in such methodical and tunable proportions".* And yet we come upon the difficulties—the insoluble difficulties of mechanism, not so perfect but that it might have been more complete; sure to wear out, and in its decay certain to entail suffering—suffering avoidable, unnecessary, which the great Archæus might, had he chosen, have prevented. Much ingenuity has been exerted in the endeavour to explain away these difficulties, and at the same time to resist the conclusion, *Non omnis moriar*, which explains them all.

But our profession gives us, in its daily exercise, the solution of the problem. We have to do with the spoilt, not with the perfect; the meaning presses on us; we find it in a brief sentence, half of which most are ready to utter with reverence, *Deus qui humanæ substantiæ dignitatem mirabiliter condidisti*; "God who in creating human nature didst wonderfully dignify it;" but two words are still wanting to complete it, *et mirabilibus reformasti*, and "hast still more wonderfully renewed it". These solve the otherwise insoluble equation, these give the answer to the enigma.

I have thus striven, sir, as best I could, to obey your commands, and to set before the Fellows and members of this College the great Harvey and the times in which he lived. I have endeavoured especially to dwell upon those features in his character—the gentleness, the forgetfulness of injury, the love of truth, the love of others, the highest love in which all of us can best hope to follow his example. I trust, however, that I have not failed to render such homage as I could bring (and the offerer's gift must not be measured by his poverty or by his wealth, but by the heart which brings it) to the genius of Harvey, and of all those whose endowments have enabled them since his time to follow where he led. I have claimed, too, for them and for all investigators into nature's ways the most unshackled freedom of inquiry. But knowing how upon great heights the head is apt to turn dizzy, and how the consciousness of having attained an elevation which few can ever dream of reaching tends to induce self-admiration and intellectual pride—"by that sin fell angels"—I have ventured to recommend, as an unailing talisman against such dangers, that *Hemomy*

"More medicinal than that *Moly*
Which *Hermes* once to wise *Ulysses* gave."

If in so doing it should seem to any of my friends, my colleagues, or to any of my audience, that I have overstepped the limits of my office, I ask their pardon, sir, as I ask yours.

THE HASTINGS PRIZE ESSAY,

1873.

ON THE PATHOLOGY AND TREATMENT OF OVARIAN DISEASES.

By LAWSON TAIT, F.R.C.S.,

Surgeon to the Birmingham and Midland Hospital for Women, etc.

VI.

THE pathology of ovarian cysts involves a number of questions that have been raised and discussed by observers of the greatest eminence; but, up to the time of writing this, I have found little that has either harmonised with my own observations, or seemed to me to give any very satisfactory explanations of the growths. I have had opportunities of examining a large number of tumours removed in the operation of ovariectomy, and I have come to some conclusions which are at variance with those of many observers, but which, nevertheless, seem to me to be founded on fact, and to have at least this recommendation, that they simplify matters very much.

First of all, we may dismiss what we know of the causes of ovarian dropsy in the confession that we know nothing about them. The most common form, the adenoid or proliferous, and also the rare multiple tumours, occur during the period of life when ovarian cell-growth is mature; the more rare unilocular cystic growths, besides being met with during this period, occur at the extremes of life; for I have seen one at 9 years of age, and I have now under my care a unilocular tumour in a patient aged 72. I have also removed a tumour from a lady aged 66, which, though it was composed of several sacs, I have placed under the category of the unilocular tumours, for reasons which I shall afterwards discuss.

I have already said that I have not yet met with an ovarian tumour that was unilocular, and I have just perused, in the *Lancet*, an extract

* See also the whole of the eloquent Chapter II of Book IV of Cudworth's *Treatise concerning Eternal and Immutable Morality*, 8vo, London, 1731; especially pages 176-177.

from a paper by Dr. Granville Bantock which strongly confirms the view I hold, that all unilocular tumours in the neighbourhood of the ovary are not of ovarian, but of parovarian, origin. The parovarium consists of a few closed linear sacs, the remains of the tubules of the Wolffian body in foetal life, which may readily be seen on holding the broad ligament, with the ovary and Fallopian tube *in situ*, up to the light. These tubules frequently contain a perceptible amount of fluid, and I have repeatedly seen them, accidentally in *post mortem* examinations, distended to the size of beans or filbert-nuts, and have disregarded them as "Wolffian sacs" of no pathological importance. Three years ago, I had occasion to make a medico-legal examination of the body of a woman far advanced in life, and I found in her left broad ligament a cyst as large as an orange, filled with clear limpid serum. It was pressing upwards and backwards out of the pelvis, the ovary being at its lower and anterior aspect, and the Fallopian tube arched over its anterior surface. On the side next the uterus, two smaller cysts were lying close to it, and, nearer still, a very minute sac, which was evidently, by shape even, a distended parovarian tubule. The ovary was white, puckered, and shrivelled, and had not a continuous relation to any of the cysts, though it touched the largest at its hilum. The Fallopian tube was normal, and had no other relation to the tumours than slight connection by loose areolar tissue. There was in my mind no doubt that this was a pathological indication of value; for, in an ovariectomy that I had performed not long before, I was struck by the fact, that the ovary was perfectly healthy and separated from the tumour, as was also the tube, by a mesovarium of some extent; in fact, I did not do ovariectomy at all in the removal of the tumour, for, in passing the chain of the *écraseur* round its base, I did not include either the tube or the ovary, and they were both returned into the abdominal cavity.

The consideration of these facts led me to examine some tumours I had removed previously and others removed by friends, and I have since subjected specimens to careful examination for confirmation of my accidental observation. The result has been that in every truly unilocular tumour I have found the ovary unaffected, though on several occasions I have found it stretched over the cyst-wall. I have three or four times found the ovary separated from the cyst by a more or less distinct mesovarium, and on one occasion I found in that fold some unaffected parovarian tubules in the case of a lady, a patient of Mr. Hall Wright, from whom I removed a large unilocular cyst about eighteen months ago. In one instance where I operated a few days ago, the healthy ovary was left at least an inch below the clamp; and in another case, to which I have already alluded when speaking of adhesions, the ovary and tube were found glued on to the cyst, but forming no part of it. In this cyst the walls were extremely thick and contained large quantities of involuntary muscular fibre—a fact which I do not think militates against my view that it was of parovarian origin, for nucleated muscular fibre-cells exist in the broad ligament to some considerable extent.

The case to which I have alluded as presenting a tumour with many cysts, but which ought to be placed under the same category as the unilocular cysts, occurred in the person of a lady aged 66. She was a widow, having been married forty-three years before the tumour appeared. The menses had ceased for nearly twenty years, and her youngest child was aged 25. There was every reason to believe, therefore, that the condition of the cell-growth of her ovaries would be one of very low activity. The tumour was first discovered about five years before I saw her, and had grown slowly for four years and a half, but with extreme rapidity for six months. The abdominal parietes were very thin, and the percussion-wave was communicated with extreme and uniform rapidity in every direction. I diagnosed, from my former experience, that it was a unilocular Wolffian cyst, and that the ovary would, in all probability, be found uninvolved. I was right about the ovary, for that was found, along with the tube, almost undisturbed, and not in any way involved in the tumour, the latter having apparently escaped from between them backwards and upwards. I had made a mistake, however, about the tumour being unilocular, for it was composed of five or six sacs. The walls of these were very peculiar, in being of uniform thickness, or rather thinness, for they were like tissue-paper, and had no thickening towards the base of the tumour, as is always the case in the multicystic adenoid or multifollicular tumour. My belief was, and is, that this tumour was a specimen of dropsy of a number of the parovarian tubules; for, if one alone may become dropsical, there can be no reason why a number should not be so coincidentally. My opinion has been greatly strengthened, however, by a re-examination of the tumour for the special investigation of one point drawn attention to by Dr. Bantock; that is, the possibility of separating the outer coat of the tumour. This can readily be done towards its base for a short distance up from the ovary, discovering the fact, that the gland and its duct can be stripped off the tumour without damaging

its walls. The rapid growth during the later periods of its existence, however, seems to have so stretched the walls, that, beyond two or three inches from its base, the peritoneal layer cannot be separated from the cyst-wall proper. I have quite satisfied myself that this case is really one of multilocular parovarian tumour; and I am the more strengthened in this view when I find that Dr. Bantock refers to a case of Mr. Spencer Wells's, which the great ovariologist recognises as one of bilocular parovarian cyst.

Considering this, it is a point for investigation whether or not the curious little pedunculated cyst, representing the terminal bulb of the Wolffian tube, and generally known as the organ of Rosenmüller, may not sometimes form a unilocular tumour of morbid size and be removed as an ovarian growth. All these rudimental structures are lined with epithelium, and may, therefore, conduct themselves as other tubes so provided are known to do. I suspect that the tumour, in the case I have mentioned where I actually left the ovary on the affected side, may have been an instance of dropsy of this little cyst.

I do not mean to assert that such a thing as a unilocular tumour of the ovary proper may not occur, but I am certain that, in my experience—limited certainly—it has not been met with; and before such a tumour is accepted, the specimen must be rigidly examined to ascertain whether or not the ovary is involved. I have met with a case in a patient 52 years of age, who had ceased menstruating for two years before the discovery of the tumour, where I diagnosed a unilocular tumour; but when I came to operate, I found at the base a large number of minor cysts representing the ovary, from one of which originally, I have no doubt, the major cyst was developed. I believe that at the base of all the unilocular tumours which are really ovarian, minor growths will be found that will substantiate the true origin of the tumour.

This leads me to speak of a variety of tumours, the origin of which has been fully traced by Rokitsansky and Ritchie, and with an example of which I have been fortunate enough to meet, thereby having been enabled to confirm their observations.

I cannot here enter into full details of the curious and most instructive case to which I now refer, for they have formed the basis of a paper elsewhere. (See *Obstet. Soc. Trans.*, vol. xv.) It will suffice to say, that it occurred in the person of a hospital patient from whom I removed both ovaries. Both tumours were multilocular, and had one or two major with innumerable minor cysts, graduating down to the most minute size. The fluid contents of all were limpid, and what was evacuated from three or four cysts at the time of the operation, together with the solid masses of both tumours, did not weigh quite ten pounds. The right tumour seemed to be about one-fourth larger than the left, so that they were probably four and six pounds in weight respectively—small-sized tumours. Both pedicles were included in one clamp, and the patient made an uninterrupted recovery.

After removal, the most careful examination of the tumours failed to discover any remnant of the ovaries outside them, nor did I find any trace of either of the Fallopian tubes. The tumours were pearly white and glistening; but the thin parts of the major cysts had a peculiar transparency that I had never noticed in any other tumours before, and columnar bands stood out here and there in relief on the walls. I may say that the tumours had been of extremely slow growth; for I had had her under notice for nearly a year before the operation, and had not discovered any increase in the size of the tumours, though they had been in existence probably five or six years.

The interiors of the large cysts were lined with regular pavement-epithelium, and the walls seemed composed of fibrous tissue with some nucleated fusiform cells, probably involuntary muscular fibre. The smaller cysts were densely packed together, and at some places where they were of an uniform size, the tumours had much the appearance of huge white raspberries. I was struck with the resemblance the tumours presented to what I recollected of those in which Rokitsansky and Ritchie had found ova, and I at once turned to Dr. Ritchie's admirable monograph and found that the tumours answered the descriptions completely. I, therefore, examined the contents of as large a number of the cysts as I could, and in every one, I think without exception, I found more or less distinct remains of an ovum.

It will serve my purpose best to quote at length from Dr. Ritchie's book, for our experiences are almost identical, and he also gives the observations of Rokitsansky.

"In the first volume of the *Wochenblatt der Zeitschrift der K. K. Gesellschaft der Aerzte zu Wien*, Rokitsansky describes the appearances observed in the *post mortem* examination of a woman, 26 years of age, who died with diseased ovaries. Both ovaries were affected. The tumour on the right side was as large as a child's head, that on the left as large as a man's fist. Both ovaries were composed of a number of cysts as large as a cherry, which, for the most part, lay closely packed

together, here and there had become flattened by mutual compression, and occasionally even projected into each other. The surfaces of the tumours were thus slightly lobulated, and between the protuberances were seen, at intervals, cysts as large as a barleycorn, a pea, or a bean. These latter cysts, on being punctured, gave exit to a greenish-coloured fluid containing membranous flocculi, and in all of them the ovum was found. In each of them, however, the ovum was softened, very dull-coloured, easily disintegrated. The zona pellucida had for the most part lost its sharp contour, and, except in one case, no germinal vesicle was discoverable.

"As far as I am aware, this observation of Rokitsansky was never published until July 1864, when the reporter to the *Medical Times and Gazette* of four cases of ovariectomy performed by Mr. Spencer Wells in the Samaritan Hospital, mentioned that, in two of the tumours removed, Dr. Webb and myself had been fortunate enough to discover many ova.

"The patient from whom the tumours in question were removed was 54 years of age, and had been for some time suffering from double ovarian disease. The tumours were easily extirpated, and the patient recovered. Each tumour was of the size of the head of a child 4 years of age. Each contained several large central cavities, and a number of smaller ones in the wall of the central cavity, the wall itself never exceeding one inch in thickness. In the *Medical Times and Gazette* for August 6th, 1864, Mr. Spencer Wells wrote as follows.

"The two tumours in question were examined directly after their removal by Dr. Ritchie, who pointed out to me, in each of them, a number of small cysts, which were evidently enlarged Graafian follicles. Knowing the great and long familiarity which Dr. Woodham Webb has had with the ova of various species of animals since his researches in conjunction with Barry, I asked him to examine some of the cysts, in order to ascertain whether they did, or did not, contain ova, knowing that, on this point, no higher authority could be appealed to.

"As one friend has suggested that we may have mistaken a blood-corpusele for an ovum, there was evidently some reason for my caution; but I trust that the following note from Dr. Webb will set all such doubts at rest.

"Both the tumours you sent me, after their removal from a woman 54 years old, were growths in excess of true ovarian structure. The multilocular character was produced by clusters of ovisacs of various sizes. Ova, with the other natural contents, were to be found in all the small sacs. The fibrous coats of the larger sacs were thickened, and had many other secondary sacs developed in them. The interior was lined with epithelium, which, in some instances, had, by parthenogenetic enlargement and successive budding of the cells, given rise to bunches of grape-like growths, repeated generations of imperfect ova."

"The whole, then, was nothing more than a reproduction in the human subject of conditions which are natural in some of the lower creatures. I suppose the description, in your orthodox pathological terms, would be, 'hypertrophy of the ovaries, with arrested development of the contents.'

"This letter, coming from a gentleman of Dr. Webb's known experience, is of great interest. Dr. Webb evidently inclines to the belief that the ovum is only an altered epithelium-cell. He also seems to believe that the grape-like growths, those described further down as dendritic growths, are repeated generations of imperfect ova."

Dr. Ritchie's unfortunate death, and my want of acquaintance at that time with Dr. Webb, hindered me from becoming acquainted with their method of manipulation; but that which I devised for myself answered my purpose completely. It consists in slitting open the cyst freely with a cataract-knife over a conical glass, collecting the whole contents, and afterwards syringing out the cavity of the cyst gently with a solution of sulphate of magnesia in distilled water of a density something near that of the cyst-contents. The fluid with which the cyst is syringed out is allowed also to fall into the vessel, and the whole to stand for a few hours, at the end of which time a little flocculent sediment will have collected at the bottom of the vessel. This is to be carefully lifted by a pipette, deposited in a clean watch-glass, and the ovum searched for under the microscope. What I found in every case I could not, of course, assert was an ovum; but having found one or two specimens about which there could be no doubt, and in every case something that was more or less like one, I am perfectly satisfied that in those tumours every cyst was a dilated ovisac. The smaller the sac, the more perfect the ovum seemed to be, and consequently I assumed that these were the more recent growths. Not only were these dilated ovisacs in the periphery of the tumours, but they were found throughout its substance. In fact, it seemed to me as if, for a long period of her ovarian history, the ova had been garnered up in cysts instead of being shed in the usual manner. Her youngest child was 6 years old, and if we assume that an ovum is shed from each ovary monthly, then we should get the num-

ber of ova so retained as about one hundred and fifty. The number of cysts was, however, much greater, probably two or three times as many; so that we may choose between two explanations—either that the tumours had existed before her last pregnancy, or that more than two ova are shed in the month. My own belief is, that both these suppositions are correct; for, when speaking of ovulation at the beginning of the essay, I gave reasons for my belief that ovulation and menstruation had only a connection of coincidence. I am of opinion that ovulation takes place far more frequently than menstruation does.

It is a somewhat singular fact that the observation of Rokitsky has not been confirmed, as far as I have yet seen, by any others than Ritchie and Webb, and by my own case. Still more curious is it that all three cases are almost identical, presenting small multilocular tumours of slow growth, and that in all three cases both ovaries were affected. This inclines me to believe that, in these cases, we have to deal with a special kind of ovarian tumour, occurring rarely and differing from the ordinary adenoid growth. Whether this be so or not, further experience alone can show. Dr. Ritchie says, immediately following the quotation I have given above, that he subsequently succeeded in finding ova in some of the loculi of a large number of ovarian cysts, but never in a loculus larger than a cherry, nor in one that had jelly-like contents. This observation I cannot confirm; for, though I have made many searches in the endogenous and subjacent secondary cysts of ordinary polycystic tumours, I have never found an ovum or anything resembling one. Perhaps my method is defective. Dr. Ritchie further says that, when no ovum is to be found, a single minor cyst is to be seen embedded in one part of the wall, and he has thought himself justified in concluding that this appearance represents dropsy of the blastodermic vesicle. I have certainly seen such vesicles in the walls of small cysts, but I have as often found them multiple as single, and I have never seen reason to interpret them as Dr. Ritchie has done. My view of the origin of such growths I shall explain afterwards.

There cannot be a doubt that there are some ovarian growths due to dropsy of the whole or the greater number of the ovisacs produced—a true follicular cystic degeneration; but it would seem that these growths are rare.

[To be continued.]

EXTRACT FROM THE PRESIDENT'S ADDRESS.

Delivered at the Annual Meeting of the Lancashire and Cheshire Branch.

By JOHN SKAIFE, Esq.,
Consulting Surgeon to the Infirmary, Blackburn.

BLACKBURN is a healthy town, so far as freedom from epidemics is concerned; but, owing to the extreme moisture and the long prevalence of the east and north-east wind, we are troubled with rather a superabundance of affections of the mucous membranes, as bronchitis, quinsy, diarrhoea, phthisis pulmonalis, rheumatism, and all of universal occurrence, to which may be added affections of the heart, and sudden death as a natural consequence. Bronchitis has superseded pleuritis, of which latter disease we now rarely meet with a case; still more rarely do we encounter the formerly universal remedy of bleeding from the arm with a lancet.

Respecting the diseases of this part of Lancashire, a great change has taken place in my time. When I first came to Blackburn, scrofula prevailed to a frightful degree, owing in a great measure to the trade and the working of the staple of the town. Hand-loom weaving was followed by almost the entire population; to every cottage was joined a weaving shop; in this, on the bare floor, were placed the looms (hand-loom, of course, the power-loom being yet unborn or unknown, as it did not come into active operation for some time). The cause of the universality of scrofula is sufficiently obvious. Seated for five days out of the seven days of the week in these wretched weaving shops, in a cold, humid atmosphere, could anything be expected but scrofula in its worst and most severe forms? We were continually lopping off legs for what was popularly called "white swelling of the knee"; and then the scars in the necks of the people, from the carelessness in looking after them, aggravated the disease extremely. But a great change has taken place. The people, instead of working in cold miserable shops, now follow their occupations in well warmed, well ventilated weaving sheds. We never had, and most probably never can have, unmitigated good. Varix or varicose veins have very much increased. Here, again, we see cause and effect strikingly manifested. The people now stand for the five days, or five days and a half, and thus produce the swelling of the veins; but this, when compared with the horrors of scrofula, is really a blessing.

The discovery of the principles of the many of our drugs has added tenfold to their value—I would instance quinine, morphia, iodine, etc. My acquaintance with iodine arose in rather a singular manner. I was a pupil at the joint hospitals of Guy and St. Thomas. We, the pupils, were going round with Mr. Green, the surgeon of the day. We came to a young man who had a large bronchocele. "Gentlemen," said Mr. Green, "this is a remarkable case. It is bronchocele in the male, an unusual occurrence, and I am administering iodine." I said to the man next to me, "What is iodine?" "I don't know," said he, and the question ran through the whole class, to which the same answer was returned by all. No one knew. This was too important not to have solved. Mr. Green, though a perfect gentleman, and very courteous, had a certain austerity of manner which none of us liked, so we drew short and long cuts with straws, and to inquire from him fell on my unlucky head. To refuse would have led to unpleasant consequences, for half a dozen stout fellows would seize hold of the delinquent and bump his *derrière* against the table. I went up to Mr. Green, and said: "In my own name and that of the class, I am requested to ask what is iodine." He called us together and said: "You are aware, gentlemen, that bronchocele has hitherto been cured by the administration of burnt sponge. It is supposed, doubtless correctly, that the curative principle of the burnt sponge is this iodine, which has lately been discovered by Dr. Coidet of Geneva, and you will find an ample account, chemically and medicinally, in the *Journal de Chimie*." Since then, I have employed it largely, and especially in the form of its invaluable salt, the iodide of potassium, certainly one of the most important additions to the modern *Pharmacopœia*.

I may mention a circumstance connected with the manufacture of the district; I mean the admission of steam into the weaving sheds. Steam in itself is anything but injurious. I have examined some of the bleaching works; there the people work all day long in the steam. The women are clad in a chemise and petticoat; the men in a shirt and a pair of canvas trousers. When the day's labour is over, they take this off and replace it with their usual garments. They walk home in their dry clothes, and they appear to me to be a healthy race. But the scene changes when we come to a weaving shed; the clothes are not changed, and, if steam be extensively admitted, the clothes become saturated with moisture; and, in walking home in the cold wet evenings, often to a considerable distance, much mischief may be done, and the seeds of future disease laid. Many of the mills, I understand, only admit the steam in the night; by this all injury to the health is avoided. It appears only to be a question of degree and time.

Another circumstance to which I would refer is the almost universal decay of the teeth of the factory operatives. Beginning from an early period during the forty years that I held the office of certifying surgeon to the factories, I noticed this decay of the teeth very closely, and I am considerably within the mark when I say that there would not be more than one case of entire teeth to two hundred cases in which the teeth were more or less decayed. What is the cause of this strange and injurious state of things? May not the change of diet be a powerful cause? When I say change, I mean from the milk to the tea diet. Forty years ago, the universal breakfast was milk and porridge. Since then, the population has doubled, and the milk-farms have rather decreased. Now the universal breakfast is tea or coffee, tea being preferred. From my long connection with the factories, I had ample opportunities of examining into the state of things. It was really pitiful to see the miserable beverages misnamed tea or coffee. The operatives, especially the more distant ones, brought their food with them. Generally each had a tin can or kit. A minute pinch of tea, or small tea-spoonful of ground coffee, was thrown into the can, and a pint of boiling water poured upon it. This, though bearing the name of tea or coffee, was in reality slightly coloured warm water.

Forty years ago, we had large bodies of troops in the town, and, the accommodation in the barracks being limited, many of the soldiers were quartered in various cottages. Two men were lodging in a cottage. They slept together in one room. One of them had been out on a Saturday night; had taken some drink, and was returning home, when four blackguards attacked him and beat him severely. He went to his lodging, and was loading his fire-lock when his comrade awoke, and, jumping up, took his fire-lock from him, and said, "What the deuce are you doing?" "I am going to shoot some of those devils who have been beating me." His comrade unloaded the fire-lock and made him get into bed. Unluckily, the quiet man fell asleep; the other, having loaded his fire-lock, went out, and, seeing a young man on the other side of the street, he fired at and shot him. The ball went through his left side close to the apex of his heart, through the left upper arm, smashing the humerus. I was called up and went. The man was laid on his back apparently dying. He cast a ghastly, despairing look at me; pulse he had none, and was quite cold. I mention this case to