GROUP G.

Disease.	Total Cases.	Success.	Failure.	Percentage of Success.
Pyorrhoea	2	2	0	—
Chronic septic ulceration ...	2	1	1	—
Suppurating sinuses (not tuberculous)	3	2	1	—
Septic thrombo-phlebitis ...	1	1	0	—
Hepatic abscess (not amoebic)	1	0	1	—
Acne vulgaris	3	2	1	—
Unna's ulcerating inguinal granuloma due to <i>B. pyocyaneus</i>	1	0	1	—
Total of group	13	8	5	61.5

This last group does not call for comment at length. The two cases of pyorrhoea were similar—young women who wished to save their own teeth. Pyorrhoea cases associated with rheumatism are placed in Group B.

Grand Total of all Cases.

Total cases	360
Success	224
Failure	66
Percentage of success	81.5

CONCLUSION.

I would again draw attention to the fact that the benefit in the vast majority of these cases has been appraised by independent observers, which fact is rendered doubly important by the nature of the results. The high proportion of success obtained is attributable to two factors. In the first place, selection of suitable cases by bacteriological examination provides one with clinical material that offers a rational basis for the use of vaccine therapy. The results are influenced accordingly. The second factor is the residual vaccine itself, which has an inherent therapeutic efficiency greatly superior to that of the older "whole" type of vaccine.

In recent years the production of improved types of antigens has engaged the attention of a number of workers. The most recent paper on the subject is by Arkwright,³ and deals with typhoid and paratyphoid vaccines. Amongst other facts elucidated he shows that a heat-stable antigen is more efficient than a heat-labile one obtained from the same organism, and notes the interesting detail that a heat-stable antigen that had been heated to 100° C. gave slightly better results than the identical antigen unheated. Precisely the same result is revealed in the tables published in my original paper on residual vaccines.

Horder and Ferry⁴ have produced antigens that differ in the mode of preparation, and almost certainly in their composition, from those of Arkwright and myself. At first sight such results may appear contradictory, but that is not necessarily so. The improvement upon heating the heat-stable antigens can be explained in one of two ways. It may be supposed that the antigen itself is actually improved by heating, which is improbable. The alternative is more feasible: it is that some substance inimical to antibody formation is destroyed by the heat.

The aggressins have not received much attention in recent bacteriological studies, but it has been shown by Bail and subsequent workers that their action is to paralyse the tissue resistance against bacterial invasion, although the aggressins themselves are not toxic, and that immunity can be created against aggressins or against bacteria. When a mixture of bacteria and their aggressins is administered the host experiences increased difficulty in the production of an adequate resistance.

This experimental evidence indicates two methods of producing immunity, and it is conceivable that the immunogens of Horder and Ferry depend in part at least for their efficiency upon the small quantities of aggressin present in the washings. The heat-stable antigens are probably freed from their aggressins when heated, and are therefore capable of stimulating to the fullest extent the resistance appropriate to them.

If this conception of the action of these different bacterial substances be correct, it follows that a mixture of bacteria and their aggressins, such as is represented by an ordinary "whole" vaccine, cannot be as efficient as some of the fractional types of vaccine. Further experience with many of these fractions may show that they are not in opposition to each other as potential remedies, but will perhaps be used most effectively at different stages of the same disease.

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HAIR-BALLS IN THE ALIMENTARY TRACT:

WITH THE

RECORD OF A CASE OF INTESTINAL OBSTRUCTION DUE TO FOUR HAIR-BALLS.

BY

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HAIR-BALLS occurring in the gastro-intestinal tract are not often met with. When found the stomach is the commonest situation for their development, but they may be rarely present in any part of the intestinal tract. The literature contains a few accounts of masses of hair situated in the ileum giving rise to intestinal obstruction, of which the case here recorded is an example.

A woman, aged 30, was admitted to the Norfolk and Norwich Hospital on October 15th, 1925, complaining of abdominal pain. She was married at the age of 24, and had one child, aged 4 years. She had been in good health up to December, 1924, when, on visiting her husband's relatives, she became strange in her manner and difficult to manage. Her mental condition became worse, and she was admitted to the Norfolk County Mental Hospital on January 5th, 1925. On admission her condition was diagnosed as recent mania.

From January to June, 1925, she was difficult to manage, irritable, and destructive. She then began to improve mentally, but at the same time her physical condition deteriorated; she rapidly lost weight, and suffered from constipation, followed by diarrhoea, abdominal pain, and distension. The stools became very offensive. On October 15th, 1925, she was discharged from the mental hospital, and the same day was admitted to the Norfolk and Norwich Hospital.

Condition on Admission.

The patient was a sallow, pale, emaciated woman. Her mental condition was fairly good; she could answer questions intelligently, although she was very ill and in pain. Temperature 99°, pulse 100, respirations 18. The tongue was furred and the breath foul. There was no evidence of any disease of the lungs. The abdominal wall was very thin and the abdomen distended, especially below the umbilicus. There was tenderness all over the abdomen. A fairly well defined swelling could be felt in the region of the caecum. Its surface was smooth and its margins clearly outlined. It was irregular in shape, and measured about 3 by 4 inches. It was painful to touch. The rectum was ballooned, and a bimanual examination was impossible because of the pain and tenderness.

The diagnosis of chronic intestinal obstruction was made, owing to the swelling felt in the abdomen being possibly of inflammatory nature arising in connexion with the appendix.

An exploratory operation was advised and performed soon after admission to hospital.

First Operation.

The abdomen was opened by a mid-line incision below the navel. The lower part of the ileum was found to be much distended, red, and inflamed, and one loop was adherent in the pelvis. On freeing this a small perforation in the intestine was visible. The caecum and the lower part of the ileum were drawn out of the abdomen and packed off. The wall of the lower two feet of the ileum was found to be much thickened, and its lumen contained soft bodies which could be separated one from another. The small perforation in the bowel was examined, and a piece of hair was seen projecting through it. The intestine was then opened, and four hair-balls, smelling offensively, were removed. There was very extensive ulceration of the mucous membrane of the intestine. A large collection of offensive fluid was removed by irrigation, and the intestine drained by a rubber tube stitched in place by Witzel's method. The intestine was then stitched to the abdominal wall.

After the operation the patient's mental condition deteriorated for a time and she was difficult to manage, but she gradually improved, both mentally and physically. The enterostomy worked satisfactorily, although it was difficult to keep the skin of the abdominal wall round the opening free from superficial ulceration. From time to time the patient passed motions by the rectum naturally.

Second Operation.

On December 10th, 1925, two months after the first operation, it was decided to close the opening in the small intestine by a second operation. This was done by resecting 8 inches of small

intestine and joining the intestine by an end-to-end anastomosis. The patient made a good recovery from this second operation. She improved rapidly, and six weeks later was discharged from hospital. She has been heard from frequently since, and is now enjoying good health.

In 1779 Baudamant described the first reported case of hair-ball; since then over 100 cases have been recorded. The condition is frequently found in animals in the season when the hair is shed, but rarely gives rise to symptoms, as the hair-balls are usually expelled by vomiting or passed in the faeces. In human beings the hair-eating habit is generally confined to young females, occurring usually in individuals of nervous constitution with perverted appetites, or in patients who have definitely exhibited symptoms of insanity.

Hair-balls may be multiple or single; those developing in the stomach are usually single. The hair is gradually worked up into a mass by the gastric movements until at length it entirely fills the organ and forms a cast of the stomach, with a prolongation in some cases through the pylorus into the duodenum. In the small intestine, in which they are very rare, the hair-balls are not infrequently multiple; they take the shape of the intestinal tube, and may be, when closely pressed together, faceted.

The clinical symptoms caused by the presence of a hair-ball in the gastro-intestinal tract depend on its position, its size, and the development of obstructive and inflammatory conditions to which it may give rise. Ledra-Heazlit states that the stomach is exceptionally tolerant of foreign bodies, but eventually rebels when the limit is reached. Ultimately symptoms appear, such as pain, vomiting, and attacks of diarrhoea alternating with constipation, and there is much wasting. The breath becomes foul, and the stools are offensive. In the case here recorded these typical symptoms were present. The development of obstinate constipation was first noticed; this was followed by occasional vomiting; later on the constipation alternated with attacks of diarrhoea. There was marked wasting, and an abdominal tumour was discovered. It has been alleged that the patient's hair may be deficient in the frontal region, but this is unusual in cases in which hair-balls are found in the stomach. In cases in which complications have not developed a marked feature is the very slight disturbance of nutrition. In the rare cases in which hair-balls have been found in the intestine the lower part of the ileum is the site where they have usually lodged.

The clinical picture presented has usually been one of chronic intestinal obstruction associated with wasting, abdominal distension, and vomiting; in addition, an abdominal tumour is usually present. As the hair-ball usually occupies the stomach the tumour, when present, is generally situated in the epigastric region, and may extend from one hypochondrium to the other. Its outline is well defined, and its surface is smooth and hard. It is usually movable. These were the characteristics in this case, with the exception that the tumour was situated in the right iliac fossa and reached to the mid-line of the abdomen. Occasionally the sensation of crackling, or deep-seated crepitation, is made out on palpating the swelling.

The x-ray appearances of hair-balls in the stomach have been carefully studied and described by Thurstan Holland. It has been observed that the first mouthful of an opaque meal spreads out to form a cap over the upper end of the tumour. The shape of the tumour is very characteristic when covered by the opaque meal.

Treatment.

The treatment consists in removing the foreign body by operation. A carefully thought-out technique is necessary during the removal of the hair-ball as the discharges surrounding the mass are often foul and septic. In the case here recorded it was necessary to drain the intestine for a considerable time. A second operation was performed later to close the faecal leak, and this necessitated resection of a segment of small intestine, about 8 inches in length, and an end-to-end anastomosis.

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THE SCOPE OF SURGERY IN THE TREATMENT OF CHRONIC RHEUMATOID AND OSTEO-ARTHRITIS.*

BY

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COMMUNICATIONS on the treatment of chronic rheumatoid infections may almost be regarded as chestnuts in the programmes of medical societies. I take it that this tendency to discuss the various problems connected with these diseases is an index of our failure to arrive at any generally accepted solution of them. The subject is certainly one of exasperating complexity, and the average late results of the more severe examples of rheumatoid arthritis may well discourage the most optimistic of clinicians. The issue on this occasion is, at any rate, clearly defined, being limited to the surgical aspect. I shall not attempt or consider any classification beyond that in the title, nor do I propose to consider the surgical treatment of what may be the primary focus of infection. I think the simple subdivision is sufficient to guide us in radical local treatment, and the surgery of the presumed primary focus would carry us too far afield.

For the purposes of surgical treatment it will, I think, be sufficient to accept the chronic rheumatoid group as including several infective conditions, the results of which on individual joints may vary within wide limits. This statement is as true of the late results in individual joints as of the earlier clinical course. In the late stages of joint change, due to what has been called rheumatoid arthritis, we may meet with extreme capsular fibrosis associated with varying degrees of destruction of the articular cartilage. Ankylosis may be fibrous or bony.

Osteo-arthritis may be accepted as a change in a joint initiated locally by some biochemical reaction; the association with injury is no doubt in many cases an important factor in the production of the process, but it does not materially affect the question at issue in the treatment of the condition. The local changes may be clearly separated from the first-mentioned variety by the fact that ankylosis never occurs, although absorption of articular cartilage may be complete, and that periarticular fibrosis is never a prominent feature.

It must be admitted at the outset that both conservative and radical treatment of joint disease of the character under consideration can at the best ameliorate the condition, and seldom, if ever, restore the state to normal.

In chronic rheumatoid arthritis it is generally agreed that no drastic treatment to the joints can be applied while the infective process is still active, on account of the risk of producing a local or distant extension of the condition. A few authors have advocated synovectomy of several of the affected joints at an early stage; but I think there is little support for this method. Evidence of activity is given by the presence of fever and the signs of local inflammatory reaction about the joints. While this is present surgical treatment will be limited to the avoidance of contractures and to holding the parts affected in such a position that function will be interfered with as little as possible should ankylosis of the joint ensue. This is not a dramatic part of surgical treatment, but it is, none the less, a very important one, and one that is perhaps insufficiently recognized, if we are to judge by the serious and disabling deformities which come to hand for treatment in late stages. The reason for this is perhaps partly because the treatment of rheumatoid arthritis in the active period is considered a medical matter. The comfort of the patient is bound to influence the practitioner, and attitudes of maximum comfort or minimum discomfort assumed during periods of active inflammation of a joint may be progressively exaggerated till they lead to extreme flexural deformities. I do not propose to describe in detail what may be regarded as the ideal positions which should be maintained for all the important joints during an acute or subacute arthritis. They

* Abstract of a paper introducing a discussion at the Medical Society of London on February 27th.