A COURSE OF
LECTURES ON SURGERY,

DELIVERED IN THE
MEDICAL SCHOOL OF CAMBRIDGE.

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LECTURE XXIV.

HYPERTROPHY CONTINUED.—CYSTS.

Cysts are not generally new formations, but result from hypertrophic condition of naturally-existing structures; cysts resulting from enlargement of gland-cells, or gland-ducts; uncertainty respecting the theory of this process; cystic disease of the kidney; cystic disease of the mammary gland, sometimes associated with cancer and complicated with aftergrowths; cystic disease of the testicle; cysts containing spermatozoa; cysts in the Meibomian, labial and buccal glands; ranula; cutaneous cysts from disease of sebaceous glands, and from disease of hair follicles; cystic disease of the ovary and thyroid;—cysts formed in areolar and fibrous tissue; their correspondence with gland-cysts; supplemental bursæ; cysts in the broad ligaments of the uterus, in the choroid plexuses of the brain, in the spermatic cord and other parts; ganglion; the structure of cysts is regulated by the properties of the tissue in which they occur; in their formation an impulse is given to the developmental as well as to the growing properties of the tissue concerned; examples of the effects of this; formation of secondary and tertiary cysts; of aftergrowths; cysts are liable to inflammation, also to degeneration of structure.

THE morbid growths commonly called "cysts," present themselves under so many circumstances, in such different parts of the body, and with so great variety of structure, that it is out of the question in a single lecture to attempt an accurate inquiry into the details of the pathology and treatment of them all. We must be content with an examination of their general characters, and an endeavour to arrange them in such divisions as may best conduce to a knowledge of their nature, their structure, and their development. At the same time we shall attain a clearer apprehension of the whole subject if we enter a little more fully into the particular features of some of those cysts which are the most common or best understood.

There can be little doubt that by far the greater number of cysts should be regarded, not as new formations, strictly so called, but as the result of a morbid condition of certain naturally-existing structures—a condition very nearly allied to the state of hypertrophy which I have described to be the proximate cause of warts, polypi, and growths of that nature. It is, I grant, not so easy in this instance, as it was in the case of those growths, to point out the several stages by which the disease advances; it is not easy to define the

changes that occur in the development of a tube or a cell of areolar tissue into a cyst. Nevertheless there are sufficient reasons for inferring that such changes do take place; and it is probable that an improved acquaintance with the anatomy and physiology of the structures concerned will, ere long, lead to a solution of this difficulty.

The first species of cysts that we have to consider includes all those which result, or appear to result, from a dilatation of the small ducts or gland-cells of the organ wherein they are found. For the present we must assume this to be their nature. As we proceed we shall find reasons for entertaining such a supposition, although, as just stated, it cannot be proved beyond dispute; still less can we decide in what manner or by what force the dilatation and other changes are effected. A mere mechanical cause, such as an obstruction in some of the larger ducts of a gland, from stricture or pressure, is quite insufficient to explain the phenomenon, because that would lead to a general enlargement of the tubes behind the strictured part, rather than to a saccular dilatation of them at certain points. If you examine the several specimens in the museum, you will find that an impediment to the flow of urine from the bladder or through the ureters has been followed, not by the formation of cysts in the kidney, but by a distension and enlargement of the pelvis, infundibula, and calices of the organ. It is more probable that the cystic affection consists in some disease, commencing and proceeding in the small ducts themselves. To carry our speculations a little further, we may suppose, as just suggested, that the disease bears a more or less close relation to hypertrophy; we may suppose also that it attacks, for the most part, those little sacculi or terminal cells which are appended, like grapes upon their stalks, to the ultimate ramifications of the ducts of some glands. This latter view derives support from the fact that the cysts in question are found in the parenchymatous structure, rather than in the neighbourhood of the large ducts, as well as from the fact that they are, with one or two exceptions, met with exclusively in the glands whose tubes terminate in the manner described. They are common in the mammary, Meibomian, salivary, buccal, and labial glands; they are especially frequent in the kidney, where the urinary tubes are expanded in so remarkable a manner as to enclose the little knots of vessels which constitute the Malpighian corpuscles. On the other hand they are very rarely met with in the spleen or the liver. Speaking of the liver I may as well take the opportunity of mentioning that the so-called saccular dilatations of the hepatic ducts, of which you will read descriptions in some treatises upon the pathology of this organ, appear to me to depend, not upon any disease in the ducts, but upon the formation in the substance of the gland of tubercles which soften, and the fluid products in their interior become stained by the infiltration of the colouring matter of the bile into them. I have carefully examined several cases where the liver presented exactly the appearances described as depending upon a dilatation of the hepatic

ducts, containing cavities like cysts, with green, more or less fluid, contents, like inspissated bile, and, in each instance, it was evident that the cavities were in reality dependent upon the formation of tubercles which had undergone the changes just mentioned. In some of these cases a close inspection showed the disease in its several stages in the same organ; in some it was associated with advancing tubercles in other organs; and in all the patients were of feeble scrofulous constitution.

You are aware that one of the simplest kind of glands is that which consists merely of a little sac imbedded in the substance of a mucous membrane. This little sac has no permanent duct, but discharges its contents, as occasion requires, by dehiscence; that is to say, the sac bursts when its contents are matured, and they escape into the tube, or cavity, lined by the mucous membrane. The glands of Peyer, in the small intestines, are a familiar illustration of this kind of gland. Now, it is not improbable that the sacculi appended to the terminal extremities of certain gland-ducts correspond with these little dehiscent glands, and that their communication with the gland-ducts is of a temporary nature only, dependent upon their bursting into those ducts when their products are sufficiently ripe. Supposing this to be the case, we can readily conceive an enlargement, or hypertrophy, of these sacculi, leading to the disease we are considering. This, however, is but an hypothesis; and it must be admitted that the occurrence of the cystic disease in the testicle rather militates against such a view; for the cysts in the testicle seem, like those in the other glands above mentioned, to be formed by a dilatation of its secreting tubes, and we are not aware that any terminal sacculi exist in it.

The kidney is more frequently affected by cystic disease than any other organ. In an early stage, when the capsule has been torn off, you see one or more transparent vesicles imbedded in the cortical substance, and projecting from the surface. These vesicles prove upon examination to be composed of delicate cysts containing a clear fluid like water. They may be completely isolated without much trouble; and they do not appear to have an especial connection with any of the structures of the kidney. This may, perhaps, be owing to the delicacy of the tissues concerned, which would render it exceedingly difficult to ascertain whether the cysts really have any especial relation to the secretory tubes or Malpighian corpuscles. If a section be made into the kidney these cysts are found not to be confined to the surface of the organ, though they are distributed in much greater abundance in the cortical than in the medullary structure. The number of them varies exceedingly; sometimes one or two only are present; at others they are too many to be counted. They are generally small, but they may attain to considerable magnitude. By their pressure upon the renal substance they induce its absorption; and, owing to their mutual pressure, they undergo various modifications of shape, being flattened, or encroaching upon one another, the stronger cyst protruding into the weaker. They may burst into one another: the orifices of com-

munication, at first ragged, become smoothed at their edges, so as to give the cysts an appearance of having been originally bilocular, or fasciculated. When they exist in great numbers the glandular structure of the organ may be entirely destroyed by their pressure. Even the fibrous septa between the lobules may ultimately give way, and the whole kidney be converted into a mass of cysts, preserving so little either of the shape or general characters of the organ that, were it not for the situation in which it is found, you would not be able to tell what part of the body was the seat of disease.

This affection of the kidney is one rather of pathological than of practical interest; for I am not aware of any particular symptoms that attend its origin or progress; neither is it probable that we could adopt any treatment at all likely to prevent its course. The remaining glandular structure of the kidney may preserve its healthy characters, so that the urine does not necessarily indicate any morbid changes. It should be remembered that the cysts rarely proceed to such extent as to affect the secretion of the urine without there being some other disease of the kidney, and the symptoms of the latter would in that case quite mask those of the former. They are often associated with a condition of chronic inflammation, or with those changes which are found to exist in "Bright's disease."

The cystic disease of the mammary gland, or the "hydatid breast," as it has been called by Sir A. Cooper and others, is pretty much the counterpart of that which I have just described in the kidney. Cysts, having delicate membranous walls and clear watery contents, are developed in different parts of the breast. They vary greatly in number and size. Now and then a solitary cyst is found imbedded in some portion of the gland, and in such case an incision made into the sac will commonly effect a cure, provided the wound be kept open for a few days, so that inflammation and suppuration is established in the cyst. Some time ago there was a patient in the hospital with a lump behind the nipple; when she squeezed the lump a thin fluid was ejected in a stream from one of the ducts of the nipple, and the size of the swelling was thereby temporarily reduced. We could not tell whether a lacteal duct had become dilated into a cyst, or whether an independent cyst had been formed, and the communication with the duct had been subsequently established. However, a free incision was made into the sac, and suppuration established; when the wound healed up the sac appeared to be obliterated, though some swelling remained. It is not always easy, without the aid of a grooved needle, to distinguish these single cysts from chronic abscesses of the breast, neither is it very important to do so, for the same treatment is applicable to both affections.

There are among the specimens made by Sir A. Cooper, and preserved in the College of Surgeons, a few in which the larger lactiferous ducts are seen to be dilated, in conjunction with the cystic disease in other parts of the breast. Such specimens furnish some argument in favour of the theory that the cysts

are occasioned by a dilatation of the small ducts; nor is the argument materially weakened by the fact that this accompaniment is not generally to be found. The cysts, which often exist in great numbers and may press upon and burst into one another, as in the corresponding affection of the kidney, are generally found in the lobules of the gland. They may produce great enlargement of the organ, and, when they are dispersed in considerable numbers through its substance, extirpation of the entire mass is the only effectual means of treatment. Occasionally the cysts are confined to one or two lobules of the breast, when a more partial operation will suffice.

The tissue of the mammary gland around and between the cysts is often thickened and indurated by the effusion of lymph into its substance, though there does not appear to be any necessary relation between the cystic dilatation of the tubes and the condensation of the areolar tissue which invests them. It is well you should be aware that these cysts sometimes exist in connection with scirrhus diseases. Two instances of the kind have lately occurred under our observation. In one the tumour was placed beneath the nipple, and the cysts were dispersed among the mammary lobules; in the other the cyst had burst through the integuments and discharged a considerable quantity of watery fluid, the cancerous mass being situated beneath and around it. A remarkable feature in these mammary cysts is their liability to the formation of solid growths in their interior. The growths, which are granulated or lobulated, are attached to the wall of the cyst, and sometimes attain to large size, filling up the sac, or even bursting its confines, so that the original character of the disease can scarcely be traced. This complication of growths, which is amply illustrated in all its several stages by the preparations in the College of Surgeons, collected principally from the museum of Sir A. Cooper, is termed "sero-cystic sarcoma." We shall presently find that a similar disease occurs in the ovary, but I am not aware that the renal cysts are ever thus filled with after-growths.

The cystic disease of the testicle resembles very much the corresponding affection of the renal and mammary glands. It was described by Sir A. Cooper as the "hydatid testicle," though he regarded it as consisting in a diseased and dilated state of the seminiferous tubes, and says that it ought to be called the "tubular disease" of the testicle. I must refer you to the excellent drawings and descriptions in his work for further information on the subject. It may be well, however, in passing, just briefly to direct your attention to those cysts containing spermatozoa, which are sometimes found in the scrotum. They generally occur in the neighbourhood of the epididymis, and project either into the cavity of the tunica vaginalis, or into the loose cellular tissue of the scrotum. In either case they are very likely to be mistaken for hydrocele. Indeed we do not commonly find out the nature of the disease till we have tapped the sac and examined the fluid, which is generally light-coloured, like water, not having the yellowish tinge of the hydro-

celic fluid. It is also seen when placed under the microscope to contain spermatozoa, in greater or less abundance and perfection, with spermatc granules, or other elements corresponding with the secretion of the testicle. It seems probable that such cysts originate in a dilatation of one or more of the tubes of the epididymis, and that as they enlarge they project away from the organ, and in course of time become quite separated from it, after the manner of a polypus in other parts. This, however, is not certain; it is possible for them to be formed in the areolar tissue investing the epididymis, in the mode presently to be described. The cysts of this kind are often single, but not always. They are not usually associated with any other disease of the organ. They yield to the ordinary treatment by injection with a stimulating fluid less readily than hydrocele. Nevertheless it is worth while to try this plan because it will occasionally succeed. In an obstinate case it may be necessary to pass a seton through the cyst, or to make an incision, and induce suppuration in its interior.

The little transparent cysts in the Meibomian glands of the eyelids you have often seen treated by an incision into the sac through the conjunctiva, the wound being kept open for a few days by occasionally passing a small instrument between its edges. You have also before seen this preparation, in which little cysts forming in the glands of the cervix uteri, raise the mucous membrane, and become polypose. In the same manner, cysts originating in the buccal or labial glands sometimes project into the mouth, and may even hang by a narrow stalk. In either case the little growth is very easily removed with a pair of forceps or scissors.

Ranula, in all probability, is a cyst in one of the sublingual or submaxillary glands, produced, like those just described, by the dilatation of a duct. Sometimes it attains to considerable size, causing much annoyance. A cure may generally be effected by an incision sufficiently large to permit the removal of the glairy fluid contained in the cyst, and followed by the free application of the nitrate of silver over the whole of its internal surface. This is rather a painful proceeding, and occasions a good deal of inflammation, swelling, and suffering to the patient. We are therefore sometimes induced to try a simple incision, and the evacuation of the contents of the sac. Such treatment unfortunately does not generally succeed, for as soon as the wound is healed the fluid commonly begins to accumulate again.

Some of the cysts called "wens," formed in and immediately beneath the substance of the cutis, more particularly about the face and head, may be here adduced as instances of the same kind as the cysts just described in the mammary, renal and other glands: their peculiarities of structure being referable to the qualities of the tissue in which they originate. Most of them are evidently the result of a diseased condition of the sebaceous glands. As a proof of this, you may often see the orifice of the gland upon the surface of the tumour, and may even squeeze out the contents of the sac through it. This would show two things: first, that the cyst originates in a dilated condition of some portion of

the gland; secondly, that the dilatation is not due to any obstruction in the excretory duct. The white semifluid contents of these cysts are found to be composed of sebaceous and oily matter, mixed with scales of epithelium. The scales are formed upon the walls of the sac, from which they are continually being shed like so many layers of cuticle, and they, in consequence, acquire very often a laminated arrangement; sometimes they nearly fill up the cavity of the sac. The wall of the sac may acquire considerable thickness; and it is to be remarked, that the inordinate development is not confined to the structure—the secretory cell or tube—in which the cyst originates, for the same influence extends to its epithelial secretion, which is more abundant and coarser than natural. Just as we observe that a wart is, in some cases, attended with a hypertrophic growth of the cuticle, to an equal or greater extent than of the cutis. Both sac and contents may undergo various changes; ceasing to grow, they may become drier, more horny, and even calcareous; on the other hand they may soften, suppurate, burst, and discharge their contents. This process is sometimes followed by a cure of the disease; and we endeavour now and then to excite the inflammation by opening the cyst and irritating the interior. Experience has, however, sufficiently proved that this practice is very rarely to be recommended; for it generally fails of success and frequently is followed by erysipelatous inflammation and fever, which have proceeded to a fatal termination in more cases than one.

We are often called upon to excise these cysts, and as they are closely connected with the skin, it is necessary to be careful, in reflecting the latter, not to open the sac, for if a small portion of the sac be left behind, the disease is likely to be reproduced. I would advise you to be cautious in your interference with these wens; for they are very often associated with an indifferent state of health, a state in which erysipelas and the other evil consequences of operation are to be apprehended. Perhaps a wen has existed a long time, giving very little annoyance, but when the patient falls out of health it grows more quickly and becomes painful; he is likely, therefore, to apply for its removal just at a time when his system is least fitted to bear an operation. Of course these remarks apply to all diseases of the like kind; they are particularly to be borne in mind in the treatment of this one, because the operation is of so trivial a nature in itself that we are more likely to esteem too lightly the dangers indirectly connected with it.

Wens occasionally contain hair as well as scales of epithelium and sebaceous matter. In such cases it is probable that the cysts originate in a diseased and hypertrophied state of the hair follicles. There are generally a number of loose hairs in the interior of the sac besides those attached to its wall; these having grown to a certain size, were separated from their matrix on the cyst, just as the scales of epithelium are thrown off in successive layers, and just as the hair upon the surface of the body is continually falling off and being re-produced. It is to be remarked that the

hairs grow from many parts of the cyst, which may result from the original matrix being spread out and subdivided into many centres, each furnishing a hair; or, what is more probable, from advance in the developmental properties of the cyst-wall corresponding with its increase of size.

The ovary is an organ, the structure, function, and position of which renders it peculiarly liable to cystic disease. It hangs loosely into the abdominal cavity, being, in four fifths of its surface, covered only by peritoneum. It is composed of a stroma of areolar or fibrous tissue, in which vesicles are continually forming and bursting through the investments of the gland, in such a manner that their contents may be conveyed by the Fallopian tubes into the uterus. There is every probability that the cysts so commonly found in this organ, growing to a very large size, originate in a diseased condition of the Graafian vesicles, and correspond, therefore, to the cysts which in other organs result from a hypertrophy or dilatation of the gland-cells or ducts.

We may assume that the cysts often found in the thyroid gland, more particularly when that organ is the seat of general hypertrophy, correspond with those we have been describing in other glands, allowances being made for the differences of structure in the respective organs.

All, or nearly all, the instances have now been enumerated in which the formation of cysts can be supposed to depend upon a dilated and hypertrophied condition of the ducts or sacculi of glands. We may conceive that the processes necessary to this change are of a very simple nature, though we cannot exactly follow them in their several stages. The second species of cysts is very little removed from the first: it includes those cysts which are formed in the areolar and fibrous tissues of various parts of the body. I say that this species is very nearly allied to that first described, because the changes necessary for the conversion of a mesh of areolar tissue into a closed sac are probably very similar to those by which the same result is brought about in a gland-duct. They are easily induced by friction, some of the threads of the areolar tissue being thus worn away and a cavity induced, on the interior of which an epithelial lining is formed. Cysts engendered in this manner, by continued friction, are called "bursæ:" they differ from cysts having a spontaneous origin, in that they seldom continue to increase beyond a certain size. They are produced by an external cause operating upon the structures, and have no inherent tendency to grow.

The cysts of this class are found most frequently where the tissue is loosest, and the areolæ widest. They are very common in the fine loose areolar tissue of the broad ligaments, being often seen beneath the peritoneum at this part, or projecting that membrane and hanging by a narrow pedicle into the cavity of the abdomen. They do not attain any great size; their walls are very thin; and they contain a transparent colourless fluid. Similar cysts are often met with in the fine structure of the choroid plexuses of the brain, and in the delicate tissue of the spermatic chord.

Occasionally also they are found in the subcutaneous cellular membrane, or between the muscles. I have once seen a thin-walled cyst imbedded in the fibrous structure of the uterus. Some time ago an infant was brought to the hospital with a cyst as large as a walnut formed in the cellular tissue behind the rectum. It was attended with much straining, and the sac, covered by mucous membrane, was protruded at the anus. A puncture gave vent to some clear fluid; but this was only a palliative measure, so I passed a few threads of cotton through the cyst, and allowed them to remain several days, which effected a cure.

A ganglion or cyst formed in the neighbourhood of tendinous sheaths, most commonly about the wrist or ankle, is probably engendered in the same way, by the enlargement or fusion of one or more cells of areolar tissue; the liability to such an occurrence, as well as the character of the cysts, and the glutinous nature of their contents, being due to some peculiarity in the areolar tissue of those parts. The treatment commonly adopted, viz., that of rupturing the sac by a sharp blow, squeezing out its contents, and applying pressure, so as to effect the obliteration of the cavity, is practised, not because of any unusual qualities in the cyst itself, but because its position renders such a plan easy and effectual. If this cannot be done, or if it fails to succeed, we treat the ganglion like any other cyst, making an incision into it and exciting suppuration, which is seldom attended with injurious consequences, provided the incision be free enough. To avoid any risk of this sort, I have excised the cyst on one or two occasions; but such a proceeding is very rarely necessary.

A third class of cysts would be formed of those which may be regarded as entirely new formations. There are, however, scarcely any that can with certainty be placed under this head; for the more accurate our information becomes respecting the nature and origin of these growths, the more reasons do we find for maintaining the opinion that they depend upon some alteration in the naturally existing tissues of the body. This view of the origin of foreign structures, as they are called, has gradually been gaining ground of late years, and it seems probable that it may be extended much further, so as to afford an explanation of many of the solid as well as the cystic growths which infest the body.

There are a few other general points in the anatomy and physiology of cysts which may occupy our attention for a short time. We find these bodies presenting a great variety of structure in different places, and in the same place at different times. Of these structural peculiarities some are no doubt explained by the assimilative properties of the tissue in which they exist. It can, indeed, scarcely be otherwise, if the view we have taken of their nature and origin be correct. Thus, the cysts formed in the areolar tissue of the broad ligaments, in the choroid plexuses and in the spermatic cord, invariably consist of a delicate membranous coat, holding a clear transparent fluid. The same may be said generally of the cysts in the kidney, the testicle, and the mammary gland: moreover, cutaneous cysts, containing hair, sebaceous matter, and epithelial scales, correspond

accurately with the qualities of the structure in which they originate.

It is scarcely necessary to remark that the formation and enlargement of a cyst is effected by a process of growth in the wall of the sac, more or less proportionate to the accumulation of secretion in its interior. Thus, the thickness of the sac keeps pace with the increase of its size: sometimes it does more than this, as in the case of certain ovarian and other cysts. Still you would scarcely be prepared to find that the stimulus to excessive growth is extended to structures which are only *indirectly* connected with the cyst. Such, however, is the case in some instances. In this specimen, for example, the Fallopian tube extends for a foot upon the surface of an ovarian cyst. That it has not been simply stretched or elongated, but that it has actually grown, is proved by the fact that it is thicker than natural, as well as longer. I should mention in reference to this point that, as a general rule, when a structure is dilated or stretched, whatever be the cause in operation, a stimulus is very commonly imparted to its growth, in consequence of which it increases in substance. Thus the wall of the uterus, distended by a tumour, becomes much thicker; so, in like manner, do the ureters, pelvis, and calices of the kidneys, when a long continued obstruction has been offered to the passage of the urine. Dilatation of the heart is generally associated with hypertrophy, and, what is more to the point, an enlargement of the valves of this organ usually keeps pace with the widening of its orifices, so as to preserve their efficiency.

It is an interesting fact to observe that the formation of a cyst is not attended simply by an exaggerated *growth* of the tissue concerned; there is, besides, in many cases an equally or still more remarkable impulse given to its *developmental* properties. This is sometimes so great that the characters of the tissue are materially altered: nevertheless, it will always be found that the acquired developmental power accords, in a greater or less degree, with the ordinary nutritive functions of the part; and the structure of the new formation corresponds, in consequence, with that of the tissues in or near which it occurs. Thus, in the case of a wen containing hair, already described, there is first the preternatural growth of the hair follicle, and, secondly, the preternatural development of hairs upon various parts of its surface. If we suppose the wen to originate in the areolar tissue beneath the skin, which it may do sometimes, there is a still greater effort of developmental force. The same remarks apply to the seminal cysts, whether we suppose them to originate in a dilated state of the tubes of the epididymis, or in the adjacent areolar tissue. In either case we have an exaltation of development, and in either case the products of that development are in accordance with the presiding nutritive forces of the part. In mammalia and birds we find examples of the same thing; but in them the characters of the new formation are often regulated by the ruling feature, so to speak, of the nutritive forces of the animal predominating over that of the part affected. For instance, cysts in the interior of the sheep, far away from any cutaneous structure,

often contain hair; and, in like manner, those in the bird are sometimes furnished with feathers.

The most numerous and most striking examples in human pathology of this accession of developmental force, are derived from the ovary, which is no more than the wondrous function of that organ would lead us to expect. It has already been mentioned that the cystic formations of the ovary depend, in all probability, upon a diseased and dilated state of the Graafian vesicles. Those vesicles receive a hypertrophic impulse in their growth, by virtue of which they increase in size and in the thickness of their walls, sometimes to an enormous extent. They receive also a hypertrophic impulse in their development, by virtue of which they undergo considerable variations in their structure and contents. They may become filled with lardaceous, oily, or sebaceous substance. Sometimes they are furnished with hairs growing in large quantities from the interior of the cyst; occasionally the hairs are implanted in a portion of genuine skin, furnished with a cuticle, sebaceous glands and hair follicles, which forms part of the wall of the sac. It is also no uncommon thing to find in the structure of ovarian cysts, masses of bone possessing the chemical and physical qualities of true osseous tissue; these bony masses may have implanted in them one or more teeth, which are furnished with ivory, tipped with enamel, and present a general resemblance to the incisor, canine, or molar shape. You remark that most of the structures thus produced are of a comparatively low type, fibrous tissue—horny and osseous, the former constituting the basis of the cyst.

Since so much increased power of growth and development is conferred upon a tissue in its enlargement or metamorphosis into a cyst, it is no matter of surprise that the property of producing other or secondary cysts should be possessed by the parent sac. Accordingly we very frequently find, more particularly in the ovary, a secondary series of cysts formed in the lining membrane of the primary sac, or between the layers which compose its wall. They project into the interior of the parent cyst, and may fill it up so as quite to obliterate its cavity; finally, they may distend and burst through its walls, so as to destroy all traces of its existence. Or they may themselves burst into the parent cavity, and discharge their contents into it, giving rise to strata of fluid of different density, colour, and qualities. The secondary cysts are in like manner the seat of tertiary formations, and so on; a very complicated structure being thus engendered, which is not easily distinguished from the multilocular cysts caused by the growths of several separate sacs in the same organ. They are probably formed in the areolar tissue between the layers of the parent sac, in the same way that we have supposed cysts to be produced in the areolar tissue of other parts of the body. In this specimen the wall of an ovarian sac is nearly two inches in thickness, from the presence of a large number of secondary and tertiary cysts in its substance.

Solid as well as cystic formations are developed in the interior of these cavities. They are more common in

the secondary sacs than in the primary. Here for instance is a large ovarian sac, with a secondary cyst growing from its wall, and you see that the latter is almost filled up by branching fibrous growths, looking like very luxuriant warts. They may completely occupy the sac, so as to give it the appearance of a solid tumour. On the inner surface of this sac the growths may be seen in an incipient state, consisting of mere granules, and in places the granules have enlarged into warts. In some instances these granules, and the growths of which they are the rudiment, suggest the idea that they may have originated in a deposit, a sort of settling, of some of the albuminous or fibrinous constituents of the fluid contained in the sac, and that they may have derived the materials for their increase from the same source. Such a view is somewhat favoured by the fact that the growths are most common in those cysts which have grown slowly, whose contents are the most viscid. They hardly ever occur in thin-walled cysts containing a clear transparent fluid. In some instances we may imagine that they are occasioned by the hypertrophic growth and projection into the sac of certain constituents of the affected gland. More particularly in sero-cystic sarcoma of the breast I have fancied that the lobulated growths which project into, and even fill up the cyst, may have originated in an enlarged and altered condition of some of the mammary lobules. I merely hint at these several modes of explaining the formation of the solid, branching, or lobulated masses occasionally found in cysts, without placing much stress upon either of them.

The cysts formed in different parts of the body are liable to inflammation and the various effects of that process. Indeed it is on this liability to inflammation, and the changes in the sac consequent thereon, that we rely in the treatment of a considerable number of these morbid products. Here is an ovarian cyst in a state of acute inflammation after tapping; the lining membrane is highly vascular; there are some flakes of lymph upon its surface; and there was a considerable quantity of purulent fluid in the sac. In the walls of this cyst taken from the same organ is a partially-healed orifice, which was probably occasioned by ulceration; it permitted the contents of the sac to escape into the abdominal cavity during life.

Sometimes cysts cease to grow; they then shrink or shrivel up, and become the subjects of atrophy, which shows itself chiefly in wasting and calcareous degeneration. The latter shows itself most commonly in the wall of the cyst, it may affect also the contents. Mr. Dalrymple has found the desquamated epithelial particles in a subcutaneous cyst infiltrated with granular earthy matter, just in the same manner that the gland cells in the liver and other organs are so commonly infiltrated with drops of oily matter lying in very thin substance. The cutaneous cysts are most liable to this, and it probably occurs in other places. I am not aware that the fatty degeneration has been observed in their walls, though their contents are often loaded and intermixed with a considerable quantity of oily matter.

With regard to the cysts occasionally, though rarely,

existing in solid tumours, it seems most probable that they are formed in the same manner as the cysts in the areolar tissue of other parts of the body.

To sum up briefly what has now been said respecting the nature and growth of cysts:—1st. We believe that one class of cysts are formed by a dilatation of the ducts or sacculi of glands. 2nd. We include in another class the cysts which, originating in cellular and fibrous structures, may be supposed to depend upon a dilatation of the areolæ of those tissues. 3rd. It seems probable that these two classes include all or nearly all the cysts which we are in the habit of meeting with. 4th. In both classes some other change besides the dilatation must take place to convert the gland-duct or the areolar cell in a closed sac. 5th. The dilatation now spoken of is not the result of any mere mechanical force; it is caused by a process of growth—of hypertrophic growth—and is attended by a thickening of the wall which may even exceed in proportion the enlargement of the cavity of the cyst. 6th. This increased growth is also often attended with an increase in the developmental powers of the tissue composing the wall of the cyst, which leads to a variety of new formations—these new formations exhibiting a general correspondence with the character of the tissue or organ in which the disease occurs. Lastly. These cysts are liable to the same diseases as other parts; and when the stimulus to their growth, whatever it be, fails, they are liable to the same results of atrophy, viz., wasting, earthy, and fatty degeneration.

ON THE USE OF COLD WATER

AS A

POWERFUL REMEDIAL AGENT IN CHRONIC DISEASE.

BY EDWARD HUMPAGE, ESQ., BRISTOL.

Read before the Annual Meeting of the Bath and Bristol Branch, July, 1850.

In submitting to you the following observations on the treatment of many chronic ailments by cold water applied to the surface of the body, I feel it to be quite necessary to state, *in limine*, that I have no sympathy with the popular notion about the universal application of this agent in all diseases—a doctrine too absurd to combat in an assembly such as this, but one which, I am sorry to say, is believed in and acted on by a very large number of intelligent people in this kingdom, as well as abroad.

It is not my intention to enter into any details, but rather to make a few general observations on the subject, in the hope that my professional brethren may be induced to test, by their own experience, the nature of a remedy at once so easy of employment, and so accessible to all.

From the time of Sir J. Hoyer, who lived in the latter half of the 17th century, down to the late Dr. Currie, of Liverpool, physicians have been quite alive to the value of cold water as a remedial agent, but with

practitioners generally I believe its advantages are even now almost entirely unknown.

Various circumstances of late have favoured the reconsideration of the subject; among these I may mention the discussions which have arisen on the public health, and the numerous sanitary reforms now under consideration, more especially in reference to the condition of the labouring classes in our large towns, and also the reaction which has most evidently taken place on the subject of remedies required, manifested in the disposition to leave nature more to her own resources in the cure of disease, and the almost universal condemnation of the heroic treatment of disease, too prevalent in former times.

The subject altogether is very large and important; nor do I even propose any statement in reference to the curative effects of water in *acute disease*, but shall merely offer a few observations on its influence in many of our chronic disorders, cases which have been always the annoyance of the medical attendant, for which he *must* prescribe, and about which he often hesitates, and finally gets rid of his patient by advising him to abstain from physic, and try change of air, or in fact do what he chooses.

Dyspepsia, in one or other of its Protean forms is, as we all know, at the root of a large proportion of chronic disorders. Indeed one of the most common forms in which stomach disorder ends, particularly in men of business, and in those of studious habits, is a prostration of nervous power, or, more explicitly, irritation of the solar plexus of nerves or some of its ramifications, the effects of which are familiar to us all. Mental dejection, inability to conduct business, restlessness, sleepless nights, dread of the future, suspicions, a want of volition, and all those distressing sequelæ of an exhausted nervous energy, too extraordinary for words to convey any adequate idea of, often, alas! leading to an entire break up of the intellectual and moral natures. I need scarcely say, in such cases medicine is of little avail, generally useless, and often injurious. The highly irritable condition of the mucous surfaces at once detects the presence of a mineral or of a vegetable poison, in however small a quantity administered. Now, for such cases the judicious application of cold water is most valuable. Let your patient be packed for three-quarters of an hour daily in the wet sheet, immediately after which let him have the cold dash, and be rubbed down by an attendant; let him live plainly, walk much, use a sitz-bath after his exercise, and once or twice weekly let the skin be freely sweated by the lamp-bath, and I can confidently say that a month or six weeks of such treatment will do more for your patient than all the drugs of the Pharmacopœia. Once get the skin to act freely, and you impress the nervous system most advantageously; you open a *great sluice*, (if I may so say,) for the getting rid of morbid secretions, and thereby remove that congested state of the internal organs which is the *first step* to organic disease.

Another class of cases in which I have seen most valuable effects of the free use of cold water is, where the health is seriously damaged by uterine irritation