be assessed by noting some convenient longitudinal line on the bandage. Only a light force with the forearm is required to stretch the bandage to the correct degree, and it should be possible with a little practice for even the inexperienced in bandaging to apply it correctly. In order to avoid oedema below the lower limit of the bandage, the foot and hand should be included. We have found that 2 or 3 bandages are required to cover completely the lower limb, and 1 or 2 for the upper limb.

The question next arises of the further treatment of the case after admission to hospital. If the bandage has been immediately and correctly applied no further local treatment should be required. How long the bandage should stay on will have to be determined by experience. But at present it would seem that it should remain at any rate for some days, and possibly then be reapplied at slightly less pressure. Finally, there is the question of the treatment of the case admitted to hospital with an established oedematous limb either because prophylactic first-aid bandaging has not been used or has been used inefficiently. As already noted, we employed in our two original cases intermittent rather than continuous positive pressure, because we thought on theoretical grounds that the pump-like action of intermittent pressure would be more efficient than continuous pressure, particularly in a paralysed or semi-paralysed limb, in getting rid of established oedema. If this view is confirmed, some other motive force than a pavaex motor will have to be devised before our technique can be generally adopted, owing to the limited number of those machines available. We are investigating the possibility of developing a simple water-pump which fulfils the same purpose.

Summary

The compression syndrome ("crush syndrome") is due to loss of blood constituents into the affected limb.

The principle of treatment should be by positive pressure, to prevent oedema and get rid of any already existing fluid.

The elastic web bandage applied in the way we have described is the simplest efficient means of exerting this positive pressure in a standard manner as a first-aid measure.

First-aid parties should be equipped with these bandages and taught the proper technique of their application. The importance of applying the bandage immediately the limb has been released from compression should be stressed.

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The social welfare policy in Sweden is being continued despite the present strain, and the new Swedish State Institute for Public Health in Stockholm was inaugurated by the King last year. The institute is organized in three departments: one for general hygiene, one for occupational hygiene, and a third for the scientific control of foodstuffs. In addition to their intelligence service all three branches carry on scientific research. The first-mentioned department provides education in social hygiene for public health officers, including maternal and child welfare, housing hygiene, tuberculosis care, water, and drainage. The task of the department for occupational hygiene is to investigate and prevent ill-health and accidents arising from unsuitable working conditions. In the sphere of food the prime task of the institute is to prevent the manufacture and sale of products dangerous to health and to assess the value of various foodstuffs from the standpoint of nourishment. Special attention is devoted to investigation and control of vitamins in foodstuffs, fodder, and medicinal preparations. The new institution has at its disposal over 100 laboratories, as well as an animal house, which is said to be the largest in Europe. It employs a staff of about forty persons, not including the medical students studying there, and its head is the well-known Swedish physiologist, Prof. Ernst Abramson. The institute, which is situated within the big "medical city" built in the last few years on the northern outskirts of Stockholm, has cost over £118,000. Part of this has been defrayed by the Rockefeller Foundation.

VAGINISMUS: ITS MANAGEMENT AND PSYCHOGENESIS

BY

JOAN MALLESON, M.B., B.S.

The number of marriages which are legally annulled must be very small compared with the number which are not in fact actually consummated. It is by no means uncommon for women who have been married many years to seek advice on account of dyspareunia, conjugal dissatisfaction, or sterility, and for examination to reveal a hymen partially or totally intact. A large proportion of such patients are genuinely astonished when this fact is made known to them. It would be difficult to assess whether such cases are due more frequently to failure on the part of the husband or that of the wife; because, although one partner may be initially responsible for the difficulty, more often than not this trouble is, so to speak, emotionally "infectious," or, at any rate, accentuated by the other partner being under-competent, over-anxious, or too forbearing. This article will deal with those cases in which the trouble comes mainly from the woman's side, on account of coitus being rendered impossible by spasm of the introital vaginal muscles.

Clinically, the term "vaginismus" denotes a condition of vaginal spasm varying from a constriction at the beginning of coitus (so slight that it may merely discomfort the woman herself) up to the extreme case in which the spasm causes acute pain to the woman and entirely prohibits any penetration by the husband: indeed, the introitus may be so constricted that even the tip of the examining finger can gain no entrance. The spasm may affect the perineal muscles exclusively or may be felt as a varying constriction of the levator ani right up to the vaginal fornices. Accompanying this spasm there is usually a definite adduction of the thighs, even up to the point of cramp-like spasm of the adductor muscles, and invariably the lumbar spine is extended in the position of lordosis. In severe cases the posture adopted is one almost of opisthotonos. A concomitant of the syndrome is a greater or lesser degree of hysterical hyperaesthesia. Rarely, this may be absent, but in some cases it may be more prominent than the spasm itself. The hyperaesthesia is usually of the "glove and stocking" variety, starting exactly at the vaginal introitus, but in extreme cases it may be registered all over the vulva and even over adjacent parts of the abdomen and thighs. Vaginismus need have no relation to an unstretched hymen, and can occur with equal severity in the woman who has borne children as in the virgin. It is known to appear as a secondary protection to some physical lesion (such as urethral caruncle, salpingitis, etc.) which would otherwise cause dyspareunia, but such cases are rare compared with the "idiopathic" vaginismus, and will not be dealt with here.

It is important to realize that a true vaginal spasm cannot be voluntarily produced—that is, it cannot be consciously employed by a woman to evade coitus—and it may appear in spite of the utmost *conscious* willingness to accept the coital act. Fortunately, as will be discussed later, it can very largely be modified by conscious control.

The entire syndrome must, of course, be accepted as psychogenic. Often these women display additional neurotic symptoms, and after marriage many of them develop symptoms of anxiety neurosis, typically precipitated by sexual frustration, although in this case the frustration is self-inflicted. Hence, certain of these cases have of recent years found their way to treatment by psychotherapy or psycho-analysis. Experts in this work assert that the aetiology of the condition appears to be varied, because—as with so many neurotic symptoms—there is a tendency to "over-determine" the original fear against vaginal acceptance.

Observation of a series of cases has suggested a possible common factor which has not yet received recognition. Before outlining this it will be convenient to comment upon the clinical

management of these cases, since certain points here may elucidate the hypothesis itself.

Treatment by Persuasion

There can be few medical conditions more gratifying to treat than the case of vaginismus: the average case, even if it has been of long standing, will often resolve after one interview leisurely enough to permit examination and "suggestion." Cases here studied have been drawn from private practice and from the various departments (i.e., gynaecological, sterility, contraceptive) of the North Kensington Women's Welfare Centre. Interviewing in the latter conditions necessitates finding a technique of minimum length compatible with a sufficiently good contact to make treatment by persuasion a feasible proposition.

A proportion of these patients exhibit hostility from the very start; they break the initial appointment or arrive late, and their defensive attitude is often aggressive. While taking a history of dyspareunia it is wisest to accept the patient's own account of the marital situation, but by inquiries to make some assessment as to the normality of either partner's behaviour. When the patient refers to "her fault" or "his fault" it is useful to remind her that "we are not dealing with *faults*, only with temporary difficulties." If the history given suggests that the woman is virginal, before she is asked to undress it is helpful to mention that clearly there may be an unusually difficult "maidenhead" to account for the trouble, or else she may merely have developed the habit of "flinching" and thus be herself causing the discomfort and pain. This idea is new to most women, and they may advantageously consider it while they are preparing for examination.

It is wise to expect difficulty from the patient, and exceptional prudery. If in cases where no physical lesion need be expected a covering blanket is arranged the woman may often be subjected to no visual exposure at all. It is absolutely essential that examination be made in the dorsal position: the alternative position on the side allows of so much lumbar flexion and consequent relaxation that the severity of the introital spasm may be quite concealed. Many mild cases of spasm are probably overlooked in this way. It is helpful to arrange a wall or some other object on the left side of the couch so that the woman can be asked to bend her left knee and keep it resting against the wall. This is invariably easier for her than a direct request to separate the legs, which will certainly revive many painful associations. The case of true vaginismus will at once exhibit lordosis, the axis of the vaginal entrance pointing towards the floor. As the examining finger—well lubricated—reaches the vulva, the left knee is usually brought inwards, still further increasing the inaccessibility of the introitus. At this stage it is advisable to cease examination entirely, and to say, "I am afraid it will be impossible for me to help you if you will not adopt a more helpful position."

Every woman with vaginismus tries, unconsciously, to put the blame or responsibility on to the other person: she expects to be exhorted and physically "attacked." There is no quicker way of modifying these impressions than a kindly but firm refusal to show further interest. Throughout any such interview the most successful contact will be made by an impartial aloofness. Hostility should be met by a firm refusal to be drawn in, and a detached civility will often bring quicker co-operation than a warm eagerness to help.

Many of these women are truly unaware that they render coitus or examination impossible by the thigh adduction, the position being quite unconsciously adopted. An explanation of this is the next stage in examination; and the placing of a folded towel (about 2 in. thick) below the sacrum will demonstrate the required attitude of pelvic flexion. The next attempt must be guided by the woman's reactions: if exceptional hyperaesthesia is present it may be unwise at this interview even to reach the genitalia at all. The woman should be told that this is a fictitious nervous "over-sensitiveness," and she must reflect upon this before she again comes for examination. The very refusal to force her will probably be followed by a request to try once more. The more average patient will allow the insertion of at least one finger, which should be lubricated and should yield entirely to the contour of the contracting passage; pressure against the perineum itself should be avoided. Probably adduction and lordosis will again begin. The patient's attention should be drawn to this, and as she controls her posture she should be told to draw the pelvis up. As the abdominal muscles contract, the levator ani will relax and the spasm and coincident pain will vanish. Given a few minutes' patience, two, or generally three, fingers can be inserted, and the woman realizes for the first time that the vagina is painless and of adequate dimensions. At this stage she should be reminded that her pain has been entirely self-inflicted through her own "flinching," and that her future marital success will therefore depend upon her own efforts. Admittedly, she may be unable to control the vaginal spasm, but if she will attend to flexion of her knees and pelvis, the rest will follow very rapidly.

Most women express themselves astonished that there has been nothing amiss, and are generally glad to have some further talk and explanation. The patient should be made thoroughly to understand that the pain will occur only if the vaginal entrance is "flinching"; and that any hyperaesthesia present must be considered as her own mistranslation of pleasure into pain. Such ideas may appear slightly philosophical, but even uneducated women are often quick to grasp them.

Some Practical Measures

Before dismissal the patient should be given a non-greasy lubricant such as K.Y. jelly (or the odourless non-spermicidal Prentif jelly) for lubricating the vaginal entrance, and reminded to place a small support below the buttocks before sexual intercourse. It is unwise at this stage to agree to her using a contraceptive device. If such measures are essential, the husband should employ a condom until the woman is confident and easy about her vaginal functions. Before this stage the use of any appliance seems always to revive the vaginismus. Difficulties are sometimes presented when the husband is incompetent with a condom, and such situations must be met by individual advice. Finally, the woman should be asked to accept sexual relations regularly and to return within a month.

In only the minority of cases will the presence of an unstretchable hymen be found. It is true that efforts to penetrate a difficult hymen may eventually result in psychical distress and some spasm, but this is different in many respects from the "idiopathic" vaginismus that has been described.

Cases in which the hymen is also causing trouble should be treated according to the preference of the medical attendant. It seems usually best to show the woman how to dilate the hymen herself; but if surgical measures seem preferable they should be done under general anaesthesia, and not entail subsequent application of dilators *by anyone except the patient herself*.

The measures above outlined are generally sufficient to ensure complete conjugal penetration. Some women will report absolutely painless acceptance for a few occasions, with later occasional return of spasm; further persuasion may then be required. Each case will, however, display its individual features. Many of these women have other sexual difficulties. Only too often by the time advice is sought either or both partners may be showing signs of anxiety neurosis, increasing sexual coldness, and depression; and often the husband has developed a secondary impotence, which complicates the picture still more. Certain cases, particularly those with hyperaesthesia, show in addition to their "flinching" an extreme distaste for the sexual relationship. Although such cases may by persuasion be encouraged to accept penetration, it is clearly desirable that their attitude should, where possible, be re-orientated by expert psychotherapy as well.

There can be few neurotic symptoms more quickly accessible to cure than the average case of vaginismus. The ideal interview should be of one hour's duration, but often half that time is sufficient. Two somewhat dramatic examples can be chosen to show how quickly resolution may occur even when the complaint has been of very long duration.

Mrs. A., a clinic patient, married for 11 years, sought advice on account of sterility. Examination revealed a thin almost intact hymen and typical vaginismus. Three months after her only interview she wrote that sexual relations were improving and a pregnancy was established. This interview could not have exceeded the maximum clinic appointment of thirty

minutes. Mrs. B., a scientist aged 36, came to ask about artificial insemination, since sexual relations "were impossible for her." Her first marriage had been annulled after 11 years, and although a doctor had subsequently stretched the hymen, penetration was no easier in her second marriage, which had lasted 4 years and was otherwise very happy. This woman appeared to have little sexual inhibition or strain; but in spite of her doctor's reassurance she still secretly believed that she "must be deformed." Examination showed no hyperaesthesia whatever, but the presence of a strong introital spasm. This relaxed fully to admit three fingers, and the patient subsequently reported easy and immediate establishment of coital relations, with rapidly increasing vaginal feeling. Pregnancy shortly became established.

Before leaving the management of vaginismus, mention should be made of its surgical treatment, whereby the vaginal entrance is relaxed by cutting the posterior muscle fibres of the introitus and vaginal walls. The success of this operation is said to vary greatly; remarkably good results have been claimed, but it is doubtful if the woman with hyperaesthesia or strong sexual prejudice is likely to gain benefit, and it is probably these cases which are therapeutically disappointing.

Aetiology

Let us now give consideration to the causes of this curious disorder. It seems clear that the mechanism is a defensive one: the vagina contracts before it is touched, much as the eyelids blink in anticipation of corneal contact. But why should a small minority of women demonstrate this predetermined and acutely developed anticipation of pain?

In most cases of established vaginismus the woman will mention a previous dread of child-bearing or of sexual pain, or perhaps a preconceived idea that they were "very small inside." Yet such ideas are so common among normal women who show no signs of vaginismus that their description here may be more in the nature of a "rationalization" for the disorder than the actual causative agent. Furthermore, many unmarried women have heard highly exaggerated reports concerning the pain of defloration, yet vaginismus does not as a rule occur among these cases.

Now it has been noticed while interrogating these patients that a common historical factor is often present which does not appear to have received recognition. Many of them have during infancy been "conditioned" to expect pain in the pelvic region by the insertion of a foreign body, the offending object being usually the enema, the suppository, or the old-fashioned soapstick so much employed in Victorian nurseries for the treatment of constipation. Anyone who has witnessed such a procedure will recognize the extreme pain to which the child is subjected. Soap is painful in the rectum as in the eye, and as the infant screams and flings itself into opisthotonos the rectum is instantaneously emptied. The baby who is repeatedly treated in this way will scream and stiffen at the very sight of the attacking object. Here, surely, we have a "conditioning" at the age which is most susceptible to permanent impression.

At first sight it may appear improbable that experience of rectal pain should lead to anticipation of vaginal suffering. To understand such a possibility it is necessary to recapitulate facts of great importance in medical psychology. The rectal, vaginal, and urethral orifices are developed from the original cloaca and possess the same innervation. In very young children the sensations arising in these organs are largely undifferentiated; hence the difficulty in learning sphincteric control and the fact that any of these organs may—and normally to some extent do—receive erotic stimulation during stretching or friction. Thus when a young child experiences pain in either rectum or vagina the resulting impression of the attack will be very similar whichever of the cloacal organs actually received the stimulation.

It is not difficult, therefore, to realize how the child who has come to dread the forcible introduction of a rectal object would respond with fear and shrinking, first in childhood to the vague instinctive ideas of coitus, and then in later life to the actuality of sexual penetration. In some women such trains of feeling must be relegated entirely into the unconscious regions of memory, but in others they are very much part of conscious impression. So large a proportion of women who suffer from vaginismus are able to recall memories of this nature that it is tempting to assume a common pelvic trauma as a basis for all such cases. If this were so the fact should receive recognition, if only for prophylactic purposes.

The possibility of such an association was first suggested by the chance remark of a woman who had suffered from extreme spasm. At her first relaxation of the vagina she stated that the examining finger "Felt exactly like an enema"; and, later, another patient anticipated interrogation by a similar comment, "It feels rather like the bowel."

Since then it has been noticed how many of these patients speak with bitterness of their childhood experiences with enemata. Unfortunately, detailed statistics of these histories have not been kept, but records are available for the rather small figure of 20 consecutive cases of severe vaginismus among educated women. In reply to the question whether they remembered such episodes in childhood, 11 of them replied in the affirmative. Among these answers the following comments were annotated: "Agonizing enemas"; "How I hated them"; "Agonizing soapsticks—at 3½"; "I hated suppositories"; "Mother was always giving us them"; "I loathed them"; "My mother was very heavy-handed"; "I hated them." One patient actually volunteered the illuminating remark, "It was because of enemas I had quite decided I would never marry." It would be interesting to have the replies of a control group of women who recollect such treatments yet have not developed vaginismus, but such have not been collected.

The negative reply of the other 9 does not, of course, exclude the experience, but excludes the probability of the practice being habitual or occurring later than the age of 5 or 6. In fact, psychologists assert that the earlier in infancy a trauma is experienced the more indelible will be its impression. One of these patients agreed to ask her mother for relevant facts, and brought back the surprising reply that no such treatment could have occurred except for soapsticks which, much to the mother's distress, the midwife had insisted on using daily during the first six weeks of life. During examination of these 9 other women 2 exhibited the excessively hostile behaviour so common to such cases: one gave a history of painful catheterization in early childhood, and another of "some painful treatment for soreness."

Neurotic Cases

Although vaginismus is a hysterical symptom, this group of women do not seem to exhibit an unduly high proportion of neurosis. Their sexual behaviour, once the spasm is quiescent, seems fairly representative, vaginal feeling being obtainable in at least half the cases, and none of this series is entirely anaesthetic. Yet it seems certain that the symptom of vaginismus is sometimes "woven in" to an intricate system of neurosis. It might be said that the symptom is *utilized* for other than its original protective purpose. Other trends of feeling such as dread of the penis, hostility to men, parental fixations, etc., may all over-determine the original symptom and make use of it, in their various ways, at unexpected occasions. Herein may lie the explanation for those rare cases of vaginismus in which the symptom develops spontaneously after sexual life has already been established, and for cases which are sometimes amenable to persuasion yet liable to be recurrent. Two long-standing cases may throw light on this phenomenon. Both occur in severely neurotic women who have required psycho-analytic help; neither is included in the above series.

Miss C., aged 28 when first seen, had unsuccessfully attempted intercourse with several men. She had a severe anxiety neurosis and many hypochondriacal symptoms. Although this patient has made an excellent general recovery the symptom is still—after marriage and normal childbirth—apt to recur. She reports that in analysis memories were revived of soapsticks administered by her mother. She considers the vaginismus to be an expression of various conflicting emotions. Mrs. D., aged 26 when first seen, was having her first marriage annulled and still suffers from occasional vaginismus. Sometimes it is quiescent, but may recur suddenly, so that she is never without the risk of its revival. She reports that psycho-analytic investigation has shown various precipitating factors for the vaginal spasm, such as resentment that she is not in an emotional position to become pregnant, or fear that the man is "taking too much from her." At the age of 18 months she had severe dysentery, but we have no proof of any

rectal treatment. This patient has no conscious memory of rectal trauma, yet an unconscious one is suggested by her showing great indignation concerning a pre-operative enema, and by the fact that at 17 years she was rectally examined by a woman specialist and suddenly fainted.

Such histories may perhaps be taken as direct support of the theory that vaginismus is caused by early trauma—and further indirect evidence may be deduced by the method of resolution of the disorder.

Conclusion

The technique above described for managing these cases came to be adopted many years before this theory was considered, yet its details seem very rational if the contention is correct. If we assume that each attempt at coitus or examination revives the infantile emotional trauma we have the perfect explanation for the hostile patient—rigid, with dilated pupils. So also is explained her surprise and relief when the examination is not insisted upon. However much originally the patient had protested, the attacking enema was rigidly completed. Here, for the first time, she is neither pleaded with nor overwhelmed. Rather she is left herself in control of the situation, and with the responsibility for refusal—and its consequent results—upon her own shoulders. This may well account for the sudden alteration of attitude so often shown. As it becomes evident to the patient that her ("transferred") fear and hostility are irrelevant, so the atmosphere of the scene alters. Giving her permission to refuse is often followed by exaggerated gratitude, which undoubtedly is propitious for co-operation and persuasion.

Here, too, may be the explanation of the fact that vaginismus treated by bougies and instruments seems usually to give unsatisfactory results: those patients who endure the treatment, while recognizing that they are no longer "too small," seem often to have had their difficulties even further increased. If this theory is correct such a result would clearly be expected, so that any such treatment should invariably be left in the patient's own hands and should not be relegated to the nurse in charge.

Since the original traumata would have been administered by women, it is possible that the sex of the medical attendant influences the degree of emotion transferred. Perhaps the handling of such cases is best managed in different ways by the male attendant. Certainly the patient's behaviour to medical examination and to coitus do not necessarily run parallel, some cases yielding best to one condition and others showing the opposite reaction. One might suppose that relaxation is best achieved when the emotional atmosphere differs as far as possible from the original one; so that the attendant, even if unfortunately resembling mother or nurse, should at least refrain from behaving like her!

Clearly there is scope for more knowledge about the effects of such early trauma in the male as well: for it is possible that here, too, may be found a basis for some sexual anxiety. If other observers corroborate these findings medical teaching will require to restrain a nursery practice which is by no means uncommon.

A Divisional Hospitals Council for Bristol and district was formed in 1941 and has lately issued its first annual report. The Nuffield Provincial Hospitals Trust authorized a sum of £1,000 to enable grants to be made by the Council in respect of hospital and ancillary medical services and also contributed £315 towards administrative expenses. A survey of hospitals and ancillary services has been undertaken in the Council's area by the Bristol Hospitals Commission, a body of 9 members, including Sir Farquhar Buzzard, who is chairman of the Medical Advisory Council of the Nuffield Trust. Inquiry was made whether it was desirable for further steps to be taken to promote co-ordination or expansion and as to the best means of financing and administering existing services. The Commission paid a second visit to Bristol this year to investigate the contributory scheme problem as it affected that area. During the year the new Divisional Council has taken steps to encourage the formation of similar councils in Bath, Somerset, and Gloucestershire, and a conference has been held with a view to creating a provincial hospitals council to cover Bristol and the West of England, bringing in the areas just named. The report states that valuable preliminary work has been accomplished in this direction.

RELAPSING FEVER IN ADDIS ABABA

BY

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This report is based on 340 cases observed during the second half of 1941.

The transmitting agent of relapsing fever in Abyssinia is, according to some textbooks (Manson-Bahr, Salvioli), the tick *Ornithodorus moubata*. Kirk, however, did not succeed in transmitting Abyssinian relapsing fever by infecting ticks. The spirochaetes in that country have been identified by Scaffidi as a regional variety of *Spirochaeta obermeieri*.

In the present series the spirochaetes were transmitted by the body louse. This is substantiated as follows: (1) mixed infections of relapsing fever and louse-borne typhus are common; (2) spirochaetes are often found in crushed lice collected from relapsing-fever patients; (3) ticks were not found, nor was there a single case in which the "tache noir" (the primary tick-bite sore) was observed.

Diagnosis

The tick film taken as a routine reveals the spirochaetes in most cases of relapsing fever, often also in the afebrile stage. Jaundice is very frequent. The enlarged spleen is as a rule tender. The rash is not easily seen on the dark skin of the Ethiopian, but is more visible than the rash of typhus or typhoid. It consists of small violet-red petechiae, the size of "rose spots," slightly raised, and not fading on pressure. The typical distribution is on the shoulders. Epistaxis is a very useful symptom. Bloody sputum or urine, and diarrhoea with blood, are often mentioned by patients but seldom observed in the hospital. Spirochaetes are sometimes found in the sputum. Pain in the left shoulder is quite common. Pain in the calves, common in other parts of the world, is rare in Abyssinia. The condition of the tongue has been found typical and helpful in the diagnosis of relapsing fever. Four stages may be distinguished. In the first stage, during the first 4 or 5 days of the disease, the tongue is stained brown as in not very severe cases of typhus. In the second stage, covering another week, the tongue is moist and clean. In the third stage the tongue is atrophic, and resembles very much the condition in pernicious anaemia. The fourth stage, not seen more than ten times, but which may occur more often, shows ulcers, single or multiple. The ulcers heal in a week or two without any treatment. Pain in the tongue is common in all stages. The blue tongue seems to be of no diagnostic significance. Systolic and diastolic murmurs are very frequent. In contrast with the murmurs occurring in other infectious diseases their frequency is striking. This and the presence of heart failure in Abyssinia, where rheumatic fever appears to be rare, leads to the assumption that relapsing fever may be one of the chief causes of cardiac lesions there. (Endocarditis of the valves has often been found at necropsy together with other pathological changes typical in relapsing fever.

We found that serum of relapsing-fever patients agglutinates the Kingsbury strain of *Proteus* in a high titre, sometimes up to 1 in 3,200. A history of high pyrexia and chill, and positive XK agglutination with no spirochaetes in the blood, usually indicates a case of relapsing fever. If there is a second rise of temperature the spirochaetes are always found. Mariani, D'Ignazio, Barelli, and Pistoni have described a rare condition which they consider to be a benign typhus showing agglutination with XK up to 1 in 100. The cases they quote are by no means convincing, and we think there is no evidence as to the existence of a typhus-like disease with positive XK in Addis Ababa. Typhus-like diseases with a positive XK have been observed twice in this material; but the titre in both cases dropped considerably, while the X 19 rose steadily and reached its peak in the period that is usual in typhus cases. We consider, therefore, that the XK agglutination in these cases was due to relapsing fever, from which the patients had suffered previously.