

**A contribution to the surgical pathology of sero-sanguineous cysts in the neck and axilla / by John Birkett.**

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OF *Authors*  
*Compd.*  
SERO-SANGUINEOUS CYSTS IN THE  
NECK AND AXILLA. *11*

BY  
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THE cases, the details of which I am about to relate, belong to the class of cystic tumours. That is to say, the tumour consists of a fibrous cyst or capsule which contains serous fluid. The principal cyst may be associated with numerous smaller cysts, with which it is sometimes in direct communication. But in other cases this is not observed.

The serum, coagulable by heat and nitric acid, sometimes contains a constituent which coagulates spontaneously after the fluid is cold. The colour of the pure serum is a pale amber tint, but it varies between dark yellow, brown, or red according to the quantity of blood mixed with it; and, as will be observed hereafter, it varies at different times when taken out of the same cyst.

This brief reference to facts will suffice to identify the cases to be related with those termed "Hydrocele of the



neck" by some authors, "Sero-cystic disease" by others, and Hygromata by foreign pathologists.

The first recorded case which I have been able to find was published by Damen at the Hague, in 1780. The illustration accompanying it is interesting in relation to one I shall describe, and which is doubtless a repetition of it at the early stage.

J. P. Maunoir was the next surgeon who called attention to these cases, under the name of "Hydrocele of the neck;" since then German, French, and English surgeons have, from time to time, added to our knowledge of this disease under various designations.

Mr. Lawrence and Mr. Cæsar Hawkins have contributed to the 'Transactions' of this Society, cases which they have observed; but in consequence, probably, of the rarity of the disease, little knowledge has since been acquired.

Some cases were published by myself in 'Guy's Hospital Reports' for 1860; Mr. Holmes described some in 'The Lancet,' in 1864; and Mr. Thomas Smith, in 1866, recorded some cases of congenital cysts cured by the introduction of a single thread seton.

The only complete monograph on this disease was published at Berlin in 1855, by Dr. E. Gurlt, who, with true German erudition, has quoted a large number of cases ('*Über die Cystengeschwülste des Halses*,' Berlin, 1855).

The following examples occurred in my own practice, and, with the exception of the early history of Case 3, have never been published.

CASE 1.—In April, 1862, a healthy, temperate man, æt. 28, was admitted into Guy's Hospital under my care. He was a native of Pembrokeshire, and by trade a joiner.

Five or six years before, when about twenty-two years old, he accidentally felt a small lump in the right axilla, which, during its slow growth, had never caused pain.

In that region there was a very moveable tumour which glided away from direct pressure, and could only be distinctly seen when fixed by compressing the surrounding structures



methodically. The growth seemed to slip away into the subscapular region, between the border of the latissimus dorsi and the ribs. When fixed, the integuments were irregular over its surface with elevations and depressions exactly resembling the appearances produced by a fatty growth. Such, indeed, was the diagnosis of the tumour given by all who examined it. The integuments were quite healthy. The man readily assented to its removal.

I made a vertical incision over the centre of the tumour parallel with the anterior border of the latissimus dorsi muscle, and exposed, instead of fat, a mass of cysts with fluid serous contents. With the finger, the handle of the scalpel and now and then its cutting edge to divide the more resisting fibrous connections, I had isolated the larger part of the growth when a cyst burst, about three or four ounces of amber-coloured, clear serum escaped, and the walls collapsed. After this, the growth when removed looked like a mass of fibre tissue. One artery was secured which ran across the growth and accompanied an intercosto-humeral nerve which was divided. The bleeding was insignificant. The wound was dressed an hour after the operation, and it quickly healed, although more serous fluid ran from it than usually happens after ordinary wounds.

The new growth consisted of a cyst with bulging sides, forming cystiform projections (see Plate IV). The elementary fibre tissues were the contractile and filamentary. I attempted to distend the cysts by injecting spirit and water, but in consequence of the large quantity of the contractile fibre element they soon collapsed. Their cavity was lined with a smooth, bluish white serous membrane. The preparation from which the drawing was made was obtained by stuffing the cysts and hardening the tissues in dilute spirit.

CASE 2.—A healthy boy, æt 7, was brought to me in October, 1860, on account of a tumour which occupied the right axillary and subscapular regions.

When he was *a year old* a small lump was accidentally felt on the right side of the chest, below the clavicle, midway



between the nipple and shoulder. The integuments were not affected. It slowly increased and, four years after first observing it, a puncture was made, and about three fourths of a pint of colourless fluid removed. The cyst refilled, and in February, 1859, about the same quantity of serum as above described was withdrawn. Neither of these operations was followed by any constitutional disturbance. The fluid again collected, and when I next examined the case the following conditions existed.

There was a large swelling occupying the right axilla, extending forwards to the mammilla, and backwards between the scapula and thorax. It was easily pressed in every direction, and, when the arm was brought against the side of the chest, the swelling bulged forwards and backwards. The wall of the cyst was not very tense, so that its thickness could be determined by nipping it up between the finger and thumb. The wavy, vibratory movement of a circumscribed collection of fluid was visible and palpable throughout the swelling, when its surface was gently tapped with the fingers. The translucency of the swelling was very apparent. The patient never experienced any pain in the part. It was easily ascertained that the cyst extended beneath the pectoral muscle in front, and between the scapula and the thorax behind. Above it reached the clavicle, between which bone and the tumour the axillary vessels and nerves were situated.

1st Operation, October, 1860.—I performed paracentesis of the cyst, and removed about twelve ounces of amber-coloured, clear fluid in which laminæ of cholestearine floated. Heat coagulated it into a solid mass.

A second very small cyst was felt above and attached to the collapsed one.

2nd Operation, September, 1861.—At this date the swelling being inconveniently large, I removed about three ounces and a half of serum possessing the characters above described. When the cyst was collapsed, I could feel a solid mass in the armpit. On this account I delayed injecting the cyst with tincture of iodine, the treatment I had proposed to adopt.



3rd Operation, March, 1862.—In March, 1862, four ounces of serum of dark brown colour were removed. After standing and becoming cold, there appeared in a few hours a spontaneous formation of a fibrinous mass which entangled a few blood corpuscles, and was, therefore, of a faint pinkish tint. A solid mass, larger than I had before felt, remained in the axilla, the precise composition of which I was unable to ascertain. Considering that iodine injections would fail to eradicate the disease, I now proposed to cut it out.

After a consultation with Mr. Cæsar Hawkins, Mr. Paget, and Dr. Harcourt, the medical attendant of the family, at which the perfect innocence of the growth was recognised, it was decided to delay all active treatment for a time.

The cyst soon refilled again, and the size of the tumour being troublesome I proposed to excise it. The consent of the parents of the child having been obtained, I undertook the operation on October 1st, 1862. The patient being fully under the influence of chloroform, I made a single linear incision along the prominent surface of the cyst, from above downwards, the lowermost border of that structure being first cleared of the surrounding tissues. Each arterial vessel was tied with silk as soon as cut. They were generally small but numerous. Having reached the solid part of the tumour, which was deeply seated in the axilla, it was found more easy to dissect it out after having emptied the cyst; although the cyst itself was dissected from its adhesions when full. As soon as the tumour was completely detached from its fibrous connections it appeared as if the external respiratory nerve ran through it, for it hung by it only. However, by careful dissection this important nerve was detached from its posterior surface without injury; although, at first sight, it appeared to be deeply imbedded in its substance. The axillary hollow, its muscles, vessels, and nerves were all clearly exposed when the tumour was removed from it. Only a few minute filaments of the intercosto-humeral nerves were cut, as was subsequently discovered by numbness of small patches of skin on the side of the chest. The operation occupied more than an hour.



*Progress after Operation.*—He suffered very much from chloroform nausea, and after a slight feverish attack on the third day a vesicular eruption appeared on the right upper extremity, which in a few days became pustular and then dried off. A great quantity of serous fluid ran from the wound; which was dressed with lint, the edges being held together by adhesive plaister. At the end of fourteen days all the ligatures had been taken away and the boy was convalescent. On the sixteenth day from the operation he left London, the wound being nearly healed. Slight supuration appeared after this, but in a month the wound was perfectly cicatrized.

At the date of writing this history, more than five years having elapsed since the treatment of the case, there is no re-appearance of the growth, and the patient is robust and healthy.

*Description of the Tumour* (see Plate V, fig. 1).—The mass removed consisted of the principal cyst, a more solid portion, numerous lymphatic glands with their vessels, a large quantity of connective tissue and fat.

1. The cyst was very thin and, when filled with fluid, more bulky than the rest. The largest part of its outer surface was loosely connected with the collateral muscles, blood-vessels, and nerves; but as it approached the solid part of the tumour, to which it was closely attached at one end, thin outlying portions of a new growth, consisting of cells, were firmly united with it. The surface of its lining membrane was uniformly smooth, although streaked here and there with lines resembling fine cicatrices. I could not demonstrate any distinct communication between this large cavity and the cellular structure composing the more solid portion.

2. The cellular division was about one third the size of the cyst, when filled, and circumscribed by a delicate fibrous envelope. Sections display its remarkable cellular composition. The whole of it is broken up into innumerable cell-spaces communicating with one another, the membranous walls of the cells being as delicate as gold-beater's skin.

Several lymphatic glands and their vascular plexus were



firmly united to the growth, the largest of which is seen on the preparation; the rest were removed.

CASE 3.—A healthy-looking, well-formed man, æt. 20, was admitted into Guy's Hospital under my care in December, 1867, on account of a large tumour occupying the right side of the neck and axilla. It was painless and simply inconvenient from its bulk. Even the movements of the shoulder joint were not embarrassed.

*Soon after birth* his mother observed a small tumour in the neck just *above* the right clavicle, about the size of a horse bean. He was a remarkably healthy child. The swelling increased, and by degrees descended behind the clavicle and appeared in the axilla.

I saw this boy in 1850, then three years old, with Mr. Hugh Rump, of Wells, Norfolk. At my suggestion a trocar and canula were inserted at its lower part, and about nine ounces of serum flowed out. The fluid was clear, limpid, of a pale amber colour, and contained a material which coagulated shortly after being withdrawn. The region in which the tumour was situated was strapped over with adhesive plaister, a compress and bandage being placed in the axilla and over the shoulder. Severe constitutional effects were produced by this operation. Great prostration ensued on the second day after this simple operation, and for a short time life was in jeopardy. The child appeared to be in the condition of a person suffering from hæmorrhage, although *not a drop of blood was lost* during the operation. The failing health of the child necessitated the removal of the bandages in about a fortnight from the operation, which being done, the cyst was found to be refilling, and in a short time it was quite as distended with fluid as it had been prior to the operation. The child, however, recovered, and I heard no more of him until the autumn of 1867, when he entered Guy's Hospital in the hope of having the tumour removed.

The accompanying illustrations (see Plates VI and VII) preclude the necessity of describing the external configuration of the tumour at that time. To the touch it was clear that



the contents were fluid. Pressure on the supra-clavicular tumour made that one below the clavicle very tense, and *vice versa*. The clavicle was traceable in front of the swelling, and the axillary artery could be felt passing along the front of it. The right radial pulse scarcely differed from the left.

Judging from the previous history of the case, that the tumour was composed of a cyst filled with serum, I proposed to reduce its dimensions by repeated paracentesis, in the hope that when confined within smaller limits I might be able to excise it.

The first puncture was made in the tumour at the outer and lower part, where a slight furrow appeared below the border of the pectoralis major. Only fluid containing a large proportion of blood flowed out. It appeared at first sight, indeed, to be pure blood and of a bright red hue like the colour of arterial. This surprised me. However, twenty-three ounces were removed without any constitutional effect arising, although the man was carefully watched. He was not under the influence of chloroform.

At intervals of four days, six, three, and again four, from each separate operation, twenty-three fluid ounces, forty, fifty, and forty-five were drawn off through a canula. So that in a period of seventeen days, five punctures having been made, 181 fluid ounces, or  $1\frac{1}{8}$  gallons of the fluid, were abstracted. The punctures were made at different parts of the walls; two below the clavicle, three above it. Not the slightest constitutional disturbance followed either operation. The tumour remained for some time more or less flaccid after each, and after the evacuation of fifty ounces, that division of it above the clavicle almost disappeared. But the cyst slowly refilled always.

The characters of the fluid, alike on every occasion, were as follows:—

First operation—quantity, fl. oz. 23; sp. gr., when warm, 1028; sp. gr., when cold, 1035.

There was no coagulation after twenty-four hours' rest. The red globules had subsided and left clear serum in the



upper part of a graduated glass measure in the following proportions :

Of serum, fl. oz. 10 : sp. gr., cold 1016. Of red globules and serum, fl. oz. 13 : sp. gr. cold 1050.

The serum was of a dark-brown colour with a greenish hue when examined with the light shining upon it. It solidified entirely by heat and acid.

The blood-corpuscles arranged themselves into rolls when the warm fluid was examined under the microscope, exactly as they do in ordinary blood, and they appeared to be well shaped, generally.

This patient was in the hospital twenty-nine days, during which time he was allowed nourishing diet, and tonics were administered. But he evidently lost strength, although he was not disposed to admit it. His pulse became weak ; his cheeks and lips pallid ; and he was not so fat as when admitted. He was very anxious, however, that more active measures should be taken to effect a cure, and, although I explained to him that great risk to life would attend any attempt to do so, I believe he would have submitted to any procedure. But at this conjuncture he was required to return to the country on domestic affairs.

I desire now, as briefly as possible, to invite the attention of the Fellows to a few inferences suggested by the facts adduced.

First, as to the true nature of the growth in the first and second case. There are writers who advocate the doctrine that the serous cysts of the neck and other parts "appear to be transformations of vascular tumours" ('Lect. on Surg. Path.,' by James Paget, F.R.S., vol. ii, p. 38). That opinion was first expressed by Mr. Lawrence in a clinical lecture on congenital cystic tumours removed by him from the thigh, neck, trunk, mouth, and lips. Nearly at the end of the lecture we read, "I merely set before you the conclusions deduced by Mr. Coote," who made "a careful examination of the parts removed in the cases now related" ('Med. Times,' 1850, pp. 559, 561). Now, if the conditions stated by Mr. Paget to exist "of the close connection which some of these cysts have



with large deep-seated veins, the occasional opening of blood-vessels into their cavities, and their sometimes distinctly forming portions of vascular *nævi*" (Paget, vol. ii, p. 38) be taken as conclusive evidence that these congenital cystic growths are to be regarded as "transformations" of the tissues forming *nævi*, or of erectile structure, these two tumours cannot be placed in the category of such growths. Because there were no large blood-vessels in connection with the cysts, nor was there any portion of a vascular *nævus* attached to either of them, the cystiform structure which a superficial observer might regard as identical with that of a *nævus* is really not so.

True *nævus* structure so intimately resembles that composing the corpora cavernosa penis as scarcely to be distinguishable from it; and, moreover, enjoys great vascularity like it. Now, the structure of the cellular part of both the tumours, cases 1 and 2 (see Plate IV and V, fig. 1), does not resemble either the one or the other.

To afford the members of this meeting an opportunity to form their own judgment on this anatomical point, sections of a subcutaneous *nævus* (Plate V, fig. 2), of the corpora cavernosa, and the tumour, No. 2 (Plate V, fig. 1), are suspended in a glass jar for comparison.

The *nævus* tissue shows a very fine, delicate, reticular, arrangement of fibrous trabeculæ, just like that of the corpora cavernosa; whilst the section of tumour No. 2 displays thin lamellæ of fibre tissue, perfectly different in form and disposition to either of the other sections. No two structures could well be more dissimilar. Further, every surgeon knows the peculiarity of the bleeding which follows an incision of a *nævus*; no such bleeding ensued in either of the cases described. In the first growth there was no portion resembling *nævus* in the slightest degree. In a true subcutaneous *nævus*, removed by myself from a child's back, immediately one of the collateral veins was cut the whole growth collapsed, and I was enabled to make the preparation exhibited by injecting spirit into it from that vessel.

The conclusion, therefore, which I am disposed to adopt is



that this cystiform growth should be regarded as a peculiar development of its own kind and individuality; basing this opinion upon its structure and vascularity, both of which are so remarkably dissimilar from any nævus I have examined.

At the same time, I would not deny that genuine nævi may undergo those changes described as cystiform; that they may retain intimate communications with neighbouring blood-vessels, or, that large veins lying contiguous to them may be cut during the operation for their removal.

Secondly, as regards the treatment of the cases by excision of the tumour. The repetition of the operation of paracentesis of the cyst having failed to effect a permanent cure of the tumour in the second case, and the fact being evident that a large growth existed in contiguity with the cyst, rendered it incumbent to adopt some method that would ensure the effectual eradication of the complaint.

I objected to the use of irritating injections on account of the existence of the more solid growth, which I thought would not be cured by that means, and the removal of which, by a cutting operation, if it should be required, might be made more difficult after the inflammation excited by them. Besides, the probable event of prolonged suppuration, causing great depression of the vital powers, was not overlooked in the consideration of the case.

Judging from the results of the operation performed in cases 1 and 2, the age of the two patients being considered, the method adopted seems to have been the correct one. Other plans of treatment would, doubtless, be preferable in infancy and early childhood, of which the cases published by Mr. Thomas Smith, before referred to, are good illustrations.

The accompaniment of numerous and enlarged lymphatic glands—a fact alluded to by Mr. Cæsar Hawkins and other writers—formed a striking feature in the second case; and their removal, without causing any untoward symptoms, is worthy of a passing notice.

The third case doubtless belongs to the class of congenital serous cysts, as the mother observed the cervical tumour *soon after the birth of the infant*. Its precise nature was



ascertained when the boy had passed his third year, by taking clear pale yellow coagulable serum from the cyst *without* the slightest admixture of *blood*. The next puncture, made seventeen years afterwards, revealed an important addition to the contents of the cyst. The fluid was to all appearances pure blood. But it differed from blood in the absence of its characteristic phenomenon, spontaneous coagulation. Some very interesting observations "On Tumours containing Fluid Blood" have been published by Mr. W. Marrant Baker, in which the causes interfering with its coagulation are ably stated. The limits of this paper will not allow the consideration of this subject here, but the fluid removed from this man agreed probably with that described by Mr. Baker as follows: "The fluid is not simply uncoagulated blood, but a mixture of serum (derived probably, not only from extravasated blood, but secreted also by surrounding parts) with blood-cells, diffused colouring matter, and disintegrated fibrine" ('St. Bartholomew's Hospital Reports,' vol. i, p. 218).

There was no reason to conclude that this cyst was lined with adherent fibrine; on the contrary, it felt, when partially empty, exceedingly thin and membranous.

I have been able to find only two cases resembling this one. That by Damen, already quoted, exactly corresponding in site and outline, was not punctured, therefore we are ignorant of the nature of its contents. Another, recorded by Gurlt, identical with mine as regards locality and form, when punctured, the age of the man being then eighteen, contained bloody serum like it. Therefore, the case I have now related to this meeting I believe to be unique as regards the circumstance of the cyst, containing, in childhood, pure serum, subsequently, in manhood, serum mingled with blood.

The source of the blood is, at present, involved in mystery; whether it flows from a single arterial or venous vessel, or oozes from a parietal growth, are facts only to be ascertained by dissection. The moment when the blood first mixed with the serum is also a subject for conjecture, although the description of the effects produced by the first operation by



Mr. Rump, who narrowly watched the child, and wrote them years before he knew the cyst contained any blood, would justify the inference that the bleeding into the cyst occurred soon after the first puncture was made.

In conclusion, I have merely to add, that I trust the cases now related may contribute to the knowledge of sero-sanguineous cysts as regards their pathology and treatment.

#### APPENDIX.

October 12th, 1868.—At this date I am informed by Mr. Rump that the patient has quite recovered his health and strength, his general health being vastly improved since he left the hospital. The tumour which was above the clavicle has now entirely disappeared (by gravitation), but the axillary and subscapular tumours are larger; they produce, however, little inconvenience.



## DESCRIPTION OF PLATES IV, V, VI, AND VII.

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### PLATE IV.

Cystiform growth from the axilla, removed April 15th, 1862, from the right axillary region of a man, J. P—, æt. 28. It had been observed five or six years, and slowly increased without pain. (See page 187.)

### PLATE V.

Fig. 1.—Section of the more solid part of the tumour excised from the axilla in Case 2. (See page 190.)

Fig. 2.—Section of a subcutaneous nævus removed from the thoracic region of a child. The trabecular structure is well displayed, and closely resembles that of corpora cavernosa et spongiosum penis. (See page 194.)

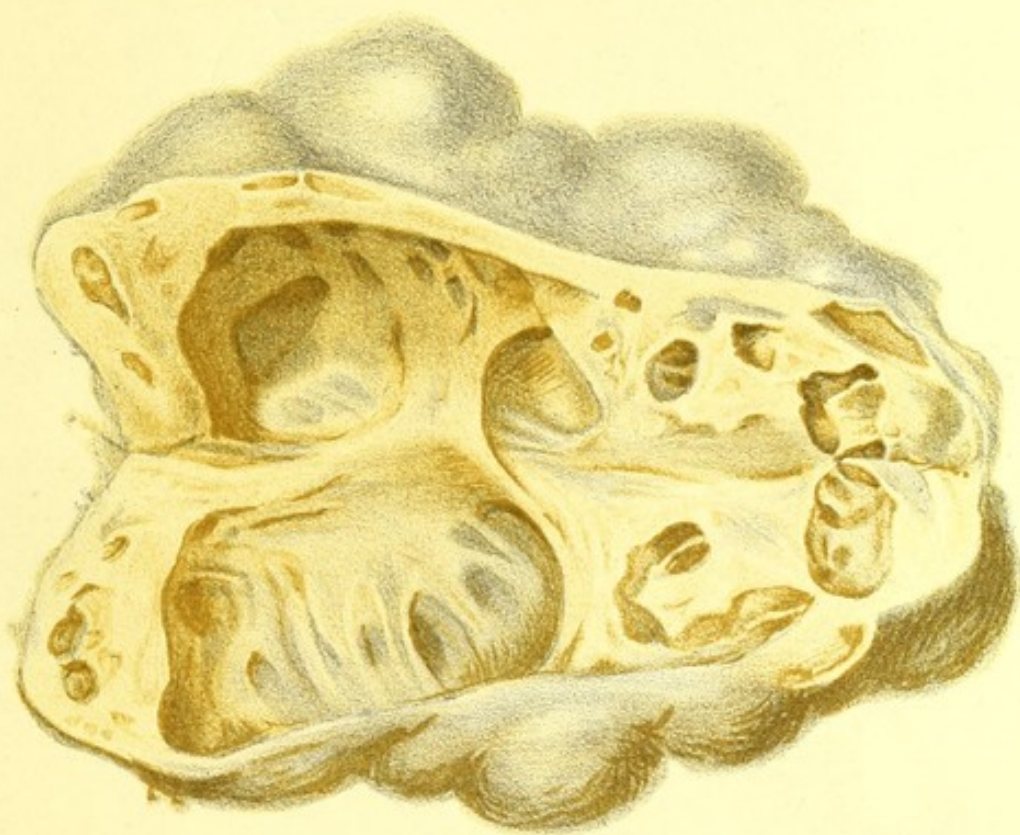
### PLATE VI.

Sero-sanguineous cyst in the neck and axilla. Case of J. C—, æt. 20. Front view. The cyst, as represented in the plate, was tapped, and at five punctures, in seventeen days, above one gallon of serum mixed with a large quantity of blood was removed, but without any striking results, and the tumour remained of its original bulk. (See page 191.)

### PLATE VII.

Ditto, ditto, back view.







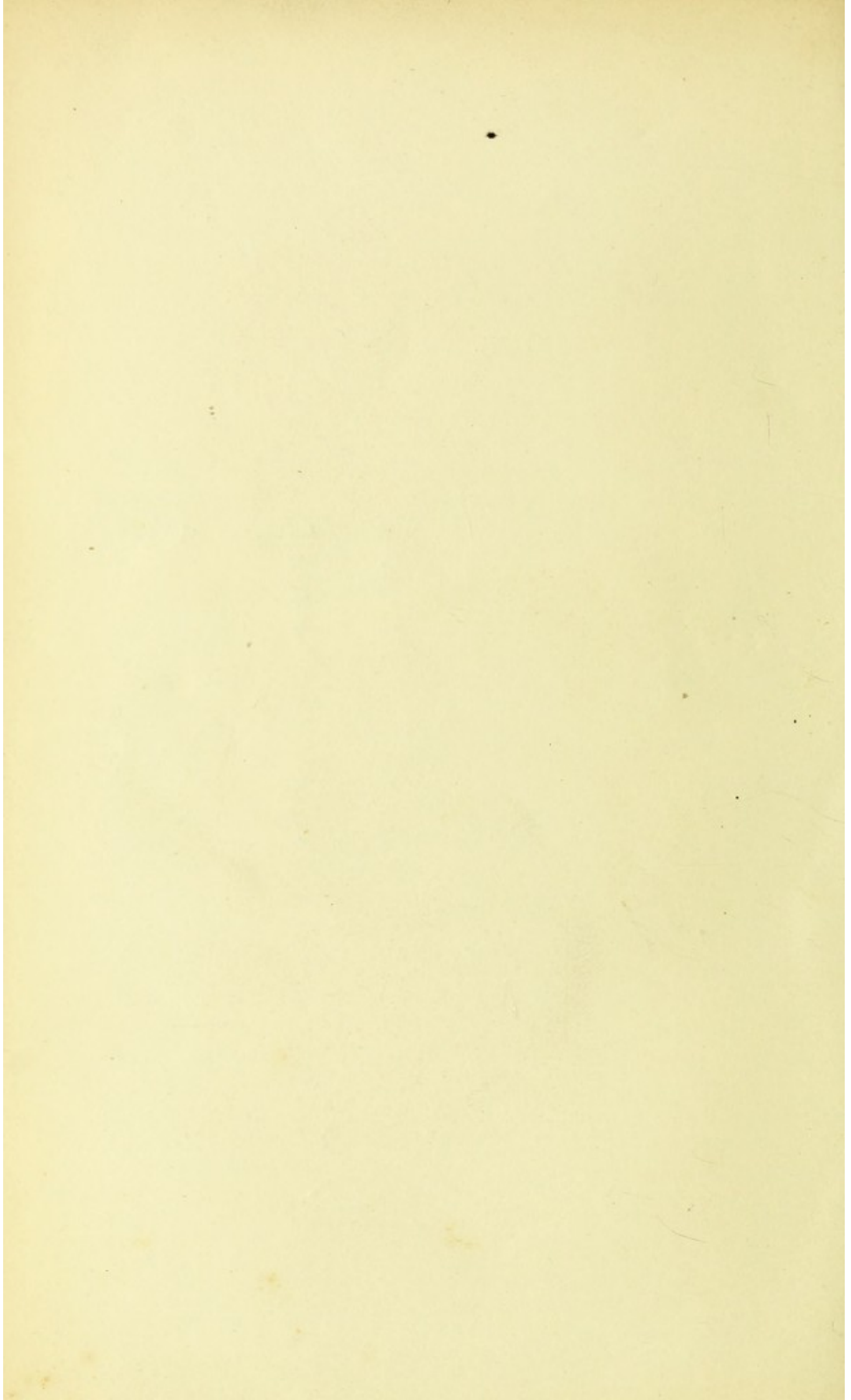




Fig 2.

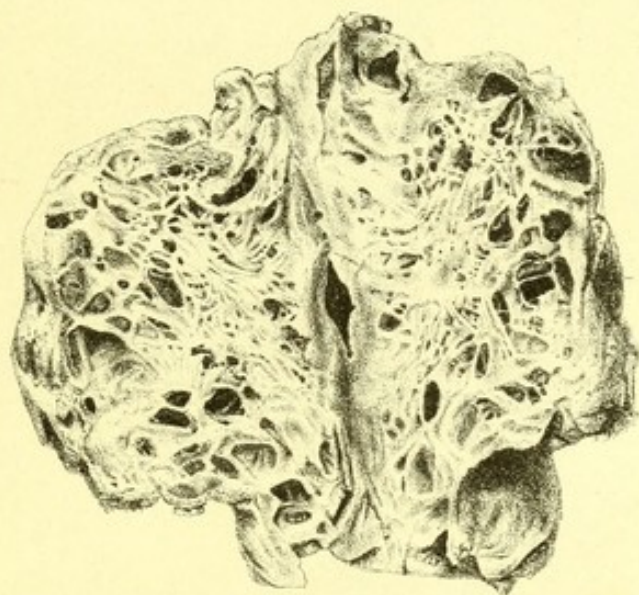


Fig 1.

