did. In September, 1908, his weight was 12 st. 2 lb.; April, 1909, 10 st. 9 lb. His hearing in the right ear is now normal. He is now steadily gaining weight. The points I should like to draw attention to are:

1. The specific causes of the disease—the three different organisms which had probably found their way from the pharynx by the Eustachian tube to the middle ear.
2. When the wounds healed up the first time organisms had remained in the tissues, and a second chill reduced the vitality of the parts, thus allowing the organisms to become more active.
3. That it is not always necessary to estimate the opsonic index when the amount of discharge is seen and the effects of the dose of vaccine easily gauged.
4. When there is more than one organism present, by using a vaccine against the most numerous or virulent type, the others may be killed by phagocytes or die off.
5. In using antiseptics we may be killing only those organisms with which they come in direct contact in the wound, leaving those in the deeper parts to multiply.
6. In using a vaccine the organisms are attacked in every part through the blood.
7. The point of greatest importance is: Had I used the vaccine immediately the pus was seen in September, 1908, would it have had the same effect as it afterwards had? This question I am inclined to answer in the affirmative, and I should advise those who have similar cases to try the stock vaccine of Wright or one made from the organisms of the discharge.

IS RADIUM A CURE FOR CANCER?*

By DR. LOUIS WICKHAM,

DIRECTOR OF THE RADIUM INSTITUTE, PARIS.

IF I think it useful to write an article on this subject it is because it has become apparent that in different quarters a misunderstanding has arisen as to the conclusions which I have drawn at various times in my lectures.

Some medical men have limited their opinions to the reservations I made in my communications, and have remained incredulous of the value of radium. Others, who were greatly impressed by such good results as I have obtained, have gone too far, overstepping my thoughts and the facts themselves, and have helped to establish a current of exaggeration and enthusiasm which is far from being scientific.

It is therefore necessary to put a stop to these false impressions with regard to the real value of radium.

The following conclusions are drawn from the 600 cases which I have treated during the last five years with Dr. Degrais.

It must first be stated that the word "cancer" is used in its widest sense, signifying a whole series of malignant new

growths histologically different, including epitheliomata, carcinomata, lymphosarcomata, sarcomata, lymphadenomata, mycosis fungoides, etc.

Considered from this point of view I can affirm, from a study of some cases of tumours of each variety, before, during, and after the treatment, that the malignant evolution of these tumours may not only be arrested for months, but that occasionally these tumours have entirely disappeared, giving the impression of real cure, the rays having on cancer cells a somewhat selective action.

This first point is most striking, and it has led, from the point of view of practice, to an exaggerated favourable conclusion. We must not rest satisfied with the observation of the growths alone; we must reason as medical practitioners, and place ourselves in the position of the patient with cancer, and see if in practice the patient derives any definite benefit from these selective effects of radium, and to what degree.

On this new ground, practice, the use of radium is faced by numerous material and other difficulties and drawbacks such as the following:

1. If the cancer is voluminous and increasing rapidly in size, the practitioner has to deal with the following vicious circles:

- (a) The necessity of acting rapidly;
- (b) The fear, when acting too rapidly, and with large doses, of causing toxæmia, and accidents of which he must be particularly on his guard, if he is not sufficiently experienced in the technique, in all cases of large cancers, for example, those of the abdomen.

2. There is no recourse against metastatic growths at a distance:

- (a) Cancerous migrations by lymphatic vessels;
- (b) Cancerous migrations by the blood stream;
- (c) Migrations by the serous surfaces;
- (d) Migrations by the natural passages.

Radium cannot at present have other pretensions than to act on lesions which are localized and sufficiently accessible, or rendered accessible. In cases with generalization, the resources of radium are limited to the reduction in size of the principal tumours, to the arrest of hæmorrhage and secretion, and to the diminution of pain.

3. If the cancer is localized and accessible, but inoperable, radium, with some rare but very remarkable exceptions, can only diminish or stop the hæmorrhages and secretions, and occasionally render the tumour operable; but, in spite of these great advantages, which result in a prolongation of life, the patient, in the end, dies of his cancer.

4. The influence of radium diminishes as the tumour becomes less and less accessible. It is true that the rays of great penetrating power act at a depth without serious injury to the skin surface, but the results will be more uncertain as the tumours are less accessible. The few cases of inoperable cancer which were despaired of, and which I have been able to reduce and maintain, were all easily accessible cases (cancer of the parotid, of the glands in the neck, sarcoma of the shoulder, cancer of the rectum situated at a distance of less than 10 cm. from the anus, etc.).

5. Certain tissues are infinitely less favourably acted on by radium than others, for example, the mucous membranes, especially of the buccal cavity (tongue, tonsils, pharynx, etc.), and in these cases must be added the material difficulty of reaching the region conveniently, and applying the heavy screen-filters and leaving them in position for a sufficient length of time.

6. Lastly, if the cancer is very extensive, a radium-therapist has great difficulty in obtaining the stock of radium necessary to act sufficiently in every direction, for the number of doses needed in a number of cases is very high.

Now it is easy to understand from our previous knowledge that the use of radium is limited by a whole series of material or clinical conditions. The result is that:

- (a) To speak in a general way of the cure of cancer by radium, without specifying and explaining circumstances, is to make use of antiscientific and inexact language; and

* I must express my best thanks to Dr. Robinson, of Paris, for his kindness in translating this note.