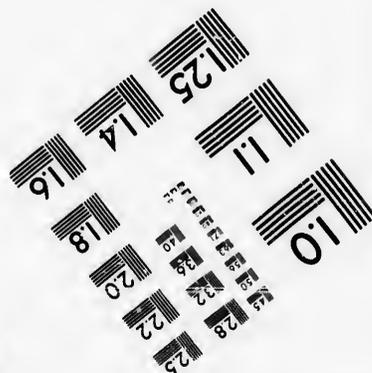
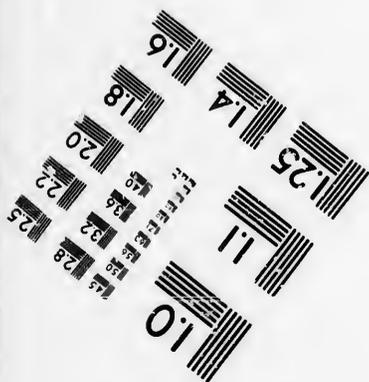
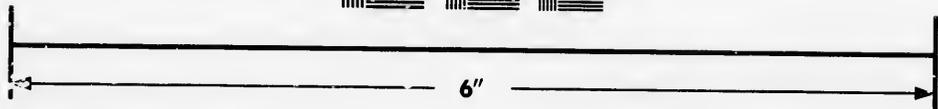
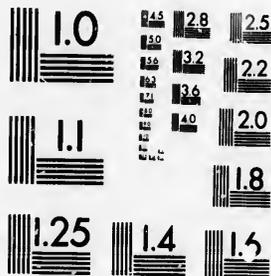


**IMAGE EVALUATION  
TEST TARGET (MT-3)**



**Photographic  
Sciences  
Corporation**

23 WEST MAIN STREET  
WEBSTER, N.Y. 14580  
(716) 872-4503



**CIHM/ICMH  
Microfiche  
Series.**

**CIHM/ICMH  
Collection de  
microfiches.**



Canadian Institute for Historical Microreproductions / Institut canadien de microreproductions historiques



**© 1986**

Technical and Bibliographic Notes/Notes techniques et bibliographiques

The Institute has attempted to obtain the best original copy available for filming. Features of this copy which may be bibliographically unique, which may alter any of the images in the reproduction, or which may significantly change the usual method of filming, are checked below.

L'Institut a microfilmé le meilleur exemplaire qu'il lui a été possible de se procurer. Les détails de cet exemplaire qui sont peut-être uniques du point de vue bibliographique, qui peuvent modifier une image reproduite, ou qui peuvent exiger une modification dans la méthode normale de filmage sont indiqués ci-dessous.

- |                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                            |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <input type="checkbox"/> Coloured covers/<br>Couverture de couleur                                                                                                                                                                                                                                                                             | <input type="checkbox"/> Coloured pages/<br>Pages de couleur                                                                                                                                                                                                                                                                               |
| <input type="checkbox"/> Covers damaged/<br>Couverture endommagée                                                                                                                                                                                                                                                                              | <input type="checkbox"/> Pages damaged/<br>Pages endommagées                                                                                                                                                                                                                                                                               |
| <input type="checkbox"/> Covers restored and/or laminated/<br>Couverture restaurée et/ou pelliculée                                                                                                                                                                                                                                            | <input type="checkbox"/> Pages restored and/or laminated/<br>Pages restaurées et/ou pelliculées                                                                                                                                                                                                                                            |
| <input type="checkbox"/> Cover title missing/<br>Le titre de couverture manque                                                                                                                                                                                                                                                                 | <input checked="" type="checkbox"/> Pages discoloured, stained or foxed/<br>Pages décolorées, tachetées ou piquées                                                                                                                                                                                                                         |
| <input type="checkbox"/> Coloured maps/<br>Cartes géographiques en couleur                                                                                                                                                                                                                                                                     | <input type="checkbox"/> Pages detached/<br>Pages détachées                                                                                                                                                                                                                                                                                |
| <input type="checkbox"/> Coloured ink (i.e. other than blue or black)/<br>Encre de couleur (i.e. autre que bleue ou noire)                                                                                                                                                                                                                     | <input checked="" type="checkbox"/> Showthrough/<br>Transparence                                                                                                                                                                                                                                                                           |
| <input type="checkbox"/> Coloured plates and/or illustrations/<br>Planches et/ou illustrations en couleur                                                                                                                                                                                                                                      | <input type="checkbox"/> Quality of print varies/<br>Qualité inégale de l'impression                                                                                                                                                                                                                                                       |
| <input type="checkbox"/> Bound with other material/<br>Relié avec d'autres documents                                                                                                                                                                                                                                                           | <input type="checkbox"/> Includes supplementary material/<br>Comprend du matériel supplémentaire                                                                                                                                                                                                                                           |
| <input type="checkbox"/> Tight binding may cause shadows or distortion<br>along interior margin/<br>La reliure serrée peut causer de l'ombre ou de la<br>distorsion le long de la marge intérieure                                                                                                                                             | <input type="checkbox"/> Only edition available/<br>Seule édition disponible                                                                                                                                                                                                                                                               |
| <input type="checkbox"/> Blank leaves added during restoration may<br>appear within the text. Whenever possible, these<br>have been omitted from filming/<br>Il se peut que certaines pages blanches ajoutées<br>lors d'une restauration apparaissent dans le texte,<br>mais, lorsque cela était possible, ces pages n'ont<br>pas été filmées. | <input type="checkbox"/> Pages wholly or partially obscured by errata<br>slips, tissues, etc., have been refilmed to<br>ensure the best possible image/<br>Les pages totalement ou partiellement<br>obscurcies par un feuillet d'errata, une pelure,<br>etc., ont été filmées à nouveau de façon à<br>obtenir la meilleure image possible. |
| <input type="checkbox"/> Additional comments:/<br>Commentaires supplémentaires:                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                            |

This item is filmed at the reduction ratio checked below/  
Ce document est filmé au taux de réduction indiqué ci-dessous.

10X	12X	14X	16X	18X	20X	22X	24X	26X	28X	30X	32X
					/						

The copy filmed here has been reproduced thanks to the generosity of:

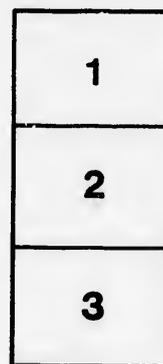
McLennan Library  
McGill University  
Montreal

The images appearing here are the best quality possible considering the condition and legibility of the original copy and in keeping with the filming contract specifications.

Original copies in printed paper covers are filmed beginning with the front cover and ending on the last page with a printed or illustrated impression, or the back cover when appropriate. All other original copies are filmed beginning on the first page with a printed or illustrated impression, and ending on the last page with a printed or illustrated impression.

The last recorded frame on each microfiche shall contain the symbol  $\rightarrow$  (meaning "CONTINUED"), or the symbol  $\nabla$  (meaning "END"), whichever applies.

Maps, plates, charts, etc., may be filmed at different reduction ratios. Those too large to be entirely included in one exposure are filmed beginning in the upper left hand corner, left to right end top to bottom, as many frames as required. The following diagrams illustrate the method:



L'exemplaire filmé fut reproduit grâce à la générosité de:

McLennan Library  
McGill University  
Montreal

Les images suivantes ont été reproduites avec le plus grand soin, compte tenu de la condition et de la netteté de l'exemplaire filmé, et en conformité avec les conditions du contrat de filmage.

Les exemplaires originaux dont la couverture en papier est imprimée sont filmés en commençant par le premier plat et en terminant soit par la dernière page qui comporte une empreinte d'impression ou d'illustration, soit par le second plat, selon le cas. Tous les autres exemplaires originaux sont filmés en commençant par la première page qui comporte une empreinte d'impression ou d'illustration et en terminant par la dernière page qui comporte une telle empreinte.

Un des symboles suivants apparaîtra sur la dernière image de chaque microfiche, selon le cas: le symbole  $\rightarrow$  signifie "A SUIVRE", le symbole  $\nabla$  signifie "FIN".

Les cartes, planches, tableaux, etc., peuvent être filmés à des taux de réduction différents. Lorsque le document est trop grand pour être reproduit en un seul cliché, il est filmé à partir de l'angle supérieur gauche, de gauche à droite, et de haut en bas, en prenant le nombre d'images nécessaire. Les diagrammes suivants illustrent la méthode.

re  
détails  
es du  
modifier  
er une  
filmage

es

errata  
to

pelure,  
in à



32X

# EXAMPLES OF MYELOID TUMOR :

WITH

GENERAL OBSERVATIONS UPON THAT FORM OF GROWTH,

BY R. P. HOWARD, M.D.,

Prof. Clinical Medicine, McGill College, etc.

(Read before the Medical Students' Society of McGill College.)

GENTLEMEN,—The great progress which has been made in the pathology of morbid growths, within the past few years, and which has resulted mainly from two causes, the employment of the microscope in the examination of morbid structures and the great attention which has been paid to clinical investigation, has tended to alter materially our modes of regarding and classifying tumors. Formerly, and not very long ago, all tumors were either malignant or benign; and an individual specimen was placed in either class, according to its naked-eye characters, and the result of its removal. If it recurred either at the original site or remotely from it, it was called malignant, even though composed apparently of fibrous tissue or cartilage. When the microscope began to be employed in the examination of structure, and it was discovered that those growths endowed with the greatest proclivity to recur and implicate parts far removed from the primary seat of disease, generally contained an abundance of *cells with large nuclei*, it was inferred that certain cells of specific character were the infallible test of malignancy, and tumors were pronounced malignant or benign, according as they exhibited or not, the alleged specific cells under the microscope.

More extended and accurate investigation, however, is now leading pathologists to abandon the idea that there is one structural element—a cell—always capable of recognition by the practised eye—which is alone endowed with the fatal gift of malignancy, and to admit that growths composed of other elements, as nuclei, fibres, cartilage cells, and cells quite unlike the so-called “cancer-cells,” may have most, if not all, the attributes of malignancy—such as rapid and enormous growth, tendency to frequent recurrence both locally and remotely, aptness to ulcerate and protrude, exhaustion of the vital powers, etc. Nay, even, that well marked encephaloid tumors may exhibit no cells; but merely nuclei possessed of no special characters. They are now recognising that the term malignant is purely relative,—that there are degrees of malignancy,—that some growths are highly so, others slightly so, and that between these there are all grades of malignancy. Thus there are growths which only occasionally and exceptionally recur after removal; others which habitually and repeatedly recur, though only or chiefly at the original site;

others again which recur both locally and remotely ; and yet others which not only recur locally and remotely, but infiltrate and absorb into their own mass the tissues in which they occur and the adjoining textures too, whether hard or soft.

Our knowledge is not yet sufficiently accurate and comprehensive to enable us to fix the *relative degrees* of malignancy possessed by the several varieties of tumors ; but, if we should attempt to draw up a table of morbid growths, classified and arranged on that principle, perhaps, the following would approach the truth in its general outline, though, of course, it would not be accurate in all its details :—

*Scale of tumors according to their degrees of malignancy.*

Malignant .....	{	Encephaloid Colloid Scirrhus Osteoid Epithelial	} Cancer.
Semi-malignant (they recur locally and remotely) .....	{	Cartilaginous. Myeloid. Malignant-fibrous. Recurring-fibroid. Fibro-plastic.	
Locally malignant (they recur locally) .....	{	Fibro-nucleated. Proliferous cysts containing vascular growths. Glandular tumors.	
Innocent.....	{	Fibro-cellular. Fibrous. Proliferous cysts containing cysts. Barren cysts. Osseous. Fatty.	

You will perceive that I retain the fibro-plastic as a distinct form. I do so, because, it is not quite certain whether the tumors included under that designation by Lebert, can all be assigned either to the myeloid, recurring-toroid, fibro-cellular, or fibrous class. To refer now to this table: the growths which occupy its extreme ends certainly differ very widely from each other, so that we have no hesitation in calling a fatty tumor innocent, and an encephaloid malignant ; still, the several groups pass insensibly into each other, and tumors having identity of structure, may be found occupying places both in the benign class and the locally malignant, or in the semi-malignant and the malignant.

The transition of the semi-malignant into the malignant is well illustrated by the cartilaginous tumor, which occasionally not only grows with great rapidity to an enormous size, but recurs when removed, and appears both in the lymphatics and in remote organs, as the lungs. Epithelioma, on the other hand, placed amongst the malignant, has little tendency to propagate itself, unless to contiguous parts ; it occasionally does not recur when removed, and but rarely invades remote parts.

The fibro-plastic tumors placed at the lower end of the semi-malignant group, are plainly intermediate between that group and the locally malignant ; for although they now and then recur after removal, it is generally only at the original site, and but seldom in remote parts.

Respecting the fibro-nucleated, enough is not yet known to justify their being placed elsewhere than in the locally malignant group; but, it is extremely probable, that, like the last two in the semi-malignant group, they will be found now and then to invade parts remote from that in which they first appear, and thus further corroborate the view I am now advocating.

Lastly, on this topic, while fibrous, osseous tumors and proliferous cysts, are generally quite benign or innocent, sometimes they exhibit some of the characters of malignancy, and thus come to occupy places in two distinct groups of the scale.

It must then be admitted, that, tumors like all natural objects, do not admit of a classification inherently and absolutely correct; for the members of each group, by very imperceptible transitions, blend with the groups placed next in the scale, whether above or below them, and the chief utility of classifying them, is the practical convenience, resulting from collecting the individual varieties into groups, possessing several characters in common.

I have made these few remarks on tumors, by way of preparing you for some of the peculiarities of an interesting variety of morbid growth, which has only of late years been recognized, and described as a distinct variety.

Early in December last, my friend, Dr. Butler, of Waterloo, requested me to examine with him a patient of his, the particulars of whose case he thus describes:—

“L. H. K., farmer, aged 42 years, of sound constitution and temperate habits, consulted me for disease of the right knee, in the early part of last May. He informed me that in March, 1857, fourteen months previously, he had received a slight blow from a sleigh-tongue, upon the external aspect of the knee, a little above the condyle. A slight puffiness at the spot was the only immediate result, and it was not until a few weeks had elapsed that he began to experience slight pain at the injured part, which, however, was not severe enough to prevent his pursuing his usual avocations through the spring and summer. In early autumn, he found it difficult to walk upon an uneven surface without an increase of pain and some lameness. On several occasions, an incautious step or accidental blow on the limb, very much augmented the pain and lameness for a few days; but this augmentation would subside and leave him in his former condition. During the fall, and part of the winter, an irregular practitioner exhausted his resources in vain attempts to cure the disease. In February, 1858, Mr. K. once more injured his knee, by slipping, and since then has been unable to leave his room or bear the weight of his body upon the member.

I found the joint considerably swollen; fluctuation perceptible, particularly above, on each side of the patella; entire absence of pain on moving the joint in every direction it was capable of, or on forcible pressure of the articular surfaces against each other; no tenderness except over a small spot on the external condyle of the femur; he suffered a pain which he describes as of a ‘burning or scalding character encircling the upper part of the knee-joint.’ The pain was not influenced by the weather, and was most severe during the day. The treat-

ment employed consisted of local counter-irritants, blisters, tincture of iodine, an issue; mercurial, and iodide of potassium, in alterative doses for some time. The joint was put up in the manner recommended by Scott; and again, immobility was secured by the double-inclined plane. At first, the pain was relieved completely by the issue, and, although it returned in the head of the femur in October last, and was accompanied by gradual increase of the swelling, it did not regain its previous degree. All means having failed to arrest the disease, I now made an exploratory puncture of the joint with a fine trocar, and obtained chiefly a sanguineous-looking followed by a thin straw-coloured fluid, a portion of which was forwarded by letter to yourself, for microscopic examination; but you have informed me you never received it."

At the consultation, we found Mr. K. in very good health for a person confined so long to the house (10 months); thin, but not much emaciated; slightly anxious-looking, but hopeful; pulse rather frequent, small and quick; digestive functions well performed, and appetite fair; no cough, and nothing abnormal discovered on physical examination of chest.

Since October last, he has suffered rather severe pain in the head of the femur or across the upper part of the knee, especially in the afternoons; but it has been easily alleviated by a small dose of morphia, and has never been of an intolerable or very severe character.

The right knee presents a smooth uniform enlargement, extending from the head of the tibia upwards, say four inches on the femur. It has very much the contour seen in thickening of the synovial membrane of this joint. The integument of the part is of the same colour as the rest of the limb; a few moderately large veins are visible beneath it; there is no tenderness at any point unless very firm pressure is made over the external condyle. A somewhat elastic, somewhat doughy sensation is experienced in handling this part, especially on each side of the patella. Over the external condyle, the swelling is more yielding, and here two distinct plates of bones can be felt, apparently formed in the substance of the external lateral ligament, or in the thickened fibrous tissue of the part. Pressure on these osseous fragments easily forced them inwards, and proved that the lower one, situate at the lowest part of the outer condyle, is irregular, while the upper one, extending from the latter in the direction of the external ligament, is long and narrow. No distinct fluctuation present anywhere; but it is somewhat simulated at this portion of the knee, and the opening made by the trocar is here situated. The patella does not float, and is but slightly moveable. The popliteal space is filled up by a firm material. No pain whatever, is experienced on percussing the heel or forcibly rotating the tibia on the femur. The leg is partially flexed on the thigh, and admits of some movements of flexion and extension, but not to any great extent; it has been kept in this position for several months. He cannot bear any weight on the toes of the right foot, and in raising the limb from the bed he grasps the leg in his hands to aid the pelvic and crural muscles.

Careful manipulation proves the tumefaction to involve, chiefly, if not exclusively, the condyles and lower part of the shaft of the femur, and to

be r  
orifi  
and,  
mea  
thigh  
In  
that  
tion  
prob  
opin  
the f  
M  
from  
cond  
artic  
injur  
as if  
serve  
snita  
the  
altho  
derec  
symp  
surfa  
ated  
enlar  
and  
was  
the o  
symp  
cond  
Th  
mort  
bran  
Th  
was  
of se  
gum  
with  
tendi  
the r  
of m  
M  
betw  
these  
cond  
whic  
char  
bone  
irreg

be really an enlargement of that bone. The probe passed through the orifice made by the trocar, appears to enter the condyles of the femur, and, at the depth of 3 inches, touches bare bone. The diseased knee measures 3 inches more than its fellow; there is much wasting of the thigh and leg.

In discussing the nature of the case with Dr. Butler, I agreed with him that it was not an ordinary case of chronic articular disease with ulceration of the cartilages and disorganization of the joint, although there was probably some thickening of the synovial membrane; and gave it as my opinion, that it was probably an instance of myeloid disease of the end of the femur; but admitted the possibility of its being malignant disease.

My reasons for this opinion were the following: the blow received from the sleigh-tongue was not on the joint, but a little above the outer condyle; it was not immediately followed by swelling and tenderness of the articulation, suggestive of synovitis; nor, for some weeks, by pain at the injured part. At no time throughout the case had the pain been severe, as if the articulation were becoming disorganized; the fluctuation observed when Dr. B. first took charge of the case, disappeared under suitable treatment, but there was no corresponding improvement in the other symptoms, and the enlargement continued to augment; although the disease had originated 21 months previously and had rendered the leg useless and incapable of bearing any weight, the ordinary symptoms of ulceration of the cartilages and caries of the articular surfaces, were absent, and had never been present; the trocar had evacuated chiefly blood and a thin straw-coloured fluid, very unlike pus; the enlargement, when seen by me, involved very plainly the condyles and a portion of the shaft of the femur, rather than the knee joint; it was a circumscribed globular enlargement of the end of the bone, and the outer part of the tumor contained moveable, yielding bony laminae, a symptom which I had before noticed in a case of myeloid disease of the condyles of the femur.

These features indicated disease of the femur of the nature of a morbid growth, with slight secondary implication of the synovial membrane of the joint.

The circumstances which appeared to render it likely that the tumor was not carcinomatous, were its comparatively slow growth; the absence of severe pain throughout his illness; the unimplicated state of the integument, glands and internal organs; his tolerably fair state of health, without any distinct indications of cachexia; the enlargement not extending along the bone so as to form an oval, elongated tumor, which is the rule in carcinoma of bone and osteoid cancer; and the non-existence of malignant disease in his family.

Malignant disease being thus excluded, it remained chiefly to decide between cartilaginous and myeloid tumor, for next to the carcinomatous, these are far the most frequent varieties of tumor found involving the condyles of the femur. It was not possible to say with positiveness, which of these growths was present in this instance, as their general characters are very similar—but, inasmuch as cartilaginous tumors of long bones, almost invariably begin on the outside of the bone and form irregularly nodulated tumors, as they consequently must, very seldom

indeed, have osseous plates embedded, or set as it were in a yielding membrane, forming their exterior—and would be more likely, when punctured, to be found dry, or to emit a tenacious jelly-like or synovial looking, rather than a sanguineous fluid, I thought it highly probable that we had to do with a myeloid tumor. This species, begins almost exclusively in the cancellous tissue within the ends of long bones, and causes a gradual expansion of the osseous walls into a smooth globular shell; the ossific matter may be at points deficient, and replaced by a fibrous membrane, the periosteum, thus giving rise to a sign which I am disposed to regard as of much value as an indication of myeloid disease, viz: a distinct yielding of the tumor's walls under pressure, and a sensation, as if thin plates of bone, not unlike an egg-shell, yielded or even broke under the fingers. Myeloid tumors, moreover, being highly vascular and containing chiefly a substance of the consistence of flesh or spleen, would not only yield blood when punctured, but would permit a probe to be easily passed into their centre without its impinging on hard, resisting bone or cartilage.

An example of myeloid tumor of the condyles of the femur which I had an opportunity of seeing in the General Hospital of this city, under the care of my colleague, Dr. Scott, in the spring of 1854, also presented the last three signs, and indeed, corresponded in almost every other feature with the case forming the subject of this paper.

The patient was a tolerably healthy looking man, about 40 years of age, who, for a considerable time (some two years I believe) had been the subject of an affection of the lower end of the left femur, which had been long and unsuccessfully treated as disease of the knee, in Glengarry, and was then sent to this city for further advice.

There was a smooth, uniform enlargement of the member above the articulation; this enlargement was most manifest over the external condyle; at which part it was somewhat yielding and obscurely fluctuating; careful manipulation detected at the lower part of the external condyle a thin shell of bone, which crackled under the fingers, and was continuous with the more yielding wall of the enlargement higher up. The day before the removal of the limb, an exploratory puncture was made, when blood alone escaped, and the probe readily traversed the heart of the tumor and touched its opposite wall, which was formed by the internal condyle. The movements of the joint were very little impaired, and not attended with pain. It proved to be a myeloid tumor, originating within the condyles of the femur, and causing at first their expansion, and ultimately the absorption of a portion of the outer side of the external condyle—but not implicating the articulation.

This case instantly recurred to my recollection when examining Dr. Butler's patient, and influenced my decision very materially. Removal of the limb above the tumor was recommended, and a fortnight subsequently, the patient having consented, Dr. B. amputated at the centre of the thigh, and kindly sent me the diseased parts for examination.

The integument covering the enlarged knee of natural color; very few moderately large veins being visible in it. The joint is much enlarged, and has a circumference of 16 inches on the level of the upper part of the patella. The enlargement extends upwards to about the extreme

limi  
mus  
of  
with  
semi  
had  
in c  
depr  
a pa  
dens  
bula  
dyle  
on it  
pose  
mem  
a lay  
seven  
mem  
exten  
the t  
tumo  
the p  
inst  
ticul  
mem  
toler  
adhe  
ing t  
ther  
Ci  
cond  
A  
natin  
bran  
with  
with  
the t  
sistin  
the i  
tumo  
three  
conte  
consi  
lines  
in thi  
white  
trave  
by w  
consi  
terial

limit of the reflection of the synovial membrane of the joint. The external muscles are wasted and rather pale about the articulation; some portions of them at their attachments to the shaft, where it becomes continuous with the tumor are much altered in structure, being dense, indurated, semi-transparent, and infiltrated with a serous fluid; they cut as if they had undergone lardaceous degeneration. At two or three points, where in contact with the anterior surface of the tumor, the muscle to the depth of  $\frac{1}{4}$  to  $\frac{1}{2}$  an inch has been transformed into a pulpy detritus of a pale brick color, all trace of fibre being lost. A good deal of very dense fat in the popliteal space. On removing all the soft parts, a globular tumor is exposed, occupying the lower end of the femur, its condyles, and a portion of the shaft. This tumor, of a reddish brown hue on its anterior aspect, and a dark bluish colour on its posterior, is composed almost completely of a thin shell of bone anteriorly, a thin, firm membrane posteriorly, with the healthy looking articular cartilage and a layer of the adjacent osseous tissue forming its lower boundary. At several points besides the posterior aspect, the bony shell is replaced by membrane, and this is most remarkable over the lateral aspect of the external condyle, where two moveable plates of bone, continuous with the thickened periosteum, forms about a third part of the outer wall of the tumor. The trocar had penetrated the tumor upon this aspect, and the probe introduced during life had here entered the cavity of the tumor, instead of the joint. The growth had not implicated the joint; the articular surfaces of which are free of ulceration and caries; the synovial membrane, however, is somewhat thickened, and covered by a pinkish, tolerably firm, though easily broken down exudation, which has produced adhesion of the patella to the femur, and the other opposed surfaces forming the articulation to each other. No fluid exists in the joint, indeed there is no place for any.

Circumference of the tumor above the condyles  $12\frac{5}{8}$  inches, around the condyles, including the adherent patella,  $12\frac{1}{8}$  inches.

A longitudinal section of tumor exposed the shaft of the femur terminating abruptly, as though broken off, half an inch within the osteo-membranous tumor. It now appears that the walls of the tumor are continuous with the periosteum of the bone, and apparently formed by or covered with it. Along the upper and anterior aspects of the internal half of the tumor there, is unequally distributed bony matter, evidently consisting of the expanded condyle, and perhaps of bone, newly formed from the inner surface of the periosteum; the latter, occupied the surface of the tumor, and the former, the lower extremity (articular). Besides three or four osseous laminae projecting inwards from the walls, the contents consisted chiefly of a deep-red, soft substance, generally of consistence of soft butter, but interspersed with irregularly branched lines of tougher and firmer consistence; various shades of redness exist in this material, and it is streaked here and there with opaque yellowish white lines and spots, so as to remind one of a hepatized portion of lung traversed here and there by bronchi. This material, save where mottled by whitish streaks, resembles very much the spleen pulp in color and consistence when that organ is slightly softened. Besides this red material, there is another of the colour of the *marrow* in the shaft, but softer;

it occupies a series of oval, cyst-like expansions or cells in the bone, forming the antero-superior aspect of the tumor. These loculi in the expanded bony portions of the tumor are numerous, and vary in size from those capable of holding a pea, to one capable of holding a bantam's egg. The largest one contains a mixture of the red and the whitish material. The former greatly preponderating. Indeed, the oval globular arrangement is remarkable throughout the tumor, and the large central mass of pulp, is itself egg-shaped, and may be as easily turned out, leaving the wall of the tumor free, as a kernel is out of a nut.

The medullary canal of the femur for about one inch and a half from the cyst is filled with ossific, cancellated tissue.

The red pulp, examined microscopically, exhibited an abundance of large cells, enclosing numerous large oval nuclei; most of these poly-nucleated cells were circular or oval, and only two or three appeared to have caudate processes; indeed, they resembled the mother cells figured by Lebert (plate xiv. figs 5 and 9), rather than those delineated by Mr. Gray, Drs. Gull, Bristow, and others. In the white portions of the tumor, the many nucleated cells contained fatty granules, as though undergoing fatty degeneration. Many large cells also, contained numerous pigment granules. Innumerable fusiform cells, or elongated nuclei, were scattered throughout the tumor.

The term myeloid was proposed by Mr. Paget,\* for a class of tumors first described by M. Lebert in 1845, under the title "*Tumeurs fibro-plastiques ou sarcomateuses*."† The latter pathologist included under this head growths whose histological structure consisted chiefly of elongated fibre-cells, like those found in granulations, or contained in addition, "mother cells," i. e. cells containing several distinct nuclei, identical in character with those of the diploe and marrow of foetal bones. The former pathologist regards growths composed chiefly of the many-nucleated cells as quite distinct in nature from these made up of elongated fibre-cells, although, he admits that both these structures usually co-exist in the myeloid growth; and to obviate objections, I have not, except in one instance, tabulated any tumor which did not contain the poly-nucleated cells in sufficient abundance to justify the application of myeloid; the exceptional case however, in its clinical history and anatomical naked-eye characters admits of no other allocation.

It is not my intention to furnish you with an account in detail of the history,—clinical, pathological and histological, of myeloid tumors—this you will find in the works of the authors above mentioned, and in two excellent papers, in the Medico-Chirurgical Transactions for 1856, and Guy's Hospital Reports for 1857; the former by Mr. Henry Gray; the latter by Dr. Virkils.

I purpose merely giving the results of my examination of some of the features presented by 38 specimens of the disease recorded by competent authorities. The table appended to this paper supplies the materials employed, and the sources whence they were derived. There are four additional cases tabulated separately, as some doubt exists as to whether they were purely myeloid growths or not.

\* Lectures on Surgical Pathology, American edition, p. 446.

† Physiologie Pathologique, tome 2, p. 120.

1  
sex  
sex  
2  
allu  
the  
larg  
caus  
or fa  
strai  
3  
foll

4.  
as c  
whil  
mye  
unde  
(\* )  
On t  
with  
i. e.  
cent  
twec  
nuc  
cases  
whil  
20 a  
that  
cer  
chan  
abou

5.  
thes  
table  
thes  
case  
Ev  
was  
to p

1. Myeloid tumors appear to occur with about equal frequency in both sexes; thus, of the 38 cases, 15 were males, 18 females, and in five the sex is not stated.

2. An apparent exciting cause is mentioned in 10 instances; it is not alluded to in 15, and is said to be absent in 13. In the 10, an injury of the part is the cause assigned, which is about  $\frac{1}{4}$ th of the whole number, a larger proportion than is assigned to injuries ( $\frac{1}{4}$ th) by Mr. Paget in the causation of cancer. The nature of the injury was in 7, either a blow or fall, or succession of blows, and in the other 3, respectively, a sprain, a strain, and a slight injury while swinging.

3. The frequency of myeloid disease at various epochs of life was as follows:

YEARS.	
From 12 to 20—	9 cases.
20 to 30—	14 “
30 to 40—	4 “
40 to 50—	2 “
50 to 60—	0 “
60 to 70—	0 “
70 to 74—	1 “
—	
30	

4. It is an interesting feature in the history of myeloid tumors of bone as compared with cancerous, that the former occur chiefly before 40, while the latter are almost as frequent after 40; thus, of the 30 cases of myeloid tumor in which the ages are shewn, 27, *i. e.* 90 per cent were under 40; 3, *i. e.* 10 per cent were over 40. Of 54 cases of cancer of bone (\*) 33, *i. e.* 61 per cent were under 40; 21, *i. e.* 40 per cent were over 40. On the other hand, it is not a little singular that cancer is of equal frequency with myeloid in early youth, say under 20: thus, of 54 cases of cancer, 21, *i. e.* 30 per cent were under 20; of 30 cases of myeloid, 9 *i. e.* 30 per cent were under 20. If the comparison be extended to the decade between 20 and 30, it will be found that myeloid disease of bone becomes much more frequent at that period of life than cancerous. Thus, of 30 cases of myeloid, 14, *i. e.* 47 per cent occurred between 20 and 30 while of 54 cases of cancer, only 11, *i. e.* 20 per cent occurred between, 20 and 30. Hence, if such limited numbers may be relied on, it follows, that if the patient be over 40, the chances that a tumor of a bone is cancer rather than myeloid are as 40 to 10; if between 20 and 30, the chances are in favor of myeloid, as 47 to 20; but if under 20, they are about equal.

5. The proclivity of the bones, especially of the long bones, and of these, their articular extremities, to myeloid tumors is shown by the table; thus, in 34 of the 38 cases, the bones were the parts affected; of these, 25 were long bones, or 73 per cent; and of the whole 25 the disease occupied the articular ends.

Even in the 4 cases in which osseous tissue was not involved, the growth was attached to the periosteum 3 times, and the dura-mater (analogous to periosteum) once.

---

(\*). Paget's Surg. Pathology, p. 55.

The special sites of the tumors were as follows :—

Condyles of femur.....	in 12
Head of tibia.....	in 7
Upper extremity of fibula.....	in 2
Lower extremity of fibula.....	in 1
Head of humerus.....	in 2
Lower end of radius.....	in 1
Superior maxilla.....	in 4
Inferior maxilla.....	in 2
Scapula.....	in 1
Patella.....	in 1
Vault skull.....	in 1
Dura Mater.....	in 1
About great toe.....	in 1
Outside radius at wrist.....	in 1
Periosteum of tibia near ankle.....	in 1

---

38

In one instance, (c 28) the growth had extended from the femur into the articulation and involved the patella and tibia; and in another, (c 38), the synovial cavity and space between the articular surfaces of the femur and tibia was occupied by the growth, and yet the cartilage covering those surfaces was intact. Myeloid disease, like carcinomatous, is extremely little prone to implicate cartilage.

6. The irritation excited by the growth in the head of the bone may, and frequently does excite inflammation in the contiguous articulation, but this is of an adhesive, rather than of a suppurative and destructive character. In the specimen now on the table, the cavity of the joint was obliterated by tolerably firm adhesions. In one of Sir. B. Brodie's cases, (c 7), old adhesions were found between the articular surfaces. The circumstance that the inflammation of the joint which supervenes upon myeloid disease of the articular extremity of a bone, is adhesive rather than suppurative, is not peculiar to that growth, for it has been observed to obtain in cancer invading the same locality, and is no doubt also the rule in cartilaginous tumors.

7. The cases collected furnish no positive information as to the duration of life when myeloid disease is permitted to pursue its course without surgical interference. Case 34, in which the growth engaged the dura-mater, terminated fatally two months after the first manifestation of the head symptoms; case 24, in which the cranial vault was the site of the growth, closed with head symptoms three years after the first indications of the disease; how long these patients might have lived, had not the growths interfered with the functions of an organ essential to life, it is impossible to say; case 39, besides being of a doubtful nature, had its natural course modified, probably much accelerated by 35appings, 6 injections with iodine, and 2 setons.

8. An examination of these cases however, proves that the average duration of life after removal of myeloid tumors far exceeds its average duration after removal of cancer. Mr. Paget assigns as the average duration of life under these circumstances, 28 months for medullary and 49 months for scirrhous cancer. But of 24 persons who survived the removal of myeloid tumors, and the duration of whose disease is

stated, I find that the whole number but two, were alive when the cases were published, and had then individually attained an average of rather more than 5½ years from the first indications of the disease. If the two deaths be omitted in the calculation, then the 22 individuals were alive five years and eight months, on the average, after the disease had manifested itself by symptoms. How much longer they may have continued to live, is a problem for future solution.

9. It is significant moreover to observe, that the cause of death in one at least of the two defunct persons, was of an accidental nature; he succumbed to phthisis five years after the removal of the disease, and 5½ years after its first discovery (c 1). Acute pleurisy, which succeeded an operation performed "a few days" previously, induced the fatal termination in the other case, but myeloid tumors were also found in the lungs (37).

10. So far as we yet know, myeloid resemble innocent tumors in their little proneness to recur after removal. The first recorded instance of the re-appearance of pure myeloid tumor as myeloid, was published in the Medical Times and Gazette last January (c 37). About two years after the amputation of the patient's leg for myeloid disease of the head of the fibula, he discovered three tumors on the stump, which on excision proved to be myeloid; and at his death, which followed the removal of the tumors in a few days, the lungs were each found occupied by three or four myeloid tumors, the largest the size of the heart.

It is true, that it is only in 19 of the whole 38 cases of myeloid that it is stated whether the disease recurred or not, and in some of these, the period that had elapsed between the removal of the growth and the report of the case, appears rather short to have afforded the opportunity for recurrence of the disease; however, two-thirds of the nineteen patients survived an average period of three years and five months without any return of the disease. The following table shows the interval which elapsed without recurrence between the removal and the date of publication of each case:

No. of cases.		Interval.
6	2	1 month
	3	2 "
	1	6 "
12	1	1½ years
	2	2 "
	1	2½ "
	1	3 "
	1	4 "
2	2	5 "
	1	6 "
	1	7 "
	2	10 "

18

Comparing pure myeloid with cancerous tumors, it may be said, that whereas recurrence is the almost invariable rule in the latter, it is the rare exception in the former; and while the great malignancy of cancer is shown in the rapidity of its recurrence after the removal, the interval

being 7 months in medullary cancer and 14 months (\*) for scirrhus, the comparative innocence of myeloid is proved by its non-recurrence after an average interval of 26 months.

11. That malignancy is but a comparative term, as remarked at the commencement of this paper, is shewn by the disease now under consideration. In one instance, related by a competent observer, Dr. Wilks of Guy's Hospital, a pure myeloid tumor recurred in the stump two years after the ablation of the original disease, and similar pathological structures were found in the lungs; the disease in fact, re-appeared both locally and remotely. The lymphatics were, however, not affected, the patient exhibited no signs of cachexia, and his death was due to acute pleurisy. (c 37).

Mr. Paget also, relates a case in which, while the microscopic and naked-eye characters of the tumor were those of myeloid, it exhibited some features of malignancy, for besides the presence of "four small masses of similar substance in the lungs," a "similar material was diffused in *one* of the cervical glands (c 39). In this instance then, one lymphatic gland was contaminated, as well as the lungs; still, the patient exhibited no cachexia, but was of "healthy appearance."

12. Our present knowledge of myeloid tumors not only proves that malignancy is not peculiar to cancer, although both terms are generally regarded as equivalents in pathological meaning, but tends to show further, (A) that the same growth may contain the comparatively innocent myeloid cells and the so-called specific cancer cells, and, (B) that a tumor apparently myeloid in structure, or, (C) mixed myeloid and fibro-plastic, may after removal be succeeded by genuine cancer both at the original site and in the internal viscera.

(A) The same growth may contain "myeloid" and "cancer-cells." A lad, *ætat* 18, had his leg amputated for a growth from the head of the fibula, which, in its general appearance, resembled other myeloid tumors"; but "it contained a large amount of bone mixed with the soft material." "Much of the myeloid matter was of a milky white colour, and to the naked eye resembled cancer. The microscope, however, showed true myeloid cells, but at the same time some very *large single nucleated cells*, elsewhere called "cancer cells" by the reporter. A few months after, the boy became paralysed, and growths, also containing *myeloid* and *cancer* cells, were found in the spine and in the lungs. This patient was markedly cachectic (c 42).

(B.) I have said a tumor apparently myeloid may be followed after removal by genuine cancer, both locally and remotely.

Mr. Paget records the history of a tumor of the mamma, which he concluded after careful examination to be "a myeloid tumor, suppurated or possibly mingled with cancer." Six months after its removal a tumor re-appeared in the axilla, grew large, ulcerated, bled freely, and was really open cancer (c 41).

(C.) A mixed fibro-plastic and myeloid tumor may likewise be followed by cancer. A remarkable case is related by Mr. Hutchinson of a

(\*) This rate is obtained by calculation made from Mr. Paget's table at p. 525 of his work, American edition.

tumor consisting of fibro-plastic and myeloid structures, the former largely predominating however, and involving the head of the humerus, the removal of which was succeeded in 10 weeks by genuine medullary cancer, both at the site of the previous operation and in the lungs. The lymphatic glands, although enlarged, contained no cells resembling cancer cells (c 40.) This last example is a further illustration of the difficulty of a rigidly accurate classification, for in the original tumor, two histological elements, now considered quite distinct and different, the fibro-plastic and the myeloid co-existed; teaching us in fact, that tumors in their structure are often compound, and are competent therefore to the occupancy of one, two, or three locations in the scale of classification, according as one or other of their histological elements is regarded as their essential characteristic.

12. If case 39, about whose real nature Mr. Paget expresses some doubt (not that it wanted the naked eye and microscopic characters of myeloid, but that it differed from all that was then known of that form of tumor), be regarded as genuine myeloid, then there are two instances on record in which that growth implicated the internal organs as well as the external, and one in which a lymphatic gland in addition was involved, *i. e.* two out of 39 cases.

#### RECAPITULATION OF CONCLUSIONS RESPECTING MYELOID TUMORS.

1. They occur with about equal frequency in both sexes.
2. Local injury was the apparent exciting cause of the growths in about one-fourth the entire number, and in 13 of the 38 cases no cause could be assigned.
3. Myeloid tumors occur chiefly before 30 years of age, for 76 per cent of the cases were under that age, and 90 per cent were under 40; they may occur at as advanced an age as 74.
3. While myeloid and cancerous tumors are of about equal frequency under 20, myeloid are more frequent than cancerous in the ratio of 47 to 20 at the decade between 20 and 30.
5. The bones are of all parts of the body most prone to myeloid growths; in about  $\frac{3}{4}$ ths of the cases it is the long bones which are implicated; and in perhaps all cases, the disease begins in and is confined to the articular extremities of such bones.
6. The condyles of the femur is the part of the body most obnoxious to these tumors, probably the head of the tibia next, and the superior maxilla next. Several other localities exhibit about equal susceptibility, viz: the head of the humerus, the head of the fibula and the inferior maxilla.
7. No bone is probably exempt.
8. Of the soft parts, it is chiefly the fibrous tissues, and especially those in proximity to bones and articulations, that are most liable to myeloid growths; but they have been rarely seen in the lungs, in the neck, in a lymphatic gland, and in the mamma; in the last site, it was probably associated with cancer.
9. These growths very seldom extend into an articulation; this event having been noticed only twice in 25 cases, in which the disease occupied the articular extremity of long bones: even should the articulation be entered by the growth, the cartilages are not usually implicated.

10. Secondary inflammation occasionally is excited in the contiguous articulation, but it is of an adhesive, rather than a suppurative character.

11. Data are wanting to determine the average duration of life when myeloid tumors are not interfered with.

12. The average duration of life after removal of myeloid tumors *far exceeds* its average duration after removal of cancerous; a large proportion of the subjects of the growth were alive five years and eighth months subsequently to the operation.

13. Of two deaths which followed removal of the tumor at the respective intervals of five and two years, the cause was accidental and not connected with the disease.

14. So far as we know, pure myeloid disease exhibits little proneness to recur after removal, there being only one instance yet recorded of that event (c 37); (\*) but, then, in only half the cases collected is the subject of recurrence mentioned, and in many others sufficient time had scarcely elapsed to justify any opinion.

15. While medullary cancer recurs on the average in 7 months, and scirrhus cancer in 14, myeloid tumor in 18 instances, had not returned after an average interval of 26 months, and in 12 of these or two-thirds, the period of non-recurrence, was three years and five months.

16. Myeloid may exceptionally recur as myeloid both locally and in remote organs; the lymphatics enjoying immunity, and there being no cachexia.

17. It may co-exist in an external part, in the lungs and in a lymphatic gland, and even prove fatal without the presence of constitutional cachexia (c 39).

18. The same growth may comprise both myeloid cells and so-called "cancer cells," although in general appearance resembling myeloid tumors, and be succeeded by similar compound tumors in the lungs and spine, with marked cachexia (c 42.)

19. A tumor apparently myeloid, even on microscopic examination, may be followed after removal by genuine open cancer in the vicinity of the original tumor (c 41).

20. A tumor composed chiefly of fibro-plastic structure and partly of myeloid, may be attended with enlargement of the glands, and when removed, be rapidly succeeded by cancer at the site of removal and in the lungs, the glands though enlarged not being cancerous (c 40).

21. Of 42 examples of growths apparently myeloid, two of which, however, probably contained cancer cells, and one fibro-plastic elements; there were five in which the growth either recurred after removal, or had involved remote internal organs.

10 Bonaventure street, March 11th, 1859.

(\*) I purposely have omitted some cases of myeloid disease of the maxilla which re-appeared after removal, apparently in consequence of having been only partly excised.

TABLE OF MYELOID TUMORS.

No.	AGE.	SEX.	SITE PRIMARY GROWTH.	CAUSE.	SURVIVED 1ST REMOVAL.	SURVIVED 1ST DISCOVERY.	RECURRENCE.	DATE LAST REMOVAL.	AUTHORITY.	ARTICULATION ADJOINING.
1	18	M.	Head humerus.	Strain 3 months before appearance of tumor.	5 1/2 years.	5 1/2 years.	None up to death, June, '58 of Phthisis.	June, '53.	Mr. Simon and Dr. Bristow, Path. Trans., vol. vii, p. 351.	Healthy.
2	22	F.	Head tibia.	None known.	Not stated.	18 months before pain felt over instep, then extended gradually to head tibia and swelling perceived.	Not stated.	April, '56.	Mr. Jones, Med. Times and Gazette, Feb., '59, p. 172. Mr. Charles Hawkins, Path. Trans. vol. vii, p. 355.	Disease had not excluded info joint. Not stated if healthy.
3	30	M.	Lower Maxilla.	None mentioned.	Not stated.	14 or 15 months when last seen removed.	None 2 mos. after operation.	Nov., '56.	Mr. Hutchinson— <i>Zo.</i> vol. viii, p. 380.	.....
4	15	M.	Condyles femur.	Do.	Do.	{ Died 10 days after operation.	.....	April, '57.	Mr. Thos. Bryant " p. 387.	Unaffected.
5	.....	.....	Head tibia.	Do.	{ Not known, alive 2 years afterwards.	{ 4 mos. when removed.	Do.	.....	{ Sir R. Brodie and { Mr. Gray, Med. Chir. { Trans., p. vol. 39.	Do.
6	18	F.	Head humerus.	Do.	{ Not stated.	{ 6 1/2 years and then alive.	None 2 years after.	.....	Do.	Do.
7	25	M.	Condyles femur.	Do.	{ Alive 5 years after.	{ 6 1/2 years and then alive.	None 5 years after.	.....	Do.	{ Adhesions between articular surfaces.
8	30	F.	Head tibia.	After a fall.	Not stated.	Not stated.	Not stated.	.....	Mr. Lawrence & Gray, Med. Chir. Trans., v. 39.	Not stated.
9	25	M.	Condyles femur.	Blow.	Alive 3 yrs. after.	Alive 5 yrs. after.	None 3 years after.	Dec., '54.	Mr. Cook and Dr. Wilks, Gay's Hosp. Reports, vol. iv.	{ Cartilages normal, nothing more stated.
10	33	F.	Do.	Fall on knee.	Alive 1 mo. after.	Alive 14 mo. after.	None for 1 month.	Sept., '56.	Do.	Do.
11	.....	.....	Do.	.....	.....	.....	.....	.....	Mr. Key and Dr. Wilks, Guy's Hos. Rep. v. iv.	Not stated.
12	24	F.	Patella.	Blow.	Not known; left well.	Not known; left well.	Not known.	Feb., '42.	Mr. B. Cooper and Dr. Wilks, Gay's Hosp. Rep., vol. iv.	Do.
13	Young	.....	Head tibia.	Not stated.	.....	.....	.....	.....	Dr. Wilks, Do.	Not stated.

TABLE OF MYELOID TUMORS.

No.	AGE.	SEX.	SITE PRIMARY GROWTH.	CAUSE.	SURVIVED 1ST REMOVAL.	SURVIVED 1ST DISCOVERY.	RECURRENCE.	DATE LAST REMOVAL.	AUTHORITY.	ARTICULATION ADJOINING.
14									Do.	Do.
15									Do.	Healthy.
16	30	M.	Head fibula.	No cause known.	Left in 1 month.	Alive 6 mos. after.	Not known after a month.	Nov., '56.	Do. Do. Do. Mr. Cook and Dr. Wilks, Gif's Hosp. Rep., vol. IV.	Cartilage healthy.
17	27	F.	Acromion process.	None known; fell 15 months afterwards.	(2 yrs. after tumor appeared.) but symptomatic (14 previously.)	None for 1 1/2 years.	None.	Jan., '56.	Do. Do. Do.	.....
18	36	M.	Lower end radius.	None known; subjected to rheumatism.	Died in 3 weeks.	7 months.	None.	Sept., '40.	Mr. Kcy, & Do.	Healthy
19	42	M.	Condyles femur.	Blow.	{ Alive 2 months } after.	2 yrs. after blow.	None for 2 mos.	Dec., '58.	Drs. Butler and R. P. Howard, Med. Chronicle, March, 1839.	{ Adhesions between articular surface
20	40	M.	Do.	Not stated.	Not stated.	{ Supposed between 2 and 3 years, but not certain.	{ Thought to have died of cholera 5 or 6 mos. after.	March, '54.	Dr. Scott and R. P. Howard, Med. Chronicle, March, 1839.	Healthy.
21	M.	18	{ Lower maxilla-symphysis.	Do.	Alive 6 yrs. after.	6 1/2 years.	None for 6 years.		Mr. Staunley, Paget's surg. Path., p. 450, Am. Ed.	.....
22	F.	21	Alveoli of superior maxilla.	Do.	Alive 2 yrs. after.	Alive 3 yrs. after.	None for 2 years.		Mr. Lawrence.—16.	.....
23	F.	22	Superior maxilla.	Do.	{ Alive about 2 1/2 } years.	{ Alive about 3 1/2 } years after.	{ None for 2 1/2 yrs } after complete removal.	April, '51.	Do. Do.	.....
24	M.	15	Vault skull.	Repeated blows.	.....	{ 3 years; diseased with head symptoms.	None.	Nov., '42.	Mr. Stanley, Do.	.....
25	F.	14	Inferior maxilla.	None known.	Not stated.	Not stated.	None.		Lebert's Phy. Path., vol. ii, p. 144.	.....
26			Do.	.....	.....	.....	.....		Do, p. 144.	.....
27	F.	23	Condyles femur and shaft.	No cause.	Not stated.	{ Alive 2 yrs. after swelling noticed, and 2 1/2 after pain was first felt.	Not stated.	Dec., '56.	Mr. B. Childs and Dr. Bristow, Path. Trans., vol. vii.	{ A few old adhesions between surfaces.
28	M.	36	{ Condyles femur, patella and head tibia.	Sprain.	{ 10 years and not said to be dead,	16 years.	None for 10 years.		Sir B. Brodie and Mr. Gray, Med. Chirurg. Trans., vol. 39.	{ Disease had extended into joint and attached to patella and tibia.

29 26 F. Condyles femur. Not stated. Not stated. Mr. Ward and Mr. A. Healthy; except

Sir B. Brodie and Mr. Gray, Med. Chirurg. and anatomical Traus., vol. 39. }  
 Disease had extended into joint and attacked patella and tibia.

None for 10 years.

{ 10 years and not said to be dead, }  
 { first felt. }  
 { 16 years. }

{ Condyles femur, patella and head tibia. }  
 { Sprain. }

M.

36

28

29	F.	Condyles femur.	Not stated.	Not stated.	{ Not stated: had it 5 years before removal? }	None for 10 years.	May, '54.	Mr. Ward and Mr. Adams, Path. Traus. vol. v.	{ Healthy; except absorption of cartilage to extent of 3d. No' stated. }
30	M.	Condyles femur.	No injury.	Alive 10 years after.	Alive 14 years after.	None for 10 years.	1844.	Mr. P. Hewitt.— <i>Ib.</i>	
31	F.	D. matter over pectrous bone.	None apparent.	Not stated.	{ Died of pneumonia about 2 mos. after the manifestation of removal. }	Head symptoms.		Lebert; Phy. Path. t. 2, p. 148.	
32	F.	About great toe, not involg bone.	None apparent.	Not stated.	20 years before removal.	None for 7 years.	Dec., '38.	Do.	
33	F.	Periosteum, lower part leg.	None apparent.	Alive 7 yrs. after.	Alive 11 years after.	None for 6 mos.	March, '56	Mr. Shaw; Patholog. Traus., vol. vii.	Not stated.
34	F.	Head tibia.	Appeared 2 mos. after an injury.	Alive 6 mos. after.	Alive 3 1/2 years.	None for 4 years.		Messrs. Parker, Paget and Gray; Medical Chir. Traus., vol. 39.	Do.
35	M.	Lower end fibula.	None apparent.	Alive 4 yrs. after.	Alive 5 yrs. after.	None for 2 months after complete removal, 3 myeloid tumors in stump.	Dec., '51.	Mr. B. Cooper; Med. Times & Gaz., Feb., 1852, p. 214.	Healthy.
36	F.	Attached to lower end radius.	Do.	Alive 2 mos. after.	Alive 12 to 15 years after.			Mr. Cook & Dr. Wilks; Med. Times & Gaz., Jan., 1859, p. 71.	Cartilage perfect.
37	M.	Head fibula.	Do.	{ Alive 2 1/2 years died few days after 2d removal (val of pleurisy } 10 days when reported.	Alive 8 or 9 mos. after.		Jan., '59.	Mr. Simon and Sidney Jones.— <i>Ib.</i> , Feb., '59 p. 171.	{ Growth occupied joint, but cartilages intact }
38	F.	Condyles femur.	Frequent blows.						

CASES OF A SOMEWHAT DOUBTFUL NATURE.

39	M.	Neck beneath sterno-mastoid.	None known.	Not removed.	1 year.	{ Died exhausted; 4 small myeloid masses in lungs, and diffused in 1 cerocal gland } { 10 weeks after removal recur- red as cancer at site of wound and in lungs.— } { Glands enlarged, but not cancerous. }		Mr. Paget; Surg. Path., p. 454.	
40	F.	Head humerus.	Appeared 1 1/2 mos. After fracture and dislocation.	Died 5 mos. after.	5 1/2 years.			Mr. Hutchinson; Pat. Traus., vol. viii.	Not stated.
41	F.	Mamma.	Not stated.	Died 21 months after.	2 1/2 years.	6 months as open cancer of axilla.		Paget; Sur. Path.	
42	M.	Head fibula.	None known.	Died few m'ths after.	{ Operated on 6 mos. after discovery of tumor, and 2-12 yrs. after first occurrence of pain. }		May, '57.	Mr. Cocks & Dr. Wilks; Guy's Hos. Reports, vol. iii., p. 175, and vol. iv., p. 31.	Not stated.

