favourable age for the excision of the knee may be said to be between five or six and twenty. The operation may, however, be performed, with fair hope of success when the other circumstances are favourable, as late as thirty or even beyond.

Constitutional State.—There must be no visceral disease. The lungs must be examined for signs of phthisis, and the urine for evidence of the albuminoid kidney, which often accompanies chronic disease of the bones; nor should examination of the liver be neglected. There must be no acute surgical fever, and no marked depression of the general health; no great wasting or confirmed hectic.

Local State.—*a.* The bones must not be too extensively softened. Unless you can remove all the softened bone, you will be almost sure to get soft union or no union at all. In excision of the elbow, and even of the hip, this objection does not hold good—you do not want to get firm osseous union, as you do in the knee. In many cases, it is quite impossible to diagnose the actual state of the bones before the operation; you must, therefore, always be prepared to change your excision into an amputation, and must always previously obtain the consent of the patient or of his friends to this course, if necessary.

One of the most favourable classes of cases for excision are those of so-called "strumous" disease of the synovial membrane, though the patient often shows no sign whatever of the strumous diathesis. It is characterised by pulpy degeneration and thickening of the synovial membrane, and by the frequent presence of small abscesses in the thickness of this pulpy mass, which may, or may not, have burst into the joint; the bones are scarcely affected at all. The operation also is exceedingly simple in these cases; you need not be particular about removing all the thickened synovial membrane, and have only to remove a thin slice of bone and cartilage from the articular surfaces.

Then there are the cases where a superficial necrosis of some part of the articular surface has taken place, and a sequestrum has formed. In some of the other joints you may just remove this sequestrum, and trust to rest, etc., but in the knee this procedure is followed by such severe shock and profuse suppuration that it is better to excise at once.

b. The disease must not be of too long standing, and the limb must not be too much atrophied. In children especially, if the disease have lasted for any considerable time, there is great risk that it may have extended beyond the epiphyses, and that the operation would, consequently be followed by arrest of growth in the limb.

c. The soft parts must not be too extensively undermined.

d. The disease must not be in an acute stage. I have seen excision successfully performed for acute abscess in the knee-joint, but, as a rule, the operation under these circumstances should be discountenanced. This rule also does not hold good in the case of other joints, especially of the elbow, where excision may be safely recommended in the acute stage of abscess.

It will thus be seen that the most favourable cases of disease of the knee-joint are those which are selected for excision, whilst the more unfavourable are left for amputation, and that this, therefore, tends to increase the mortality after amputation. Some have argued that the tendency is to some extent neutralised by the fact that, since the introduction of chloroform, amputation has been performed in many favourable cases of old deformity, etc., which would formerly have declined the operation. This may be true, but, on the other hand, a far larger number of favourable cases are saved by the conservative surgery of the present day, which would formerly have undergone the operation; so that I do not doubt that, on the whole, amputation for disease is now practised in a class of cases less favourable for recovery than was formerly the case.

The *Operation* itself is tolerably simple. Some surgeons, as Mr. Butcher, still adhere to the H-shaped incision; this, however, is rarely required—only when a joint is ankylosed in an awkward position, or when you wish to expose the bones very freely. Others make a large anterior flap, enclosing the patella; the only advantage of this is that you can at once amputate, if necessary, without removing much of the femur; the objections are, that there is a large hollow left after the removal of the patella, and that the wound is larger, and, consequently, the shock is increased and convalescence retarded.

Langenbeck, I believe, operates, or used to operate, on a totally different plan, and with a different object in view. He makes a longitudinal incision down each side of the joint, divides the lateral and crucial ligaments, and turns the articular surfaces out through one of the wounds. He leaves the patella and its ligament entire; his object being to get a moveable joint, while we look for firm ankylosis. I have no experience of Langenbeck's treatment, but, from my own experience, should always advise the removal of the patella, or, at all events, of the whole of its cartilaginous surface. When the patella is left, it often becomes the seat of the recurrence of the disease, and, if the bones are to be firmly united and soldered together, there is no advantage to balance this risk. You

will see by the examination of such cases several years after recovery, that the quadriceps extensor cruris becomes atrophied, and the function of the patella entirely abolished.*

I think, then, that the best plan is to make a single straight incision from the back of one condyle to the back of the other, cutting across the ligamentum patellæ, and completely dividing both lateral ligaments. After turning up and removing the patella, the limb is well flexed, the back of the condyles cleaned, and the lower part of the femur sawn off nearly perpendicular to the axis of the bone; the head of the tibia is then cleaned and sawn across horizontally. The danger to the popliteal is not great, unless it be bound down to the back of the bones—glued to them, as it were, by inflammatory products; nor is there any motive for sawing the femur from behind forwards, as has been recommended.

Be very careful to tie all bleeding points. I always use the carbolised catgut ligatures, and cut off both ends quite short; the knots do not interfere in the least with rapid union. I find this much more satisfactory than torsion, especially for small vessels.

Put up the limb at once, before the patient recovers from the chloroform. There are several different forms of apparatus. The limb should be perfectly straight, and the splint should be carefully adapted to it. The plaster of Paris splint is very good; the best form is that of Dr. Patrick Watson, a description of which is inserted in the *System of Surgery*. The objection is that, if the limb become inflamed and swells, you have at once to take it all down; and if, as sometimes happens, the limb shrinks, the splint allows too much motion. The same objection applies in some degree to Mr. Butcher's apparatus; this consists of a sort of trough, formed by three flat wooden splints, open in front. In this hospital we usually use a McIntyre's splint, cut away at the sides opposite the joint. Wooden side splints are applied to this, and a well moulded leather splint is fitted over the front of the thigh.

Whatever apparatus you use, do not disturb the limb oftener than you are absolutely obliged; perfect rest is the great point of the after-treatment. If you can avoid any changes for four or five weeks, so much the better; by that time there will probably be a sufficient amount of union between the bones to dispense with all special apparatus for the future.

Do not allow the patient to use the limb too soon, and watch him for some little time after he begins to move about on it, so that you may at once check and correct any tendency to bending or bowing at the seat of union.

ON THE USE OF CONCRETE IN ASYLUM BUILDINGS.†

By W. W. WOOD, M.D. Lond.

It seems necessary to offer some apology for occupying the time which should be devoted to the consideration of scientific subjects with such a small matter as that to which I propose to direct attention; but in these days, when the cost of everything (excepting, perhaps, medical advice) is increasing at a rate which threatens seriously to cramp the means of living amongst many of the middle and lower classes, and so, by adding to their anxieties, tending to the development of brain-disturbance, economical considerations in relation to asylum accommodation are not without some value.

Having had recently to make considerable additions to buildings, a large quantity of material remained in the form of what is commonly called ballast; and, in considering to what use it could be applied, it occurred to me to try an experiment which I had been rather urged to make with the new building itself. Accordingly, in the first instance, I decided to try what sort of a wall could be built consisting of concrete composed of seven parts of ballast and one of Portland cement; and I have found that a wall of this kind may be built at one-half the cost of brickwork, if the soil of the ground on which the wall has to be built be gravel, and at two-thirds of the cost of brickwork if the ballast have to be bought in the neighbourhood. It is to be understood that it is not necessary to have such gravel as is used for making paths—for this, of good colour, in certain localities, it is very difficult to obtain—but rough ballast, the shingle of which is mixed with about one-third of "sharp" sand—*i. e.*, ballast which does not contain loam or garden-mould. Finding that a wall eleven feet high and one foot thick, with occasional buttresses, was very hard and strong, it occurred

* See an illustration in Holmes's *System of Surgery*, vol. v, page 708. Second edition.

† Read before the Public Medicine Section at the Annual Meeting of the British Medical Association in Birmingham, August 1872.

to me to construct summer-houses in the wall of the same material; and two were successively and successfully constructed of this concrete, one seventeen feet by eleven feet, and one twelve feet by seven feet. The arched entrances are entirely of concrete; and, excepting a few tiles bedded in cement in the roof, there is not a particle of any material in the whole of these buildings but ballast and cement. A very great saving of cost is effected in buildings of this kind, in consequence of the class of labour employed. Ordinary bricklayers' labourers do all the work, under the guidance of one experienced artisan; and, if an arched roof covering a room seventeen feet by eleven feet will carry itself without any wooden support, it is probable that a building of proportionately increased solidity might be constructed on the same principle. For cottages and detached buildings, especially of one floor only, a very great saving of cost may be effected; and, if any of the members should wish to see what I have done, or to obtain any further information as to details, I shall be very glad to see or hear from them.

ABSENCE OF THE UTERUS AFTER REPEATED PREGNANCIES.*

By WALTER WHITEHEAD, F.R.C.S.E.,

Surgeon to St. Mary's Hospital for the Diseases of Women and Children, Manchester.

ANN DAWSON, aged 39, was admitted an out-patient of St. Mary's Hospital, on the 11th April, 1872, suffering under general debility and amenorrhœa. Menstruation began at eleven years of age. She was married at 25, and had four children within three years and a half; the first two having been born at the seventh and eighth months respectively, the others at the full term. Flooding took place after the birth of each, especially after that of the last child. On that occasion, she was attended by Mr. Rothwell (late of Bolton), who did not arrive for some hours after the child's birth; the placenta had not come away when he got there, and this he appears to have removed. Hæmorrhage subsequently took place to such an extent, that he found it necessary to remain with her four or five hours, during the greater part of which time she was delirious. Previously to labour coming on, there was milk in the breasts; the following day it had disappeared. After the cessation of the flooding, the discharge does not appear to have had the ordinary character of lochia, but to have consisted of a brown watery fluid, which persisted for a couple of weeks without any change in its appearance. Convalescence was so protracted that, at the end of eighteen weeks, she was unable to stand; but there is no history of her having suffered during this time from febrile or irritative symptoms indicating the occurrence of any acute mischief. From this period, her general health somewhat improved; menstruation, however, has never been re-established, so that it is now eleven years since the woman had any appearance of the usual monthly discharge; and although occasionally menstruation ceases at the early age of twenty-eight, each instance, when it does occur, is sufficiently singular to make it worthy of individual consideration. The interest in this case is further increased by the fact that she has never had the slightest leucorrhœa, a discharge which I have usually noticed to persist for a length of time when menstruation has ceased at an earlier period than usual. Neither has she, since the cessation of the menstrual function, experienced any of the *molimina menstruationis*, which, when in activity, were well marked and characteristic in her case. During this period, also, all sexual desire has become abrogated, coitus being attended neither with pleasure nor with pain. There does not appear to have been any hæmorrhage recurring at regular intervals, which could be looked upon in the light of vicarious menstruation, although four years ago she vomited blood, and once lately she spat a small quantity, and, for the last year, the nasal mucus has been streaked with blood every morning. For four months previously to the birth of her last child, large quantities of blood were passed *per anum*; and, at the same time, she appears to have suffered from an aphthous condition of the intestinal tract; and she states that her child at birth was similarly affected. She is a tall, pale, thin woman, with markedly flabby cheeks, and a commencing arcus senilis; the mammae are shrunken and flat, with apparent atrophy of gland-structure. On digital examination *per vaginam*, no cervix or uterus can be detected, but the finger discovers an opening, of irregular outline, in the position of the os uteri. The speculum reveals the presence of a small growth, of the size of a pea, on the right margin of the opening referred to, and confirms the absence of a cervix. A No. 12 gum elastic catheter passes, without any pressure, and without the slightest resist-

ance, eight inches through the opening. The absence of the uterus is still further confirmed by the approximation of the left forefinger in the rectum to the right hand placed over the pubes, and also by the sound in the bladder with the finger in the rectum. The sound passed through the opening can be felt under the abdominal wall, two inches above the umbilicus; and it can also be moved in a lateral direction for three inches to either side of the centre of the abdomen. The sound, bent at a right angle an inch from its extremity, and passed through the opening, can be rotated so that the angular portion nearly describes a circle immediately within the opening, meeting with some slight obstruction only posteriorly. These methods of exploration have been repeated, and the results generally confirmed by Dr. Thorburn, Dr. Lloyd Roberts, and Mr. Windsor. These various examinations, although apparently rough and dangerous, never appear to cause any distress to the patient, either at the time or afterwards; in fact, she rather attributes an improved appetite to the manipulation she has undergone.

Such is the history and condition of this woman; a case, so far as I am aware, without a parallel in medical literature. The importance of which such knowledge would be is obvious could we determine the precise condition of this woman, and could we further ascertain what cause has effected such changes that an organ like the uterus, after repeated pregnancies, should have disappeared, if not altogether, at least from its usual situation. It cannot positively be asserted, during her life, that the uterus does not exist; but it is quite certain that, if it remain, its situation is either removed beyond reach, or its bulk is so far reduced that it is not detectable by the means which I, and those who have given me the benefit of their knowledge, have employed. There is but one other alternative; and that is to suppose that, by some process, the uterus has been destroyed, and either absorbed or sloughed away. I am aware of the necessity of being cautious in speaking confidently about the presence, or even the size of the uterus; and I still entertain the possibility of the uterus being even now in its usual locality, but that the walls are so attenuated that, although they may exist, they are so thin that, having to be examined through other contiguous structures, they are difficult to recognise—the uterus, in fact, being present in outline, but not in bulk. Supposing, on the other hand, the uterus to have disappeared—and I must confess that, in this case, I feel the supposition to be warranted—how far is it possible to account for such an occurrence? For the solution of this question, the changes which the uterus undergoes in the cycle it performs between impregnation and the resumption of its virgin condition, require to be considered severally in the three stages of development, degeneration, and reconstruction.

It is not necessary to go through the details of these processes, although it is perhaps as well to remark that the stage of development depends less upon the introduction of new elements than on the increase and the higher perfection of its ordinary constituents, and that the degeneration is the fatty degeneration which other tissues in like manner undergo previous to removal. Thus, the pregnant uterus may be compared to a physiological wave, gradually augmenting and steadily subsiding without receiving any perceptible aid from surrounding elements. Of the process of reconstruction we know little; but it will be conceded that it depends upon a healthy condition of the function by which it is brought about; consequently the condition of what is termed superinvolution of the uterus, or atrophy after pregnancy, must depend either upon an excess in the process of involution, an excess of the fatty metamorphosis and subsequent absorption, or on some defect in the development of the new tissues that ought to replace those that have become effete. That one or other of these processes takes place, Sir James Simpson and Dr. Arthur Farre have published cases to demonstrate, and they have both verified by *post mortem* examination that an uterus may become so attenuated that its walls are found no thicker than those of the intestines. The only analogous instance of a body like the uterus spontaneously lessening in bulk is found in fibroid tumours, and here the resemblance is further increased by the similarity in structure of the two. I do not mean to assert that their identity is complete, but that organic muscular fibre is the main element in the composition of them both; and the muscular fibre only differs in this respect—that whereas in the uterus the fibre-cells are large and soft, in fibroid tumours they are small and dense, and consequently less prone to rapid disintegration and absorption. The spontaneous absorption of fibroid tumours is no longer denied, and the number of well authenticated instances of the complete removal of large fibrous tumours by absorption are now sufficiently numerous not to require special mention. The accepted theory of the disappearance of these tumours is that the fibres undergo, in the first instance, a molecular fatty degeneration, and then become absorbed; so that in both respects the processes correspond to those which constitute the involution of the uterus after delivery. We know absolutely nothing definite of the cause which induces those metamorphoses in the intimate structure of these growths

* Read before the Lancashire and Cheshire Branch.