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OBSERVATIONS ON CANCER.

BY

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The author confined his observations to the four questions connected with cancer, which more particularly interest the medical practitioner, namely, 1st, Is there any anatomical character which will enable us positively to distinguish a cancerous from any other kind of growth? 2dly, Is there any evidence that cancer is ever spontaneously curable? 3dly, What means do we possess of diagnosing cancerous from other tumours or growths in the living subject? and, 4thly, What influence should our present knowledge of diagnosis have upon the treatment?

1. *Is there any anatomical character which will enable us positively to distinguish a cancerous from any other kind of growth?* A cancerous growth may contain the following elementary structures:—1. Molecules and granules; 2. Nucleated cells of various shapes; 3. A filamentous or fibrous tissue; 4. A viscous fluid; 5. Blood-vessels; 6. Fatty matter; 7. Pus, and compound granular cells; 8. Black pigmentary matter; 9. Earthy matter. Of these, some are accidental or only occasional, and others essential or invariably present. The essential elements of cancer are, 1st, A fibrous mesh-work or stroma; 2dly, Nucleated cells; 3dly, A viscous fluid in which these float.

The fibrous tissue of cancerous growths exactly resembles that found in lymph, or in the healthy tissues of the economy. It may be formed either by deposition or by means of cell growth. In the former case, filaments more or less delicate, and closely aggregated, may be seen crossing each other or running in bundles, forming various kinds of mesh-works in which the cells of cancer are deposited. In the latter case, we can observe fusiform cells splitting up into fibres, and are able to trace their formation from round, oval, or caudate cells, until perfect fibres are formed. These cells (called by Lebert *fibro-plastic*) are of a round or oval form, varying in size from the $\frac{1}{100}$th to $\frac{1}{50}$th of a millimetre in diameter. Sometimes they possess a distinct nucleus, about the $\frac{1}{150}$th of a millimetre in diameter; at others, contain only several molecules and granules. Acetic acid causes these bodies to undergo very little change. They become somewhat paler, but there is no marked difference in this respect between the nucleus and cell wall. These cells, in their different stages of development into fibres, have been frequently mistaken for those of cancer;—Müller placed them among cancerous growths; and hence the erroneous opinion, that the caudate or spindle-shaped cell is characteristic of cancer. Fibrous tissue may be arranged so as to form loculi, containing a viscous fluid with or without cancer cells, constituting the colloid tissue of Authors.

The nucleated cells peculiar to cancer vary greatly in shape and size. Sometimes we see nothing but oval bodies about twice the size of a human blood globule, or closely resembling, except in colour, the oval blood corpuscles of the llama or camel. They measure about the $\frac{1}{75}$th of a millimetre in length, and $\frac{1}{100}$th or $\frac{1}{120}$th of a millimetre in breadth. These oval bodies are the nuclei of cancer cells. Sometimes they exist alone; at others, we may observe, by careful management of the light, a round or oval delicate cell wall, frequently resembling a mere shadowed halo, in the fluid in which it floats. On adding acetic acid to them, we find the cell wall disappear, whilst the nucleus becomes more distinct than formerly. Such is the character of a cancer cell

in its young state. At a more advanced period of development, the cell wall is more distinct. The nucleated structure is now round or oval, its medium diameter being about the $\frac{1}{250}$th of a millimetre, with a round or oval nucleus about the $\frac{1}{1000}$th of a millimetre in diameter. The addition of acetic acid always produces a remarkable change in these bodies, causing the cell wall to become very transparent and faint, and the nucleus to assume an unusual degree of distinctness. Hence the author considers that Dr Walshe has committed a fundamental error in the histology of cancer, when he says, p. 33 of his treatise, that "the ultimate microscopical cells of cancer are insoluble in cold and boiling water, and are not seriously affected by acetic acid."

Dr Bennett minutely described the further growth of these cells, which he illustrated by diagrams, showing how they multiplied from cell rising within cell. It is owing to this cellular structure that cancer owes the reproductive power which constitutes its malignancy. The cells occur isolated or in groups, surrounded by the other elements of the growth, but more especially by the fibrous tissue.

The third essential element in cancer is a gelatinous fluid. On cutting through a scirrhous tumour, however hard it may be, we may generally succeed in scraping from its surface a fluid more or less transparent. In soft cancer it is more abundant, and contains the granules and cells previously described. In some forms of cancer, however, it constitutes a very large proportion of the mass, presenting a gelatiniform or mucilaginous appearance, varying in colour from a pearly white to a deep amber, and in consistence from a slightly viscous fluid to a firm semi-solid mass. Collections of this kind may occur in loculi formed by fibrous tissue, or in cystic tumours perfectly structureless, or containing only numerous molecules and granules, constituting the simple colloid tissue of Gluge and Lebert. When associated with cancer, however, it contains a greater or less number of the cells previously described, in various stages of their development. In the case just narrated by Dr Paterson, the gelatinous matter within the loculi of fibrous tissue contained numerous cancer cells in an advanced stage of development, enclosing secondary and tertiary corpuscles, all of which presented the characteristic reaction on the addition of acetic acid.

It is the relative amount of the three essential elements of cancer now described, which constitutes its peculiar form. If the fibrous element be in excess, it constitutes scirrhus. If the corpuscles be numerous, encephaloma is produced—and if the fluid abound, and is collected into loculi, we call it colloid cancer. There is no other difference between these three forms than this, and Dr Bennett expressed his conviction that there was no essential distinction between them. He pointed out that we frequently find all these forms of cancer in the same tumour, in one place scirrhus or hard cancer, in another encephaloma or soft cancer, and in a third gelatiniform, alveolar or colloid cancer.

The non-essential elements of cancer, such as blood-vessels, pus, fatty, pigment and earthy matters, &c., modify the external appearance of the growth in particular cases, but are not constant. Want of time prevented the author from entering into a consideration of these anatomical complications.

At an early period in the study of histology, it was natural to conceive that a certain *form* of the cell should be thought characteristic of cancerous growths. The observations of Müller led to the belief that the caudate and spindle-shape of this minute structure was peculiar to them. Hence, we find him confounding certain tumours long denominated sarcomatous, and which wholly consist of fusiform cells, with cancerous or malignant growths. These, however, have no power of reproduction, and although often associated with cancerous cells, should not be confounded with them. From the results of many examinations, Dr Bennett was satisfied that there is no one form of cell which can be considered as at all times characteristic of cancer. The caudate and spindle-shape of these bodies are common to fibrous structures in general, frequently seen in lymph, and especially in the exudation forming the granulations on ulcers, recent wounds, vegetations on the endocardium, &c. &c.

The *structure* of the cell and the action of acetic acid upon it is much more distinctive. If the corpuscles are in that stage of growth in which they present a distinct nucleus with contained nucleoli, and if on the addition of acetic acid their external wall be rendered more transparent, whilst the border of the nucleus is apparently thickened, they are highly characteristic of a malignant structure. But even this is not an absolute and invariable mode of distinction; besides, it is only applicable when the cells have arrived at a certain stage of development. Dr Bennett had frequently seen young epithelial cells under certain circumstances present all the characters just mentioned, with the exception of enclosed nucleoli, and undergo the same reaction with acetic acid. This is very apparent in some cases, where effusion has taken place into the lateral ventricles of the brain, when the epithelial cells of the choroid plexus become separated, swell out from endosmosis, assume a globular form, and if young the cell-wall is partially dissolved in acetic acid, whilst the nucleus is unaffected. The same occurs with the epithelium of the bladder. He has found in the bladder a fluid having all the external appearance of pus, and on examination shown them to consist of round, oval, and caudate nucleated cells, exactly resembling those found in cancer, and acting with acetic acid in the same manner. Yet the lining membrane of the bladder, the ureters and kidneys were perfectly healthy. We need not wonder, then, that epithelial cells have frequently been mistaken for those of cancer even by histologists, and that many growths, consisting of hypertrophy of the epidermis, or epithelium, as in several so-called cases of cancer of the lip, ulcerated warts, excrescences, &c., should have been mistaken for malignant growths.

Dr Bennett stated that he was not aware of any tissue in which a fibrous and a cell structure, such as had been described, were combined, and he was, therefore, inclined to think, that whenever we find cells of this kind deposited between the meshes of a filamentous structure, we may be satisfied that cancer is present. If we trust to the form of the cell alone, we may confound epithelial growths with cancer—if we trust to the fibrous elements alone, we may mistake sarcomatous growths for it. But in no case, so far as his experience has yet gone, can the two be associated without the existence of malignant growth. This character, then, he thinks one which will apply to all forms of cancer. In many cases, the form and appearance of the cells to an experienced eye, will be sufficient, this more especially when they are fully developed, and the influence of acetic acid upon them observed. In difficult cases the conjoined character of the cells and fibres, and their relative position with respect to each other, will enable us to determine the point with more exactitude. To arrive at a knowledge of these facts, however, considerable skill in the manipulation of the microscope is necessary, and a very intimate acquaintance with the healthy and morbid tissues of the body. To distinguish the relative situation of the cells and fibres, especially when mucous membranes are the object of investigation, a section, by means of Valentin's double-bladed knife, is also in most cases essential.

2. *Is there any evidence that cancer is spontaneously curable?* Of the ultimate causes of cancer, or why an exudation thrown out from the vessels should ever undergo the peculiar transformations described, we know nothing. Observation and experience, however, coincide with the modern theory of cell growth, in attributing to it a reproductive power, on which its malignancy and power of spreading from tissue to tissue depends. Is this process ever checked? A general opinion prevails that cancer is necessarily fatal. Dr Bennett did not coincide in this opinion, because it was not easy to understand why nature should never cause the degeneration and disappearance of this one particular growth alone, whilst every other tissue and form of cell-life was occasionally abortive.

Trousseau, Hodgkin, Cruvelhier and others, have frequently traced the conversion of scirrhus into ossiform matter, in the lower animals and in man. Dr Walshe on this subject, observes, "I feel myself justified in affirming, that after careful investigation of the point, that if the bony lamellæ actually continuous with some part of the skeleton, and which formed a marked character-

istic of certain cancers connected with osseous structure be excluded from consideration, the phenomenon in question will be found to be much more written of than observed. (Treatise, p. 81.) Dr Bennett stated that he had seen this transformation into calcareous matter in five cases, and presented four preparations to the Society taken from three of these. The first preparation, was a portion of a large soft cancer, lobulated externally, taken from a case of Dr Paterson's preserved in spirit. A microscopic examination showed it to contain numerous cancer cells, deposited in areolar tissue, combined with an immense number of crystalline masses of phosphate of lime. The second preparation, was a dried section of this tumour, the volume of which was only slightly diminished, and seemed to be wholly formed of calcareous matter. The third preparation was a dried portion of intestine, with a mesenteric gland attached, the external portion of which was converted into calcareous matter ; where fresh cancerous matter could still be squeezed from its centre, exhibiting the characteristic cell structure, mixed with a quantity of earthy matter. The fourth preparation was a dried portion of mesentery, studded over with enlarged mesenteric glands, completely calcareous, removed from the body of a female who had died from scirrhus and chronic stricture of the pylorus. This series of preparations, Dr Bennett considered, offered conclusive evidence that cancer is capable of undergoing the calcareous transformation.

It has been stated, that cancer sometimes becomes transformed into fibrous or fatty tissue, and thus produces cicatrices in organs. It is very difficult to prove such a statement, because if there be no cancerous cells in a fibrous tissue, it is contended that it is not malignant and never has been. On the other hand, if cancer cells be present, it is clear that we have no evidence of degeneration. There can be no doubt that many organs and tumours are considered cancerous, which are only fibrous. Dr Bennett had examined many so called cases of scirrhus of the pylorus, which were only hypertrophy of the muscular and fibrous tissue of the part. He alluded to a case of Dr Alison's he had examined, in which the coats of the stomach throughout varied in thickness from an inch to an inch and a-half. The viscus was thought by all who saw it to be cancerous, and yet he showed it to consist of nothing but fibrous tissue and fusiform cells. He had also proved many tumours supposed to be cancerous, to be only fibrous.

Professor Bochdalek of Prague, formerly pathologist to the hospital there, and now Professor of Anatomy in the University, published a memoir in 1845, " On the Healing Process of Cancer in the Liver." He describes the cancer in this organ, as breaking down into a cream like matter, the fluid parts being absorbed, and the whole shrinking together, forming a puckering on the surface often corresponding to a fibrous mass or a fatty material, in which collapsed cancer cells may yet be detected. In some livers, he has seen these cicatrices in all stages of formation, cancer in some places, and perfect cicatrices in others. In Prague, he tells us, there are between 400 and 500 bodies examined annually. Among these cancer of the liver occurs about 16 or 17 times, and among these proofs of healing may be observed between 6 and 7. (Oesterreichische Wochenschrift, 26th April 1845.)

Dr Bennett had frequently seen these appearances in the liver, but he had never been able to satisfy himself that they were proofs of cured cancer. There are strong probabilities in its favour however. Tubercular masses are rare in the liver of adults, and such lesions must depend either upon cancer or upon chronic abscesses. He exhibited to the Society two wet preparations of livers, with puckerings on their surfaces, some corresponding to white fibrous cicatrices, and others to rounded yellow masses, varying in size from a pea to that of a walnut. When recent, these latter were thought to be cancerous by all who saw them, yet a minute examination showed them to be formed principally of fibrous tissue, mixed with irregular fatty particles, and debris of cells, so indeterminate in their character, that their nature could not be ascertained. In some of the cases of Prof. Bochdalek, cancer was associated with these cicatrices, and that cancerous ulcers occasionally cicatrize, is well known to surgeons.

When in Prague last autumn, Dr Bennett having been previously acquainted with Professor Bochdalek's memoir, carefully examined the preparations of the lesion described, in the pathological museum of that city. He recognised them to be the same in appearance as those he now presented to the Society. Professor Dlauy, the present pathologist, was so polite as to take the preparations out of their bottles, make fresh incisions into them, and permit Dr Bennett to examine them microscopically. He found that the cicatrices, though altered by spirit, were principally composed of fibrous tissue, the nature of the softer matters could not be ascertained. This was no proof of cancer. He was then shown a similar preparation of a liver, together with a stomach taken from the same case, the former having similar puckerings, and the latter a cancerous ulcer of which the individual died. Whether this was a mere coincidence it would be difficult to say. M. Sedillot has lately asserted that cancer cells are occasionally elongated, so as ultimately to form fibres, but it is not certain whether he has clearly distinguished the fibro-plastic elements so often present in cancerous tumours from those of cancer. Dr Bennett considered, that taking every statement into consideration, it was by no means improbable, that cancer might occasionally degenerate into a fibrous mass, although we still require positive proof of it. At all events, they have convinced him of the necessity of making further researches on this subject.

The same difficulties exist with respect to the supposed degeneration of cancer into fat. Nothing is more common than to find associated with cancer, a yellowish friable matter, more or less abundant, resembling cream in colour or consistence, or presenting a bright gamboge yellow tint. This, on examination, is found to consist of numerous granules, which disappear on the addition of ether, and refract light, like globules of oil. Whether these granules are elementary nuclei and cells, or whether they are the result of the disintegration of cells previously formed, is unknown.

What means do we possess of diagnosing cancerous from other growths in the living subject? The local symptoms and general signs of cancer have frequently been found to be insufficient for the purposes of diagnosis, such as the lancinating pains, unequal surface, hardness, elastic feel, softening, ulceration, the surrounding tissue being affected, a general alteration of the constitution, and a tendency to return after excision. All these symptoms have, at various times, been proved to be connected with epidermic, fibrous, fatty, or cystic growths.

In the living subject it is clear that the anatomical arrangement of the fibrous and cellular elements, observed in morbid specimens, can seldom be seen. We have no opportunity of obtaining a section. Still there are certain places where the detection of such cells as have been described, exhibiting their peculiar change under the action of acetic acid, will enable us to diagnose a malignant growth with certainty. Over most of the surface generally, for instance, where the diagnosis most concerns the surgeon, a group of such cells cannot leave us in doubt, because the epidermic scales in such cases never resemble them, as they do in internal organs, as the bladder, stomach, or brain. Thus, although anatomically, and in all cases, we cannot depend upon the form or even structure of the cell, as connected with the epidermis alone, we can. Hence, to the surgeon, a minute examination is a more precious means of diagnosis, than to the physician. Various ulcerated and fungoid tumours of the surface may be diagnosed with certainty, from an examination of the cells alone, whilst in fluids discharged from the stomach, bowels, or bladder, this means of diagnosis is not so certain.

Many instances are now on record, where in doubtful cases, such an examination has determined the nature of the growth. Several have been lately published by M. Sedillot of Strasburgh, and others may be found in the works of Lebert and Vogel. There can be no doubt that many tumours and ulcerations exist which, to the naked eye, and according to the ordinary symptoms, resemble cancer, although they are perfectly innocent. To all such growths Lebert has given the name of cancroid. Among them may be placed many so called cancers of the lip, which, on examination, are often found to be fibro-

epidermic; many tumours of the breast, which are either fibrous, fibro-epidermic, or cysto-sarcomatous; fungoid swellings of the dura mater: the ordinary fungus of the testicle, which Messrs Goodsir and Syme have shown to consist of healthy granulations; and probably the so-called chimney-sweep's cancer of the scrotum. Several instances were referred to, published in the writings of Lebert, Vogel, Syme, and Sedillot.

There were some cases, no doubt, where, after every means of research had been employed, doubt as to the nature of the growth would still exist. All those who contend for the exclusive advantage of any one sign or symptom, must have very limited notions of disease or diagnosis. No one could repudiate the use of the microscope more than the author was disposed to do, as a sole means of diagnosis in any case. But he contended that this instrument judiciously employed, is likely to be as useful in the hands of the surgeon, for the diagnosis of cancerous and cancroid growths, as the stethoscope is in the hands of the physician for the diagnosis of diseases of the chest. Neither instrument should be alone depended on, but conjoined with the history and other symptoms, will lead in many cases to more correct conclusions than it is possible to arrive at by means of the unaided senses. Dr Bennett cited a few instances which had come under his own observation, confirmatory of this statement, and alluded to others brought forward by the writers formerly mentioned. A few dozen cases, however, could not be considered a sufficient basis for this important inquiry. He believed that the whole subject was yet to be worked out, and considered it above all things desirable, that some young surgeon would dedicate his time and energies to the task. No doubt it was troublesome to be under the necessity of entering into new researches on points which many consider already determined, and where such decided opinions respecting them had been so long held by practitioners. Such, however, were the sacrifices which the progress of medical science required. In the meanwhile Dr Bennett invited surgeons to forward him specimens of morbid growths in a fresh state, or to enable him to examine the ulcers or discharges from malignant and doubtful growths or ulcers. He would make notes of the result, and these with a short history of the case, might form the ground-work of a more extended series of researches, which would no doubt, before long, lead to some positive result.

4. *What influence should an improved knowledge of the pathology and diagnosis of cancer have upon the treatment?* Most of the practical points connected with the surgical treatment of cancer, were fully discussed in the French Academie de Médecine, in 1844, on the occasion of a paper read by M. Cruveilhier. That eminent pathologist maintained that surgeons are continually cutting out fibrous tumours from the female breast which never undergo cancerous transformation, and which therefore might be allowed to remain with perfect safety. So far from fibrous growths ever degenerating into cancer, he considered that they indicate a state of constitution altogether incompatible with malignant action, so that in being able to detect them in the breast or uterus, he has confidently assured the patients that they would never be subject to cancer. In support of these statements he brought forward cases of tumours in these situations, which had existed from ten to thirty years, and cited one exceptional instance, where cancer having attacked a breast already the seat of fibrous tumours, these remained unaffected, while all the rest of the organ was cancerous. He pointed out that cancer always depended upon a constitutional disorder, that local disease was the effect and not the cause, and to remove the first, while the latter was allowed to remain, was an irrational practice.

In these opinions M. Cruveilhier was supported by M. M. Velpeau and Jolly. The first maintained that he could diagnose fibrous, or what he called fibrinous tumours of the mamma, which never degenerated into cancer, although he frequently removed them, to tranquillize the patient, or to get rid of a deformity.

On the other hand it was contended by most of the practical surgeons of Paris, including the names of Blandin, Gerdy, Roux, Amussat, Berard, and Lisfranc, that it was impossible to diagnose fibrous from cancerous tumours of

the breast at an early period ; that the former were only an incipient stage of the latter, and consequently frequently degenerated ; and that the best practical rule to be followed was always to excise them as early as possible. They maintained that the disease was first local, and that the cachexia was induced by absorption from the morbid growth—was the cause, and not the result. They denied the law of incompatibility, sought to be established by M. Cruveilhier, and denounced his paper as one likely to be followed by the most injurious consequences in practice.

In support of these opinions, numerous cases were cited, having all the symptoms and characters belonging to what M. Cruveilhier called fibrous tumours, which afterwards became cancerous, and destroyed the patient. Some specimens also were brought forward, where tumours, originally fibrous, had apparently undergone the cancerous transformation, even in the uterus. Many surgeons brought forward instances of tumours, to all appearance truly cancerous, which were excised, and where there had been no return for a long series of years.

This celebrated discussion left the practical question in the same state as before, namely, that as a matter of prudence, all tumours should be removed from the female breast as early as possible, whatever be their nature. No one practitioner who took a part in it, appeared to be aware of the real structure of cancerous tumours, or knew that a fibrous as well as a foreign growth was invariably present in them. Indeed, many cited, as the best proof of cancer, the presence of the dense fibrous structure, often grating under the knife, which is exactly that part of the tumour which is least malignant.

A more perfect diagnosis, however, has already led to some useful modifications in surgical practice. Among these, Dr Bennett alluded to the altered operation of fungus of the testicle, so successfully executed by Mr Syme, as communicated to the Society. Another valuable modification has been introduced by M. Sedillot of Strasburgh. It is well known that in many cases of incipient cancer, it has been advised to make the incision embrace a considerable portion of the sound textures, in order to insure eradication of the malignant growth. Thus the whole female breast has often been removed, although the extent of the tumour has been inconsiderable. In cases, however, where a restoration of parts is necessary, as in the lip, the rule is very inconvenient. M. Sedillot, therefore, in several cases, having satisfied himself, in the manner pointed out, that the ulcer or growth is not cancerous, has barely removed the indurated structure, and thus been enabled to preserve a larger amount of soft parts than he otherwise would have done. These operations have been perfectly successful.

In some cases, an exact diagnosis formed by a microscopic examination, has prevented an operation which would otherwise have been determined on. Vogel gives a case of ulcerated breast of this kind. (Icones Histologiæ Pathologicæ, p. 127.) Dr Bennett has seen two others, where, in a cancroid growth in the breast, he diagnosed non-malignant disease. All these cases ultimately recovered.

If when this means of examination has been so little employed, such good results have already resulted, what may we expect when surgeons are more extensively aware of the benefits which may be derived from an exact diagnosis ? Dr Bennett believed that we were only on the threshold of the inquiry, and that the most important discoveries would yet be made in the pathology and diagnosis of cancerous growths, the influence of which upon surgical practice could not be calculated on.

In conclusion, Dr Bennett observed, that he had carefully avoided theory. He had said nothing of the supposed mode of growth of the cancer cells, whether the disease be dependent on a peculiar condition of the blood, induced by any particular regimen, climate, constitution, or other causes. He had confined himself entirly to facts, and endeavoured to show that cancer possesses a distinctive structure ; that it may occasionally undergo a calcareous, and probably a fibrous transformation ; that a knowledge of its structure is of diagnostic value ; and that this has already been serviceable to the healing art, and bids fair to be still more so in the treatment of this class of fatal diseases.

Professor Syme observed, that it was Mr Lawrence who first pointed out that fungus of the testicle was not a malignant disease. That surgeon, however, extirpated the organ, whereas, the operation he had introduced enabled him to preserve it. With respect to the tumour lately removed from the neck, he had at first considered it purely fibrous, but as the operation proceeded, he was induced from its connections and general appearance to believe it malignant. He should feel much surprise if it did not return. As regards the question concerning the cure of cancer, he had always thought that its chief characteristic was incurability. He should like to know Dr Bennett's views as to the possible degeneration of fibrous or fatty tumours into cancer.

Dr Taylor inquired how it was possible to examine microscopically a tumour in the living subject, when no section could be procured.

Dr George Paterson observed, that he could not consider the puckerings and yellow deposit in the liver, as shown in the preparations on the table, to be proofs of cured cancer. This disease had a tendency to spread, and destroy neighbouring tissues, an evidence of this was exhibited in the specimens before the Society. On this point, however, he had noticed that Dr Bennett had expressed a very cautious opinion.

Dr Martin Barry observed, that he believed the description given by Dr Bennett, of the cell-formation of cancer to be correct, and that from what he knew of such structures, there could be little doubt that they possessed the power of reproduction.

Dr Alexander Wood considered the observations made respecting the possible cure of cancer likely to be injurious in practice. He was not satisfied that the calcareous masses presented to the Society were proofs of cured cancer, and was disposed to believe that this never occurred in the human subject. Even did this kind of cure take place, he thought that patients would be in no better circumstances, than if they had submitted to an operation.

Dr Bennett in reply, said he had little doubt that fibrous and some fatty tumours might become the seat of cancerous growth. Wherever blood-vessels existed, there it was possible for an exudation to be thrown out, in which cancer cells might be formed. It was only by supposing a superadded growth that those cases could be explained, where tumours remained indolent for years, and then suddenly increased with rapidity, presenting all the appearances of malignity. That fibrinous tumours occasionally become cancerous, was proved by a case of Professor Sedillot. A young soldier, previously in good health, fell from his horse upon one shoulder. A considerable extravasation of blood took place into the axilla, which was partially absorbed, and subsequently formed a firm circumscribed tumour. At length all the symptoms of malignant disease were manifested, the tumour was extirpated, and proved by a microscopic examination, to contain cancer cells. With regard to diagnosis in the living subject, a microscopic examination could, of course, only be directly beneficial when there was an external sore, or some discharge came from the part. The benefit likely to result indirectly from obtaining a clear notion of the nature of cancerous tumours, and separating them from cancroid growths, could not be calculated. Nothing could more strongly prove the unsatisfactory condition of our present acquaintance with the diagnosis of cancer than the statement of Mr Syme, namely, that he had *commenced* an operation believing the tumour to be fibrous, but that *during* the operation he considered it malignant. The inquiry was yet in its infancy, and our present notions with respect to the curability or incurability of the disease, would require to undergo a complete revolution. We were assuming as proved, and making that enter into our definition of cancer, which was the first point to be candidly and impartially investigated. With regard to the evidence of cured cancer in the liver, it rested principally on the observations of Professor Bochdalek of Prague, to which he had alluded. As to the possibility of cancer being capable of undergoing the calcareous transformation, he contended that the series of preparations on the table, afforded proof in the affirmative, as positive as it was in the power of morbid anatomy to furnish.