

veins of one side of the face and neck with a prominent jugular on that side should always lead one to suspect the existence of enlarged bronchial glands.

In describing the tuberculous diathesis several writers have referred to the presence of visible veins; Landouzy,⁴ describing the tuberculous predisposition, says: "Peau blanche, fine transparente marbrée de veinules, souvent tachetée de macules; système pileux soyeux, de coloration rousse ou rouge; iris bleu; chairs molles; sueurs faciles, parfois odorantes; formes plutôt graciles et élégantes." Eustace Smith⁵ says: "Such children are tall for their age and slightly made, the skin is delicate and transparent-looking, allowing the superficial veins to be easily seen," &c. It is questionable whether thinness and transparency of the skin, a condition which has been accepted by medical writers, is sufficient to explain the condition in which these veins become visible. In wasting other than that due to tuberculosis it is not common to see superficial venules; it is possible to see, as I have seen, superficial venules in children with a moderately good layer of superficial fat; further, in view of the association in the cases quoted of dilated jugular veins along with visible venules on the chest, it is legitimate to assume that the two conditions may be due to the same cause. Only once (Case 12) has it been possible to observe the conditions under which the enlarged veins are produced and in this case only the left jugular vein was dilated. A dissection of the anterior mediastinum shows a ring of fleshy enlarged glands encircling the left innominate vein (Figs. 1 and 2) attached

FIG. 1.

FIG. 2.

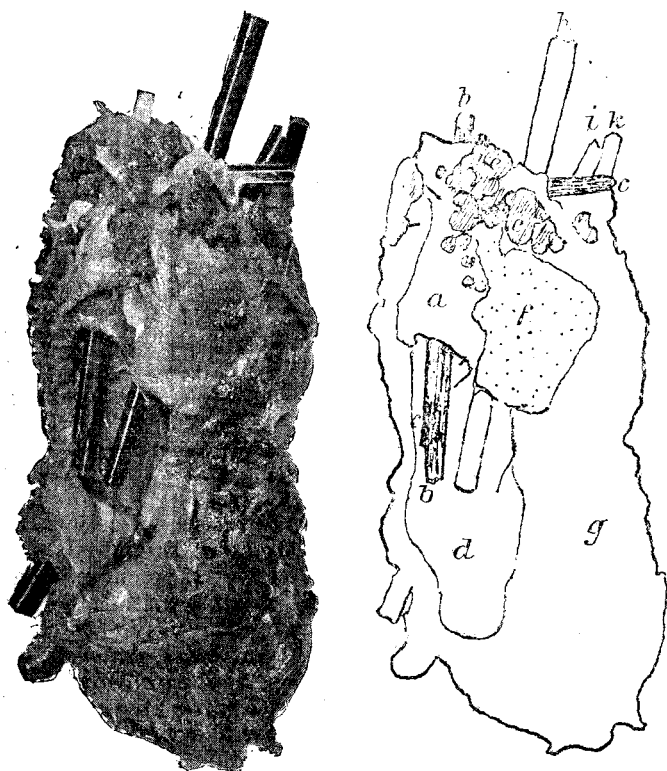


Fig. 2 is a tracing from Fig. 1. *a*, Superior vena cava. *b*, *c*, Glass rods in the right and left innominate veins respectively. *d*, Pericardium. *e*, Small, fleshy lymphatic glands compressing the left innominate vein. *f*, Thymus. *g*, Root of left lung. *h*, *i*, *k*, Glass rods in the innominate artery and the left carotid and subclavian arteries respectively.

below to the thymus. Microscopic sections of one of the glands shows giant cell systems and a few tubercle bacilli. The primary focus of infection in this case has been a mass of caseous glands containing numerous bacilli in the posterior mediastinum. Stretching up from this focus along the lymphatics are several small fleshy glands of the same type as that encircling the vein. In assigning the cause of the condition in the other cases supposition must necessarily take the place of proof, but in view of the facts enumerated above, the history of tuberculosis, the condition of the hair, the presence of a retraction murmur, and the presence of small glands in the neck, the importance of which has been insisted on by Legroux⁶ as an aid to the diagnosis of tuber-

culosis in children, it becomes highly probable that tuberculosis of the mediastinal glands is the cause.

From the pathological standpoint we have adequate proof that tuberculosis of the glands, especially those of the mediastinum, is extremely frequent in children who have died from diseases other than tuberculosis, and that where death has been due to tuberculosis an overwhelming percentage of cases show the glandular mediastinal affection in addition to that of other organs. It is sufficient in this connexion merely to mention the writings of Sims Woodhead,⁷ Coleman,⁸ Walter Carr,⁹ Leonard Guthrie,¹⁰ in this country, and C. Spengler¹¹ and Neumann¹² in Germany as a few examples of writers dealing with the subject from this point of view. Some of the French writers have recognised from the results of this work that most children attending the out-patient departments of our hospitals harbour tubercle bacilli somewhere in their bodies. As yet, however, we have had no means of detecting minute glandular lesions of the mediastinum so frequently the cause of a general infection, but it is suggested that the presence of visible veins on the chest, dilated jugular veins which do not collapse on inspiration, visible veins under the chin or on the temples, together with the other suggestive facts (enumerated above) in the history and state of the patient may lead to an increase in the number of these cases diagnosed during life. It is hardly necessary to mention how quickly these children improve under a liberal diet and ordinary attention to health and therefore what a valuable weapon for prophylaxis the knowledge of the presence of mediastinal tuberculosis may become.

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STRANGULATION OF THE APPENDIX VERMIFORMIS IN HERNIAL SACS.

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THE appendix as a content of a hernial sac is by no means infrequent. Many statistics have been compiled showing a percentage of cases in which the appendix is herniated. These, however, can hardly be quoted as an accurate interpretation of the relative frequency of the appendix in hernial sacs, since in many cases the latter is empty at the time of operation and the viscus which has occupied it must remain unknown. The combined statistics of Hoffmann, Colzi, Wassiljew, Coley, and Bundschuh are that in 3054 cases of inguinal and femoral hernia the appendix was present 53 times. In 250 cases of inguinal and femoral hernia of adults collected from the statistics of Charing Cross Hospital the appendix is mentioned as being a content of the sac in four only; in 100 consecutive cases of radical cure of inguinal hernia in children I have found the appendix present eight times. The total of these figures (which comprise cases at all ages and in both sexes) is that in 3404 cases of inguinal and femoral hernia the appendix has been present as a content of the sac in 65. These figures merely show the occasions on which the appendix has actually been seen and not the possible relative frequency of the organ in hernial sacs; they include cases in which the appendix only is herniated and in which other viscera are also present. The relative frequency of appendicular femoral and inguinal hernia is not far from equal. Statistics vary a little on this point but the larger number of cases collected show very little difference in these two forms of herniæ.

Two accidents may happen to the appendix when herniated. The more frequent of these is an inflammation

⁷ Sims Woodhead: Tuberculosis and Tabes Mesenterica, THE LANCET, vol. ii., 1883, pp. 51 and 99.

⁸ Coleman: The Distribution of Tubercle in Abdominal Tuberculosis, Brit. Med. Jour., 1893, vol. ii., p. 740.

⁹ Walter Carr: The Starting-point of Tuberculous Disease in Children, Transactions of the Medical Society, 1894, p. 238.

¹⁰ Leonard Guthrie: The Distribution and Origin of Tuberculosis in Children, THE LANCET, Feb. 4th, 1899, p. 236.

¹¹ C. Spengler: Zur Bronchialdrüsen-Tuberkulose der Kinder, Zeitschrift für Hygiene, 1893, Band xiii., p. 347.

¹² Neumann: Ueber die Bronchialdrüsen-Tuberkulose und ihre Beziehungen zur Tuberkulose im Kindesalter, Deutsche Medicinische Wochenschrift, 1893, Nos. 9, 10, 12, 13, 14, 15, 16, and 17.

⁴ Landouzy: Prédispositions Tuberculeuses, Rêvue de Médecine, 1899, p. 422.

⁵ Loc. cit.

⁶ Legroux: La Micro-polyadénopathie considérée comme Indice de la Tuberculose Profonde chez les Enfants, Congrès pour l'Etude de la Tuberculose, 1888.

similar to that which befalls the appendix when situated within the abdomen. The second is strangulation of the appendix at the hernial ring. The former condition is the better recognised one. It is more frequently observed in the inguinal than in the femoral hernia and this probably so because of the comparatively high frequency with which it occurs in children in whom inguinal hernia is so exceedingly common. In appendicitis occurring in a hernial sac the appendix may be the sole content of the sac or may be present together with other viscera. In appendicitis occurring in inguinal hernial sacs in man the proportion is very nearly equal. Thus Wassiljew found that in 31 cases the appendix was the only content of the sac, in 23 cases in addition to the appendix the cæcum was also present, and in eight cases other portions of the intestine were also present. In appendicitis occurring in femoral herniæ the appendix appears to be more often the only content. When the herniated appendix becomes strangulated naturally it is the sole content of the sac, although in a few cases some omentum has also been present to which further reference will be made.

It is a matter often of considerable difficulty to distinguish between the inflamed appendix and the strangulated appendix in hernial sacs. In the literature are many cases recorded as incarcerated or strangulated appendices when the sac is full of pus, the appendix perforated or gangrenous, and, in fact, has every appearance of being acutely inflamed. It is conceivable that such a case may be one of primary strangulation and later acute inflammation, but this it is impossible to say and in my statistics such cases are omitted. On the other hand, some cases are recorded as appendicitis which pathologically and clinically seem undoubted examples of pure strangulation. The appendix when incarcerated rapidly swells and has appearances simulating an acute inflammation. In the majority of cases the differentiation can only be made in the early stages. Later the distinction is practically impossible since the strangulated appendix becomes acutely infected, and the primary cause of this cannot with certainty be told. Both diseases have an abrupt onset with pain in the hernial region, often abdominal pain, either around the umbilicus, lower abdomen, or more diffused and colicky in character. Vomiting is common to both. In appendicitis the temperature is elevated from the beginning, but this perhaps is not so marked as when an abdominal appendix becomes inflamed, since a thickened hernial sac does not react in the same way as does normal peritoneum; in strangulation of the appendix the temperature is subnormal at the onset and only rises later when inflammatory changes set in. The inflamed appendix rapidly gives rise to evidences of inflammation of the coverings; the skin will soon become reddened and cedematous; in the strangulated appendix such changes are much longer delayed. Pathologically the strangulated appendix has in the sac clear, slightly turbid, or blood-stained fluid with an absence of inflammatory lymph. The appendix is in a condition of venous hyperæmia only, is in the majority of cases free from adhesions, and has not any concretions in its interior; it shows at the level of strangulation a distinct furrow. Its mesentery is equally affected in this venous hyperæmia. After division of the constricting agent it has been noticed by Honsell and myself that the colour of the appendix changes, as does any portion of strangulated bowel. It is interesting to note in this connexion that it is as safe to reduce an incarcerated appendix as any other portion of the bowel. This has been done in at least 15 cases and the after clinical course was apparently as smooth as in simple strangulated hernia. The after course of an inflamed appendix which had been reduced would probably be very different.

From the literature I have collected 53 cases (including three of my own) which I regard as examples of strangulation of the appendix. In by far the majority of cases the appendix is the sole content of the hernial sac. In four, however, the omentum has also been present and both appendix and omentum are strangulated. In one of Koerte's cases an old woman had an adherent omental hernia for some time. An acute incarceration forced operation three days after the beginning of the symptoms. Barnsby records a case of a woman 45 years of age who for four years had complained of colic in the right iliac fossa coming on in crises. A femoral hernia was found; it was easily reducible. A bandage was worn and then abandoned. Acute symptoms of strangulation followed and on the fourth day of the illness at the operation the sac was found to contain a quantity of

black fœtid liquid, a portion of omentum, and the appendix with its cæcal attachment. The omentum and the cæcum close to its appendicular attachment were strangulated; these were removed through an abdominal incision. Legueu records a case of a woman, aged 53 years, who suddenly after some effort was seized with colic and noticed for the first time a swelling in the femoral region. The symptoms continued and on the tenth day of the illness an operation was performed; the sac contained in addition to the appendix some epiploic fringes of a black colour; both were removed. Bundschuh records a case of a woman, aged 60 years, who for two years had had a right femoral hernia; acute pain and nausea developed and the hernia became irreducible. Operation was performed on the third day of the illness. The sac contained turbid fluid, a strangulated appendix, and hæmorrhagic omentum; both the latter were resected.

The appendix herniates by virtue of its free mobility and its situation in the abdomen. The length of the appendix is not an etiological factor. In only one or two cases is the appendix mentioned as being of excessive length. It is not the whole appendix which usually lies in the hernial sac, although this may be so and even include the cæcal attachment as in Barnsby's case; but the rule is that only a portion is herniated—the greater portion it is true. The mobility of the cæcum probably has something to do with the occurrence of isolated appendicular hernia in some cases. This, however, appears not to be invariably the case. In four cases of this series it was impossible to drag the cæcum down to the hernial ring to reach the insertion of the appendix, and the latter had to be removed through an abdominal incision. In four other cases the appendix was incompletely removed through the hernial ring; the probable cause of the incomplete removal seems to have been the immobility of the cæcum. In the other case in which the appendix was removed this seems to have been readily effected through the hernial incision. In these cases, however, it is not always stated whether the whole appendix was removed or not and no note is made as to the mobility of the cæcum.

The appendix usually protrudes through the hernial ring in such a way that its apex is the most advanced point. This is not invariably so. In some cases it is distinctly bent and curved upon itself. In a few instances it is so curved that the proximal and distal extremities lie within the abdominal cavity. Such cases are recorded by Honsell, Guinard, and Rotter. The appendix in the majority of cases lies free in the hernial sac, being without any adhesions. The meso-appendix shares in the strangulation and it is often noted that the meso-appendix is very well developed, being very rich in fat. Such a thickly developed meso-appendix seems a probable factor in the etiology of the strangulation.

The rigid structures forming the boundary of the ring are responsible for the strangulation. In one case recorded by Rochard the strangulation was not at the crural arch but by a sort of diaphragm in the sac. This was a woman, 70 years of age, who for three or four days had had pain and swelling in the right groin; the bowels had not been opened for three days but flatus had been passed; there was nausea but no vomiting; the abdomen was a little swollen; it was supple and not tender. In the femoral region was a small, rounded, tender, and irreducible swelling. At the operation after opening the sac and cutting the crural arch the appendix was found to be strangulated about two centimetres above its inferior extremity, and the agent of strangulation was a sort of diaphragm in the sac, above which the appendix was completely healthy, whilst below it was black and necrotic, and between the two portions was a furrow impressed by this diaphragm.

Of the 53 collected cases only three occurred in the male subject. Of these three, two were children—one a baby five weeks old and my own case, a baby aged 22 months. Both were inguinal herniæ. The third case recorded by Rahn is also an example occurring in an inguinal sac. This was a man, aged 57 years, who for five years had had a reducible inguinal hernia. This came down one day and was associated with pain and vomiting; it was reduced by a surgeon. Eight days before operation the rupture again came down and could not be reduced. There was little collapse. The man vomited once on the fourth day of the illness, lost his appetite, and suffered from abdominal pain. The abdomen became somewhat distended. At the operation the sac contained blood-stained serous fluid, with the appendix strangulated at the internal abdominal ring; there were no adhesions. The appendix was removed after

dilating the ring and the wound allowed to granulate. Strangulation of the appendix in the male subject seems a great rarity.

Fifty cases occurred in women and in every case the appendix was strangulated in a femoral hernia. In every instance the hernia was on the right side. The age at which strangulation occurred is not given in five cases. In 45 cases in which it is mentioned the youngest was 21 and the oldest 87 years of age. The age incidence in decades is as follows:—

Between 20 and 30 years of age	2 cases.
" 30 " 40	"	...	6 "
" 40 " 50	"	...	9 "
" 50 " 60	"	...	13 "
" 60 " 70	"	...	10 "
" 70 " 80	"	...	3 "
" 80 " 90	"	...	2 " (ages 80 and 87).

22 of these 50 patients were known to have had a hernia before strangulation occurred. The duration of the hernia is given as anything from between two months and 13 years—years, several years, and in Bundschuh's case, a woman, 53 years of age, the hernia had been known to exist since childhood. In 18 cases the existence of a hernia previously to the symptoms of strangulation was not known. In the remaining cases this fact is not mentioned. In the cases in which the hernia had been present before acute symptoms it was of small size. In many cases it is mentioned as being quite small and in others it is said not to have caused any inconvenience, and a small hernia is therefore inferred. In by far the majority of cases the hernia was easily reducible. This, however, is not always the case. In Levy's case the hernia had been gradually increasing in size for two months and was irreducible but was only painful for four days. In Swasey's case the hernia was never completely reducible; it had existed for six years and a truss had not been worn. In one of Koerte's cases an adherent omental hernia had existed for some time. In several cases the hernia had only been down on a few occasions. The best example of this is the case recorded by Waring, of a woman, 56 years of age, who had had a hernia 12 years before; this was easily reduced and did not occur till 11 years later, when it became irreducible and painful. It was then reduced with difficulty. The third time it occurred it became strangulated.

In a few cases the hernia had given trouble before the acute symptoms set in which called for operation. Rotter's case was a woman, 68 years of age, who had had an irreducible hernia of the size of a hazel-nut for four years; this was occasionally painful but acute symptoms had only occurred five days before operation. Ricou records the case of a woman, 52 years of age, who had had a femoral hernia for seven years; this was easily reducible. Some painful crises were experienced at times accompanied by vomiting. The hernia became irreducible but without symptoms of strangulation. Operation was advised but refused. Two months later symptoms of strangulation occurred. In one of Pollosson's cases, a woman, 32 years of age, strangulation had occurred once before but the hernia was reduced and a truss had been worn since. Later a recurrence of strangulation occurred demanding operation. Vulliet records the case of a woman, 54 years of age, who had had a hernia for 14 years. She had never worn a truss, since the hernia had never caused any inconvenience and was always easily reducible. One month previously, for the second time recently, she suffered violent abdominal pain; the hernia became irreducible and increased in size. The swelling was aspirated and some clear fluid withdrawn, after which the hernia was reduced. Three weeks later the same symptoms were repeated and an operation was necessary. Davies-Colley records the case of a woman, 32 years of age, who, 12 months previously, whilst lifting a heavy weight felt sudden pain in the right groin; this was followed by vomiting. The symptoms soon subsided but recurred from time to time. On the second occasion she noticed a swelling in the groin. She was always able to return the swelling and the pain never lasted more than an hour. Sometimes the hernia would not come down for two or three months. Later strangulation occurred and this was relieved by operation. In Waring's case the hernia had once previously become painful and was only reduced with difficulty.

The characteristics of these herniæ are that they are of small size, generally early reducible, and only present on occasions and not constantly, sometimes only having been observed once or twice previously to strangulation. They had not given rise to any inconvenience and hence a truss has

rarely been worn. Occasionally they have been irreducible and in a few cases have given rise to symptoms of incarceration previously. The sac of a femoral hernia is regarded by most as acquired and presumably these sacs would be considered of acquired origin. In the cases in which a hernia has not been known to be present previously to strangulation it is difficult to conceive that the sacs are acquired. In such cases the appendix must be herniated into a preformed sac. If this preformed sac were acquired the presence of a hernia would probably be known. It seems most likely that the sacs are of congenital origin. The same inference is perfectly logical in the other cases also. If these sacs are acquired and produced by abdominal pressure and laxity of the tissues around the femoral ring, they should steadily increase in size and not remain quite small after some years, they should be more or less constantly occupied and not only at times, and the continued pressure should stretch the tissues bounding the femoral ring so as to allow of sufficient room for a small viscus like the appendix to pass with impunity. In order that the appendix may be strangulated it is necessary to have a sac into which it can slip and a small ring bounded by rigid tissue. This is exactly what one expects in a congenitally formed sac. Given this preformed sac with its neck surrounded by well-developed tendinous fibres and an appendix lying in close proximity, there is nothing mysterious when, on some sudden increase of intra-abdominal pressure, the appendix is forced through the femoral ring. A knowledge of the very small size of the normal ring will readily allow one to understand how even a small viscus like the appendix may become strangulated by it. This chance of strangulation is increased when the meso-appendix is thick and bulky, a fact which has been commented upon in several cases.

SYMPTOMS.

In all cases a detailed symptomatology is not given. The majority of cases are ushered in with acute local symptoms and in 38 cases some abdominal symptoms are also mentioned. In three cases abdominal symptoms preceded the local ones. The symptoms were abdominal pain, nausea, vomiting, and only later—a few hours to 24 hours—was the hernia discovered. In 19 cases vomiting occurred at the onset and was repeated several times; in three cases vomiting occurred at the onset of strangulation only. Nausea is frequently present in these cases unassociated with vomiting. In a few cases abdominal pain has been a feature. The pain is more or less diffused, or around the umbilicus, or in the lower abdomen; it is described as "dragging" or "colicky" in character. On two occasions "dragging" sensations were experienced in the right iliac fossa. The abdomen in a few cases has been distended and tender, but free from rigidity. Constipation is the rule and often the bowels have not acted throughout the illness of some three or four days' duration. Loose motions were passed in one case. In ten cases absolute obstruction to gas and fæces was present. The local signs are those of strangulated hernia. Collapse does not seem to have been a marked feature; it is only mentioned in four cases and two of these were in children.

Occasionally a strangulated appendix runs a more chronic course. Abdominal symptoms had been absent; real signs of strangulation had not been present. The hernia has suddenly become irreducible—perhaps on its first appearance; it increases in size, with or without pain. The appendix, thus loosely snared, has been operated upon, reduced or removed, at intervals of ten days, 14 days, 18 days, one month, and five weeks after the irreducibility.

The diagnosis of a strangulated appendix is not mentioned in any one case as being accurately made. In some cases it is definitely asserted that there were no signs present which allowed one to think that any portion of the intestinal tract was involved. Such cases were generally regarded as strangulation of a portion of omentum. In the acute cases with complete obstruction to gas and fæces (this is recorded in one-fifth of the cases) the symptoms are those of strangulation of any portion of bowel. The differential diagnosis is impossible. In other cases with incomplete obstruction the diagnosis has to be made from an incarcerated omental hernia, strangulation of a portion of the lumen of the bowel or a diverticulum, and possibly from a tubo-ovarian hernia torsioned or strangulated. All these occur in quite small herniæ, in herniæ which had been previously reducible, and these accidents may all occur on the first appearance of the hernia. The constitutional and abdominal symptoms may

be precisely similar, as also the local signs. The "dragging" sensation experienced in the right iliac fossa, increased by pressure over the hernia, has been present too rarely to consider it as a sign of diagnostic use. A strangulated portion of intestinal tract would in general give rise to a more early infection of the hernial coverings than would an incarcerated omentocoele. This may be of some importance although a late sign, but many patients curiously enough do not seek advice for a strangulated appendicocoele until they have suffered for two or three days. It may be definitely asserted that there are no practical signs by means of which it may be said that it is the appendix which is strangulated. The obvious conclusion is that all swellings in the groin which are reasonably suspected as hernial and are painful and irreducible should be explored without delay. Delay may not perhaps cost the patient her life but it may consign her to a long and tedious illness and deprive her of the chances of a cure of the hernia.

PROGNOSIS AND TREATMENT.

The prognosis of this condition is perfectly satisfactory. Every case resulted in recovery as far as the strangulation of the appendix was concerned. The results are far superior to those of appendicitis occurring in hernial sacs. In 38 cases the duration of strangulation before operation is given. In only two cases was operation performed at the end of 12 hours; in 4 more at the end of 24 hours. In 9 cases two days elapsed, in 7 cases three days, in 4 cases four days, in 1 case five days, in 5 cases eight days, in 1 case nine days, in 1 case ten days, in 1 case 14 days, in 1 case 18 days, in 1 case one month, and in 1 case five weeks between the initial symptoms and the operation. In several cases the appendix has been reduced after exposure at the operation. Bayer records the case of a woman, 27 years of age, who for 18 days had an irreducible femoral hernia; this gradually enlarged. At the operation the sac contained some blood-stained fluid and the appendix; the latter was reduced and the wound was allowed to granulate. Davies Colley reports the case of a woman who for 12 months had had recurrent attacks of pain and vomiting with descent of a small hernia, on the replacement of which the symptoms disappeared. She then developed another attack and the hernia became irreducible. Taxis was tried without success. Operation was performed on the third day; the appendix was little altered, except for some blood extravasation under its peritoneal coat; it was returned after notching the ring and the sac was closed. Jacobson in a woman 43 years of age returned a constricted appendix after notching Gimbernat's ligament and removed the hernial sac. Kasinowski in a woman, aged 35 years, who had suffered from symptoms for two days, found a small quantity of fluid in the sac and a very little altered appendix; the latter was reduced. Mueller in a woman, aged 75 years, reduced an appendix which had a distinctly bluish colour and had been strangulated for three days. Rose reports the case of a woman, aged 54 years, who had had a hernia for some time. She suddenly developed pain in the hernia and began to vomit; the following two days she vomited three or four times a day; the pains became colicky and violent, and stools and flatus ceased to pass. Operation was performed 55 hours after the beginning of the symptoms; the strangulated appendix was not removed; it was blackish-red in colour and the strangulated portion was probably twice the size of the other part. Sauvage describes the case of a woman who had a strangulated femoral hernia, the content of which was the appendix, which was reduced after dilating the hernial ring. Swasey records the case of a woman, 67 years of age, who had had a right femoral hernia for six years; the hernia was completely reduced; she had worn a truss. The hernia became painful and she suffered from abdominal pain and nausea. Operation was performed 36 hours later. The sac was exposed and clear fluid was seen within it; this was withdrawn through a hypodermic needle. The appendix was seen and felt within the sac and returned to the abdomen by manipulation without opening the sac. Tapie records the case of a woman, aged 67 years, who had had a right strangulated hernia 15 years before. She was then operated upon and some intestine was found in the sac; the intestine was reduced and the sac was closed. Six years later the hernia recurred; it was easily reducible and she wore a truss. For two years the truss had been abandoned and the hernia became irreducible and increased in size and then it suddenly became painful. She suffered also from colicky pain and vomiting. At the operation the sac was

found to contain the appendix only; it was strangulated and greatly swollen; the constricting ring was liberated and the appendix was reduced. Vulliet reports a case of a woman, aged 54 years, who had had a hernia for four years. She had never worn a truss, as the hernia did not cause her any inconvenience and was easily reducible. A month previously, for the second time recently, violent abdominal pains were experienced. The hernia became irreducible and increased in size. She had some nausea and vomiting, and the bowels acted regularly. The swelling was aspirated and clear fluid withdrawn, after which the hernia was reduced. Three weeks later a relapse occurred and the same symptoms were repeated. The sac was opened under local anaesthesia and a large quantity of yellowish fluid escaped. The appendix, which was incarcerated, was reduced after dilating the hernial ring. The sac was resected. Witte in a woman, aged 87 years, reduced an incarcerated appendix and performed a radical operation for the hernia. Wood reports the case of a woman, aged 65 years, who had had a swelling in the right groin for a month. This was almost painless, gave an elastic sensation, was dull to percussion, and irreducible. At the operation the sac was found to contain a considerable quantity of slightly turbid straw-coloured fluid which was forcibly discharged. The appendix was the sole visceral content; it was slightly swollen and oedematous and was returned to the abdominal cavity, and a radical cure for the hernia was performed. Bidwell records the case of a woman, aged 50 years, who for seven years had had a reducible right femoral hernia. For 14 days this had become irreducible but without symptoms of strangulation. The hernia was tense and slightly tender. The sac contained clear fluid and about one and a half inches of apparently normal appendix. The latter was reduced and a radical cure for the hernia was performed. The same surgeon records a second case of a woman, aged 60 years, who had had a right femoral hernia for five weeks; this came down suddenly and was irreducible. About one inch of apparently normal appendix was found in the sac, together with some clear fluid. The appendix was reduced and a radical cure of hernia was performed. Court operated upon a woman, aged 50 years, for a strangulated hernia 24 hours after the commencement of symptoms. At the operation the appendix, which was the only content, was reduced. All these patients recovered apparently without any complications of importance. Satisfactory as these results are, it cannot be said to be the ideal treatment; yet a few of them are taken from recent literature. In a few cases the strangulated portion of the appendix only has been removed and the stump returned into the abdominal cavity. These cases have not come to any further harm apparently. The ideal treatment in a case of strangulation of the appendix is complete removal of the organ. This can be readily effected in the majority of cases through the hernial incision. If it be impossible to reach the caecal end of the appendix by this route the abdomen should be opened and the appendix removed, taking the usual care to guard the peritoneum from infection which may occur by dragging the appendix across it.

The notes of my three cases are briefly the following:—

CASE 1.—The patient was a female, aged 42 years, who about a year ago collided with a small cart and said that she then strained herself. She experienced immediately pain in the right iliac fossa and the right groin. A few hours later she noticed that a small swelling had formed in the right groin. She consulted a medical man who advised a truss and this effectually kept the hernia back. The truss was only worn irregularly and the hernia would occasionally come down, but was always of small size and caused no inconvenience. The history of the present illness is as follows. The hernia suddenly came down associated with pain and could not be reduced by the patient; there was no vomiting. The swelling increased in size; the pain persisted and was also experienced in the lower abdomen, especially the right iliac fossa. The temperature was normal or subnormal; the pulse was from 80 to 100 per minute. The bowels were confined but opened once after an enema; flatus was passed. Taxis was unsuccessful. The abdomen became a little swollen. On admission on the fourth day of her illness the patient did not appear to be in great pain, although she was suffering from colicky pain in the lower abdomen. The temperature was 98.4° F. and the pulse was 92. The abdomen was slightly distended; there was no tenderness. In the right groin was a swelling without impulse and somewhat diffused on account of the oedema of the skin and

subcutaneous tissue. Strangulated femoral hernia probably containing omentum only was diagnosed.

Operation was performed on the fourth day of the illness. The tissues over the sac were œdematous; the sac contained some quantity of fluid, slightly turbid and having the odour associated with the bacillus coli. In the sac was the appendix, free from adhesions and of a deep bluish-black colour, and the meso-appendix of a similar colour, much swollen and very rich in fat. After dividing the tissues around the neck of the sac and dilating the ring it was impossible to draw the whole appendix down. An incision in the right iliac fossa was made, the muscles were split, the peritoneum was guarded, and the appendix was drawn through and removed. The appendix, three and a half inches long, was strangulated close to its origin. The cæcum was normally placed and had not a mesentery. The hernial sac was removed and the ring was closed. Both wounds were drained in part; healing took place in five weeks.

CASE 2.—The patient was a female, aged 45 years. Her previous history was as follows. For about two years she had had a small right femoral hernia which was easily reducible; this had not caused any inconvenience and she had never worn a truss. The hernia was only present occasionally. The history of the present illness was as follows. The hernia after some strain suddenly came down with pain; she vomited once or twice; the hernia could not be reduced; the pain increased and some was also felt in the lower abdomen. The bowels were not opened; flatus was passed. On admission, 36 hours after onset, the pain was not great but some was present in the hernia and some colic in the abdomen. The temperature was 98° F. and the pulse was 100. There had been no vomiting since the onset. In the right femoral region was a small swelling of the size of a walnut, without impulse, slightly tender and irreducible, of elastic feel. Strangulated hernia probably containing omentum only was diagnosed.

Operation was performed about 40 hours after the onset of symptoms. There was no œdema around the hernia; the sac contained about two ounces of clear fluid and the appendix was quite free from adhesions; the appendix, one and a half inches long, was deeply congested, as was also the mesentery which was very well developed. After just notching the ligaments the appendix was drawn down with its cæcal insertion and was removed; it showed a distinct furrow impressed upon it by the tissues of the femoral ring. The sac was removed and the ring closed. Some superficial suppuration occurred; otherwise an uneventful recovery ensued. About four-fifths of the appendix was strangulated.

CASE 3.—The patient was a male baby, aged 22 months. The child was not noticed to have been ruptured before; he was seized with sudden pain and a swelling was noticed in the right inguinal region; he had not vomited. On admission 12 hours later the child was somewhat collapsed. The temperature was 98° F. and the pulse was 120. The bowels had not been opened. In the right inguinal region was a rounded elastic swelling just reaching to the scrotum; it was tender, irreducible, and without impulse. A strangulated inguinal hernia was diagnosed without thought of the contents.

At the operation the sac, which was of the partial funicular type, was opened and a small quantity of fluid escaped. The appendix, about one inch long, was the sole content; it was swollen and congested; by a little traction it was easily drawn down with a portion of the cæcum. The appendix was removed and the hernia was cured by removing the sac and closing the canal. The wound healed by first intention.

Harley-street, W.

A NURSING CONFERENCE.—It is proposed to hold in the St George's Hall, Hanover-square, London, W., on Nov. 22nd, 23rd, and 24th a nursing conference illustrated by exhibits on the subjects of tuberculosis and maternity and mental nursing. On the evening of each of those days papers will be read and discussions held. On the evening of Nov. 23rd, when the subject will be Maternity Nursing, Dr. F. H. Champneys, chairman of the Central Midwives Board, has consented to take the chair; and on the evening of Nov. 24th, when the subject will be Mental Nursing, Dr. R. Jones, President of the Medico-Psychological Association, will be in the chair. The chairman is not yet fixed for Nov. 22nd when the subject will be Tuberculosis. The conference is organised by "The Provisional Committee of the National Council of Nurses."

THE DETECTION OF SUGAR IN URINE AND ITS SIGNIFICANCE IN CON- NEXION WITH LIFE ASSURANCE.

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THE true significance of the presence of small quantities of sugar in urine is one which has been repeatedly debated without definite conclusions being finally accepted by physicians and physiologists. The problem is intimately bound up with the question as to whether traces of sugar can be present in normal urine. Much controversy has taken place with regard to this latter question since Brücke¹ stated definitely that all normal urine contained sugar. Brücke's statement has been supported among others by Bence Jones,² Tuchen,³ Abeles,⁴ Meissner and Babo,⁵ Udranszky,⁶ Wedenski,⁷ Molisch⁸ (whose evidence is doubtful because other substances which may be present in urine give similar reactions with the reagents—alpha-naphthol and thymol—used by him), Luther,⁹ Roos¹⁰; and more especially Allen,¹¹ Baisch,¹² and Pavy¹³ have offered strong confirmatory evidence, with which Halliburton¹⁴ agrees. There have been many observers, however, who have either stated that no sugar is present, or have questioned its presence in normal urine, among whom Friedländer,¹⁵ Maly,¹⁶ Seegen,¹⁷ Leuken,¹⁸ Kulz,¹⁹ Sir G. Johnson,²⁰ and G. Stillingfleet Johnson²¹ may be mentioned.

As a result of a careful review of the whole field of argument we have been led to the conclusion that a small quantity of grape sugar—or a body giving identical reactions—is probably an almost constant constituent of normal urine. We think that the balance of evidence indicates that such small quantity can readily be demonstrated to be present by the action of phenylhydrazine or of alkaline safranin solution on urine. It is not impossible also that traces of glycuronic acid may be met with in certain cases.

Our reasons for arriving at the above conclusions among others are detailed in the following paper. We were led to consider the matter from the point of view of life insurance, with special reference to the manner in which Fehling's test should be carried out and the quantity of sugar which should be considered pathological, but we found that before definite conclusions could be reached the whole problem must be considered. We take it for granted that in medical examinations in connexion with life insurance it must be accepted as an axiom that the usual chemical tests should be applied to the urine in every instance.

The results of our experiments and the deductions from them may conveniently be summarised in the following order: I. The copper test as applied by Fehling. II.

¹ Wiener Akademische Sitzungsberichte, vol. xxix., p. 346.

² Quarterly Journal of the Chemical Society, vol. xiv., p. 22.

³ Virchow's Archiv, vol. xxvii., p. 26.

⁴ Centralblatt für die Medicinischen Wissenschaften, 1879, Nos. 3, 12, and 22.

⁵ Zeitschrift für Rationelle Medicin (3), vol. ii.

⁶ Zeitschrift für Physiologische Chemie, vol. ii., p. 537; vol. xii., p. 33.

⁷ Ibid., vol. xiii., p. 122.

⁸ Monatsschrift der Chemie, vol. vii., pp. 198-209.

⁹ Chemisches Centralblatt, vol. i., p. 90.

¹⁰ Zeitschrift für Physiologische Chemie, vol. xv., p. 513.

¹¹ THE LANCET, July 28th, 1894, p. 212; Chemistry of Urine, pp. 42-90.

¹² Zeitschrift für Physiologische Chemie, vol. xix., pp. 339-68; vol. xx., pp. 249-52.

¹³ Guy's Hospital Reports, vol. xxi., p. 413; Physiology of the Carbohydrates, 1894; Carbohydrate Metabolism and Diabetes, 1906.

¹⁴ Chemical Physiology and Pathology, THE LANCET, Feb. 9th, 1895, p. 372.

¹⁵ Archiv der Heilkunde, vol. vi., p. 97.

¹⁶ Wiener Akademische Sitzungsberichte, vol. lxiii., p. 2.

¹⁷ Ibid., vol. lxiv., p. 2; Centralblatt für die Medicinischen Wissenschaften, 1886, p. 44.

¹⁸ Apoth. Zeit., vol. i., p. 246.

¹⁹ Pflüger's Archiv, vol. xiii., p. 269.

²⁰ THE LANCET, July 7th, 1894, p. 10 et seq., and Jan. 12th, 1895, p. 87 et seq.; Transactions of the Pharmaceutical Journal, 1895 (3), 25, pp. 603-05.

²¹ Proceedings of the Royal Society, vol. xliii., p. 493. Transactions of the Royal Medical and Chirurgical Society, vol. lxxvi.