tion introduces into a bad stricture often proves of the greatest and most permanent advantage in cases suited for this proceeding.

Fourthly, that in wounds of the urethra—made either accidentally or in the course of surgical operations, which, by the nature of circumstances, have to be treated without due regard for urine drainage—means should be more systematically taken to prevent the development of urine fever, as well as the formation of a dense contractile cicatrix. I found, after repeated trials, in the case of internal urethrotomies, that much might be done by irrigation, locally and through the agency of drugs, which were largely eliminated by the urine in promoting these objects.

Lastly, we must remember that the prevention of stricture is within our scope. If, as I have urged, the dense cicatricial material which constitutes a stricture is the result of urine leakage occurring in the process of a chronic inflammatory affection in the interior of the canal in one instance, whilst in another it is brought about by the constant contact of the excretion with an internal wound, as in accidental rupture of the urethra, then the importance in one case of irrigation as a part of the treatment, and free urine drainage in the other, is at once evident.

It is, however, in connection with ruptures of the urethra, such as are caused by blows and falls on the perineum, where the canal is more or less lacerated, that we see exemplified the most disastrous effects of permitting a wound to heal subject to the irritation that constant contact with pent-up urine is capable of exercising. Fortunately, as a rule in these cases, retention of urine for a time averts the liability to acute septic intoxication, such as I have already illustrated in an earlier part of this lecture. Though the future of these cases relative to the kind and degree of stricture that follows is in some measure determined by the character of the injury inflicted upon the urethra—whether, for instance, the canal is entirely torn across, or partially, either obliquely, longitudinally, or transversely—I have not the least doubt, from a careful observation of a considerable number of these cases, that those do best which are treated by perineal section and drainage without reference to the question of extravasation. When a catheter can be passed under these circumstances, and there is no evidence of urinary extravasation, it is often, I admit, very tempting to be content with this procedure, and to wait until there are further indications as to the necessity for incision. Such a course is almost invariably followed by the formation of a stricture of the most dense and contractile nature. Where incision is practised, as in those instances where there is evidence of extravasation and the laceration proves to be only of a partial nature, the wound heals with a scar which shows but little tendency to subsequent contraction. In these cases we have remarkable illustrations of the damage that the presence of urine under certain circumstances is capable of exerting whilst the process of repair in a wound is going on. And what applies to the healing of wounds inflicted accidentally upon the urethra internally applies equally to others similarly inflicted on the canal for surgical purposes. I have elsewhere stated that for many years past I have taken some pains in collecting and noting cases of urethral strictures, with the view of estimating the permanency or otherwise of the treatment to which the patient may have been previously submitted by various surgeons. The testimony that I have thus gathered from the examination of many hundred cases is certainly not favourable either to the permanency or the character of the relief that internal urethrotomy usually affords. Amongst the worst cases of stricture that I have thus met with have been those which have been treated by an internal section. If there is any force in the observations I have brought before the Society this evening, I do not think there should be any difficulty in explaining how this happens, and of recognising the importance of applying to the treatment of wounds of all kinds involving the urethra those principles which are the basis of Listerism, namely, drainage and cleanliness. There is no part of the human body to which disregard of these conditions is more likely to be attended with disastrous consequences, whether we have regard to the present or to the future. In conclusion, gentlemen. Most speakers commence their discourse with a text, I prefer concluding with one. Urine can spoil tissue as well as blood.

SEAMEN'S HOSPITAL SOCIETY.—Lord Charles Beresford has consented to take the chair at the annual court of governors of this corporation on a day to be fixed in February next. Owing to the increasing area over which the shipping of the port of London now extends, this charity has established dispensaries for seamen at the Docks and at Gravesend. The maintenance of the 258 beds at Greenwich, as well as the dispensaries, necessitate an expenditure of £12,000 per annum.

HARVEIAN LECTURES ON LUPUS.

Delivered before the Harveian Society, December, 1887.

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LECTURE I.—COMMON LUPUS—THE HEAD OF A FAMILY, AND NOT A SOLITARY DISEASE.

Characteristics of the Lupus Process.—Its Power of Infection by Continuity, by Contiguity, and through Vascular Channels to distant parts.—Importance of the Subject in reference to General Pathology.—Satellites and their Meaning.—Different forms of Lupus on different parts of the Body.—Differences in relation to Age and State of Health.—Relations of Lupus to Tuberculosis, to Scrofula, to Chilblains, and to Cancer.—Justification of the term Scrofula as distinct from Tuberculosis.—Morbid Anatomy of Lupus.—The Bacillus.—Description of the different Varieties of Common Lupus, and Definitions of the Terms proposed to be Used.

EVERYONE knows lupus. In student-life, we all early learnt to recognise lupus; for its frequency, its conspicuousness, and its very definite features, rendered its diagnosis both easy and attractive. Nor, for many of us, have the questions as to its nature and affinities failed in interest as we have advanced in life. Lupus has been well and ably studied by many competent observers, and no atlas of portraits has been published which has failed to portray it in at least two or three of its principal forms. Our clinical knowledge respecting it is now well advanced, and I purpose in the present lecture to endeavour to place before you a summary of it, not without the hope of being able to gain therefrom some little further insight as regards the disease itself, and the valuable illustrations which it affords of the general laws of pathogenesis.

We shall find, I believe, as we proceed with the examination of the facts as to common lupus, that not only does it present some important varieties, but that there are a number of other maladies, some of them already named and others as yet undescribed, which stand in close relationship with it, and partake, indeed, of its nature. Before proceeding in this direction, it is needful, however, that we should recapitulate the chief clinical facts as to the type form of the malady. This type form we find in "common lupus."

All observers are agreed that lupus is a disease which usually begins in early life, and which, although it may affect mucous membranes, almost always has its first development in the skin. It prefers exposed parts, and attacks the face out of all proportion to other regions. It is insidious in commencement and very slow in progress. Its characteristic feature is the formation in the corium of a peculiar effusion, or cell growth, which is visible to the naked eye through the transparent cuticle. This growth is of a brownish-yellow tint, and semi-transparent, being aptly compared to apple-jelly. It is present in greater or less abundance in all cases of common lupus, but may easily be obscured by the products of inflammation. The recognition of this apple-jelly growth, in however small a quantity, denotes the disease conclusively as lupus, for nothing exactly like it is ever seen in any other disease. It often happens that we succeed in finding it at only one part of a large lupus patch, or in only one patch, where there are several which do not show it; but I may repeat that, whenever it is thus sparingly present, it is yet sufficient to justify the diagnosis as regards the whole of the diseased processes which it attends. Whether this growth is present in the very earliest stage of the disease, or whether that be not rather simply one of inflammation, is not yet known, but it is certainly the condition which first justifies the application of the name "lupus," and it is often recognised while the disease is as yet on an exceedingly small scale. Many facts as to the causes of lupus—such, for instance, as its frequently beginning after slight injuries to the part—would suggest the belief that a stage of congestion and cell effusion, undistinguished from common inflammation, usually precedes for a short period the characteristic growth. There are, further, no facts whatever which would support a belief that lupus ever takes its origin from contagion. Whether or not it begins by inflammation, there is no doubt that it is very apt in all its stages to be complicated by it. Although a few cases are seen in which the growth, through a long course of years, pursues its quiet course of gradual extension, without

ulceration, and almost without inflammatory redness or swelling, they are exceptional; and in a large majority, at one or other period, the tissues break down and ulcers form, attended usually by the formation of papillary granulation masses, covered by crusts of pus and epidermic scales. Most of the distinctive terms employed in reference to lupus by the older surgeons have reference simply to the presence or absence of inflammation. We may disuse with advantage the old terms *exedens* and *non-exedens*, *exulcerans*, *hypertrophicus*, *serpiginosus*, *exfoliatus*, and the like, and speak simply of inflamed lupus and non-inflamed lupus, for all the epithets alluded to generally refer to peculiarities produced by more or less active inflammation. The same case may vary in respect to them in different parts at the same time, and at different times in the same part. They have, too, been used by different authorities with very varying meanings.¹ I much fear that, before I have done, you will accuse me of introducing new names whilst I disuse the old; but I hope to be able to convince you that those which I shall propose are based upon real and permanent clinical distinctions. If a man has a large family, he must, for convenience sake, give to each child a distinctive name. It is so with lupus. The diseases to be grouped under that name are related—closely related, but they are yet different—and it is necessary that we should distinguish them.

It will be convenient that I should here introduce to your notice a schedule of the various forms of lupus which we meet with in practice. I shall not now discuss its details, but it may be well to state that where I have joined two substantives together as a name for a sub-species of the malady, it is with the intention of asserting that the disease so named partakes of the characters of both. Thus *acne-lupus* is not a lupus resembling acne, nor an acne looking like lupus, but is acne and lupus in combination. It occurs at the age at which acne is common, and in the subjects of common acne, differing from it only in that some of the pustules become the site of lupus-processes. So with *eczema-lupus*: the disease begins as eczema, and throughout looks like it, but it has these peculiarities, that it is well nigh incurable, slowly advances at its edges, and heals in the centre, leaving a scar. It is an eczema which produces the results of lupus, and therefore clearly partakes of its nature. I cannot but think that this plan of joining substantives, each one having already a well known meaning, conveys what it is intended to imply with far less trouble to others than can possibly be attained by coining uncouth adjectives, which are at the best more or less inappropriate.

The Lupus Family.

General Definition.—Serpiginous, infective, scar-leaving inflammations of skin and mucous membrane.

Principal Forms.

Struma-lupus (with subcutaneous abscesses and gland disease).

Common lupus (its typical forms)

Acne-lupus (very rare).
Eczema-lupus (very rare).
Psoriasis-lupus (very rare).
Nævus-lupus (very rare).
Lupus lymphaticus (very rare).

LUPUS ERYTHEMATOSUS. Distinctive Features.

- Little or no apple jelly growth
- Symmetry the rule
- Non-tendency to ulcerate
- Not seen in childhood
- Far more common in women than in men
- Closely allied to chilblains
- Sometimes fatal

Principal Forms.

Seborrhœa-lupus
(=lupus sebaceus)

Erythema lupus
(its typical forms)

Chilblain-lupus.
Sunblain-lupus.
Acne rosacea-lupus (very rare).
Psoriasis-lupus (very rare).

Clinical Groups.

1. Restricted to face.
2. Face and extremities.
3. General diffusion
4. With recurring crystalline.

Kaposi's disease is probably a "family form" of lupus erythematosus.

In dividing lupus into two great groups, as *vulgaris* and *erythematosus*, I yet wish it to be clearly understood that they are closely allied. There are numerous connecting links, and cases often occur which it is impossible to assign exclusively to either.

Amongst the qualifying adjectives which have been used for lupus, we can well spare that of "*serpiginosus*." It is of the very essence of all lupus to be serpiginous, and if any form of new growth or inflammatory action were shown to be not so, it would certainly *de facto* lose all claim to rank with the lupus family. In all its varieties, and in all stages of its development, the lupus patch gradually spreads at its edges. It is necessary to consider this tendency to creep on into all adjacent parts in a little detail, for it is a most important feature. It proves that lupus action is attended by the production, in the part affected, of elements which are infective to those with which they are in contact. In this power of infection by continuity of tissue, we have one of its most characteristic features, and we have also an important guide to its treatment. Not only, however, do we witness the gradual extension of lupus patches by growth into continuous parts, but we observe almost invariably another phenomenon of a slightly different order. This is the production of other foci of diseased action not continuous with the original patch. To these when they are, as is usual, very near to the first, we may suitably give the name *satellites*, and may imply by it that we believe that they originate, as the moon from the earth, from materies directly detached from the larger mass near to which they are seen. We have in them an example of infection by contiguity, and the infective material has no doubt spread either in the perivascular spaces, or along the lymphatic channels. The phenomenon is exactly parallel to what we witness in the case of cancer of the skin, in which the production of satellite nodules of smaller size near to the parent one is very common. Their nearness proves their relationship. It is not a matter of chance where they are formed, nor are they arranged with anything like symmetry in the two halves of the body. No, they come as a rule near to the patch of which they are the product. In many instances the satellites and their parent, by gradual extension at their borders, tend to coalesce. The term *disseminata* lupus has been employed for cases in which the crop of satellites is very abundant, but as they are present to some extent in almost all cases, it is scarcely necessary. Although, as first asserted, it is the rule for secondary lupus growths to occur near to the border of the original patch, yet this position is not invariable, and we sometimes observe them at considerable distances from it. Thus a patient may have primary lupus on the nose, and may have secondary patches on the arm or leg. Must we, when that occurs, seek some other explanation of their production, and assume that they are developed independently of the original patch? Such a step is not necessary, for we encounter precisely the same occurrence in the case of cancer. No one doubts that when a growth develops itself in the femur after scirrhus of the breast, that such growth is due to the transference of germinative material from the mammary gland to the bone. Nor is there any reason to doubt that such distant transference is possible also in the case of lupus. Both in cancer and lupus proximity of infection is the rule, but distant infection is possible, and not very rare, and the two are to be explained in the same way. Let me here in passing remark that neither in common lupus nor in cancer does the distant infection show any tendency to arrange its products in a symmetrical pattern in the two halves of the body. In other words, the distant tissues show little or no preference or selective power as regards the germ elements which are afloat. It is almost a matter of chance

Sycosis and the Rhino-scleroma of Hebra are probably allied diseases.

¹ The term lupus hypertrophicus or the adjective hypertrophicus, in connection with lupus, has been used in such different senses by different authors, that I think it would be much safer to discard it. The older writers, I think, generally employed it in cases in which there was an unusually solid œdema or elephantoid hypertrophy. Hebra and Kaposi have used it for cases in which the papillary outgrowth was well marked and large; and, lastly, I find that Dr. Sangster has availed himself of it for a case in which the scar is very thick and fibrous. It is quite clear that there is no variety of lupus by which this adjective can, with any clinical usefulness, be applied. Overgrowth of papillæ, hypertrophic induration of scar, and elephantoid œdema are conditions which may be present in certain parts of any given case of lupus and wholly absent in others, and they certainly do not differentiate any special variety of the disease.

where these may develop. I shall have to ask attention in another lecture to the fact that this rule is to some extent reversed in the case of lupus erythematosus.

Permit me to pause here to remark that, although I have been obliged to mention cancer as the most instructive parallel to lupus in respect to infection by continuity, the production of satellites, and of scattered secondary growths at a great distance, yet these features are by no means the exclusive property of new growths. They do not prove, although to some extent they may seem to imply, an association between lupus and malignant neoplasms. Infection of the individual, in all of the three methods mentioned, is probably a possibility in all types of inflammatory action, though it is seen with much greater energy in some than in others. Near to a boil other boils occur; one patch of eczema, if neglected, tends to produce others; indeed, the facts as to multiplicity of lesions following local ones which are constantly under our observation in so many diseases are probably all of them to be explained in the same way. Those which we witness in the rare cases in which cicatricial keloid becomes multiple are of especial interest, because amounting almost to a demonstration of the law. We witness in them excellent illustrations of blood infection by a morbid growth not usually supposed to be malignant, and at the same time the preferential selection by certain predisposed sites. If a patient who has old and perfectly healthy scars becomes the subject of a new wound the scars of which take on keloid growth, his old scars may become infected and grow on a like pattern. This I have myself observed more than once, and an instance of it is recorded by Mr. Clutton. It is not easy to suggest any other explanation of the phenomenon than that the keloid growth sheds into the blood certain elements which find their proper nidus for development only in scar-tissue. I suspect that this is the only way by which keloid becomes multiple; but, in citing it as I have now done as evidence in support of my theory, I am bound to admit that it is not the ordinary rule for old scars to become thus infected. Even when it does happen we usually observe many of the old scars to escape. The case which I first published as illustrating the fact was, however, a very definite one. A man who had been frequently cupped, and whose cupping scars were perfectly soft and healthy, was long afterwards very severely scalded over his shoulder, and the scald became the site of an enormous keloid growth. At this stage many of his cupping scars developed little buttons of keloid.

We have, then, described common lupus as a slow process of cell growth in the true skin with infection by continuity, by contiguity, and in some instances to distant parts through the vascular channels. We have said that it is to be recognised by these qualities as regards its mode of advance, and above all by the visible presence of a new material, like apple-jelly, which is easily appreciated by the unassisted eye, and which is absolutely pathognomonic. I wish to make the distinct claims for all affections of the skin, which show these features that they belong to the lupus family, and in so doing, I by no means insist upon the last named. There are a great many cases of common lupus in which the apple-jelly cannot be seen and many more cognate affections in which it is never visibly present. In order, however, that we may increase the means at our disposal for deciding as to what should and what should not be admitted to be either true lupus or nearly cognate with it, it may be well to mention a few other common features of lupus-disease. None of them approach in importance those already stated, but some are still of considerable value.

The lupus process, although very slow, yet always tends to come to an end after a time, and it always, when it does thus end, leaves the structures disorganised and in a state of scar. The kind of scar is often peculiar. It is thick and firm and is seamed with white, so as to have suggested a comparison to veal. These peculiarities are probably due to the fact that the scarring has taken place without complete removal of the lupoid cell-material. By degrees this removal will become complete, and then the scar will become supple and thin. In many instances it is supple and thin from the first. It is by no means necessary to the production of scar after lupus that there shall have been ulceration. The scar may be wholly subcuticular, and is so in many instances, the disease having disorganised the corium, but left the cuticle almost uninjured. A tendency to the production of scars is invariable in lupus, but there are many slight cases in which the recognition of scar is difficult. An absence of tendency to infect lymphatic glands must be noted in all forms of lupus, and with it an absence of tendency to travel deeply or to involve parts other than the skin. It is essentially a disease of skin and mucous membrane, and does not, with the rarest exceptions, attack other tissues. When ulceration has occurred there is usually a remarkable proclivity to the formation of granulations which assume papillary forms and over which scar-tissue readily develops. The removal of lupus-crusts is almost always at-

tended by bleeding, for these papillary outgrowths are united to the partly organised crust, and are very easily torn.

Lupus-disease in all excepting its most quiet and absolutely non-inflammatory forms is very liable to be attacked by erysipelas. Some patients have many such attacks, and although not infrequently they are excited by the use of caustics, yet they are often spontaneous. As a rule, but by no means invariably, the erysipelas is mild. It may, I think, be added to the minor characteristics of lupus that its processes, although slowly retrograde in the structures first attacked, always spread so much in the adjacent ones that nothing of the nature of a complete spontaneous cure ever results. This statement may possibly have a few exceptions, but they are very few.

Having thus endeavoured to trace the characteristic features of the lupus process in general, it may next be convenient to enumerate some of the modifications which it assumes in different regions of the body, and parts of the surface. As will be conjectured from what I have already advanced, these differences have chiefly reference to different degrees of inflammatory action. In some parts lupus almost invariably inflames and ulcerates. It is rare indeed to find a patch of non-ulcerated lupus on the nose; and, should such be encountered, we may feel quite sure that the condition is only temporary. The same remark applies to the extremities. On the hands and feet lupus is always inflamed more or less, the degree varying with the season and weather. Often, indeed, it is difficult to diagnose lupus on the feet, so great is the excess of inflammatory material by which it is concealed. I have not in many instances, indeed, recognised the apple-jelly stage, and when it is shown it is never present long, being soon superseded by a mass of fungating granulations. It is, in fact, a clinical fact that lupus-ulcers on the feet very often escape diagnosis, so wide is their difference in appearance from the typical form of the disease. Often, however, the diagnosis is set at rest by the discovery, on other parts of the body, of patches which show the characteristic conditions.

The part in which it is most common to see lupus without any inflammation and absolutely quiet is, I think, the cheek. Here we sometimes see what I have called single-patch-lupus, slowly progressive at its edge, but without satellites, and without any trace of crust or even of congestion. The subjects of such conditions are almost always near middle life and in tolerably good health. If the patient be young, or the strength feeble, lupus is almost certain sooner or later to inflame and ulcerate.

There are certain regions of the body which are almost exempt from the attacks of lupus. It is in the main a disease of exposed parts, particularly of parts exposed to cold and wind. The face and the extremities are its most frequent sites. Excepting when it has passed by extension from the limbs or neck, it is very seldom seen on the trunk, and it scarcely ever originates there. The more protected the part as regards warmth, the less is it likely to be the seat of lupus. The genitals in both sexes, the cleft of the nates, and the armpits are almost wholly exempt. This is by no means true of the syphilitic imitations of lupus, which not infrequently display themselves in these regions.

When lupus attacks the lips, and extends to the prolabium, it is almost always attended by much swelling and ulcerative destruction of parts. The explanation of this is, no doubt, that the disease affects the skin surface on the one side, and the mucous on the other, and hence much loss of tissue. The same is observed when the *ala nasi* are affected, destruction of the parts being then almost certain. It will easily be realised that the conditions are very different from those which obtain on a flat surface, as the cheek.

Thus, I think, it may be with justice held that many and very important differences which are observed in the lupus process are due not to essential difference in the nature of the disease, but simply to the peculiarities of the part attacked. Anyone who will inspect a considerable series of cases side by side, or examine a collection of portraits, will easily satisfy himself of this, and will observe that the disease may in one and the same patient earn for itself different names, according to the part affected. It is almost always "exedens" when it attacks the nose, often "hypertrophic" on the lower part of the face, and always "serpiginous" on the neck.

I do not wish, however, for one moment to attempt to explain all the varying features of lupus by reference to the part affected. Many of them have reference rather to the peculiarities of the individual, to his age, and to the state of his general health. Without venturing in much detail upon this topic, I may repeat a statement already made, that the younger the patient the greater is the probability that lupus will inflame and ulcerate, and the greater by very far the risk that its infective material will become diffused, and its manifestations multiple and distant. It is rare in those of middle age to see lupus show itself in more than one place, and the disease at this period of life is

almost always very slow in its advance. As old age approaches, we sometimes witness a sort of return to the liabilities of youth, and lupus originating then may prove very troublesome. It is so, however, only in that it may rather rapidly spread and resist treatment, not, I think, in the way of general infection.

Before quite leaving this part of my subject, I will venture to ask your attention to some statistics as to the parts most usually affected. They confirm in a very definite manner the statements which I have made as to local exposure constituting an extremely important predisposing cause.

From the analysis of 56 cases in which I find the parts affected specified in my notes, it is shown to have occurred on the face in 41, and on the extremities in 15. In 5 of those in which the face suffered, there were one or more patches on the limbs also. In 15 the disease was on the nose only, and in 9 on the cheek only. My notes do not state with sufficient precision on what part the disease commenced, but only the parts affected when the patient came under my observation. We may probably assume that in all cases in which the nose is mentioned it began there, for it is almost unknown for the nose to suffer secondarily, whereas it often causes the infection of other parts. In the table which I have displayed I have given more detailed statement.

Nose and cheeks ...	8	} 41
Cheek alone ...	9	
Nose alone ...	15	
Nose and lips ...	1	
Chin ...	2	
Face and limbs ...	4	
Cheek and neck ...	1	
Nose and foot ...	1	} 15
Leg ...	2	
Fingers and hand ...	6	
Forearm ...	3	
Each hand and arm ...	1	
Arm ...	3	

As a good example of the influence of local conditions in modifying the disease, I may mention that lupus assumes somewhat peculiar features when it occurs on the buttock. Its cause in this position is frequently the irritation of riding. I well remember, when a student at St. Bartholomew's, the case of a young man (I think a groom) who had a patch the size of the palm of a hand on one buttock. Mr. Stanley amused himself by making his friends write their diagnosis of this sore on a paper which hung at the head of the man's bed, and I think there were at least half a dozen different opinions there recorded. For some it was simply a "saddle sore," others regarded it as syphilis, others as impetigo, and, lastly, some, who I have no doubt were quite correct, called it lupus. I have seen several such sores since then, and they are all of the same characters. Their peculiarities are—extremely slow advance at the margin, and a very thick, almost brawny, cicatrix in the centre. These peculiarities are no doubt due to peculiar conditions as regards pressure and friction to which these sores are exposed.

An example of this form of lupus has been admirably studied by Dr. Sangster, who has recorded his results in the twenty-ninth volume of the *Pathological Transactions*. His patient was an engine fitter, aged 24, but as the disease had begun when he was 10 years old, it had, in its origin at least, nothing to do with his occupation. The patient was in excellent health, but a paternal aunt was said to have died of consumption. Although the disease had been fourteen years in progress, the patch did not measure more than four inches across. It was hard and cicatricial in the centre, like "bacon rind," but had a somewhat inflamed and crusted edge. Its complete excision as a measure of treatment gave Dr. Sangster an opportunity for a microscopic examination of it in its various parts, and of this he availed himself with zeal. The paper is illustrated by some excellent drawings. I will quote the summary of the microscopic appearances in Dr. Sangster's own words.

"1. Changes (cell-germination proliferation) are observable in the epidermal structures before the lupus cell-growth can be made out in the corium.

"2. The lupus cell-growth in the corium appears first in clusters round the blood-vessels.

"3. When the clusters occur in the neighbourhood of epidermal cells they are accompanied by what appears to be an irritative germination of the latter.

"4. Where the cell infiltration is great it replaces all superficial structures below the rete Malpighii; the hair follicles, sweat glands, etc., disappearing as a result of degenerative change.

"5. The rete Malpighii covering extensive cell infiltration is in a state of extreme activity, simulating appearances seen in epithelioma.

"6. In the cicatricial stage there are seen only lupus "nests" lying in meshes of fibrous tissue, covered by an irregular Malpighian layer, with flattened cells representing a stratum corneum."

Some differences are to be observed as regards the parts affected at different ages. Thus I think that the mucous surfaces are never attacked in very early life.²

A discussion as to the relations of differences in lupus to different states of health brings us at once to the all-important question as to its relationships to tuberculosis. All who have observed the disease have been struck by its frequent association with feeble health and with what, until lately, we have known as scrofula. On the other hand all have acknowledged that there are startling exceptions, in which the disease shows itself in those who appear to enjoy great vigour of constitution. The names given by authors, however, sufficiently attest the general assertion that almost all observers have regarded lupus as frequently of a scrofulous type. I am desirous for the moment to avoid reference to histological questions, and to discuss the subject solely on its clinical evidence. It is certainly not common for lupus patients to have definite evidences of tuberculosis of the viscera. I have in the course of many years' experience known two or three who were the subjects of lupus become affected by aggressive phthisis, but they have been very exceptional. The same may be said, but with more numerous exceptions, as to the occurrence of gland disease or other forms of struma. The lupus patient does not, as a rule, suffer from any other form of disease. More than thirty years ago I collected and tabulated with considerable care a long series of cases of lupus, with the hope of showing by statistics its relation to struma as well in the patient's family as himself. Nearly all my patients were at that time of the hospital class. My statistics did not prove much, and I have not felt encouraged to continue their collation during later years. Nothing is easier than by statistics to show, in reference to any given disease occurring amongst the English poor, either the frequent history of tuberculosis or the reverse. All depends upon the patience and perseverance of the investigator. Most patients begin by denying that any relatives have died of consumption, and most will, if time be allowed, succeed in remembering that such has been the case. More definite facts may be obtained if we restrict ourselves to the causes of death in the patient's parents and amongst his brothers and sisters; but here still are numberless fallacies, and, after all, we know well that such tendencies often overpass a generation. Briefly, I may say that my statistics did not prove the history of scrofula nearly so frequently as the impressions formed by memory would have led me to expect. Out of nearly seventy cases I found the occurrence of other evidences of scrofula in the patient is only 28 per cent., and the history of such disease in any near relative in only 35 per cent. No fewer than 50 per cent. appeared, so far as I could ascertain, to be themselves in good health, and to come of families against which nothing could be established. It is to be remembered also that the impressions formed by casual observations

² The following statistics are compiled from a series of hospital cases, which I tabulated more than thirty years ago, and do not include my more recent experience. They are sufficient for the present purpose. Of 141 cases, 59 were males and 83 females. Of 67 cases in which the age at which the disease began is noted. In one case at the age of 1, at 2 in 3, at 3 in 9, at 5 in 2, at 6 in 2, at 7 in 2, at 8 in 3, at 9 in 1, at 10 in 4. Thus in the first decade we have 30, or nearly half.

At 11, 2; 12, 5; 13, 8; 15, 1; 16, 3; 17, 1; 18, 1; 19, 1; 20, 1; 23, 3; 24, 2; 26, 2; 30, 1; 32, 1; 33, 1; 35, 1; 40, 3; 42, 1; 44, 1; 48, 1; 49, 1; 52, 1; 56, 1; between 10 and 20, 18; between 20 and 30, 8; after 30, 4. Thus after the first decade we have a total of 37.

In reference to the proportion of lupus cases to other forms of skin disease, I may quote the following statement from Sir Erasmus Wilson, who found in 10,000 cases of skin diseases occurring among the wealthier classes—

Lupus "strumousus" (= vulgaris) 77

Lupus erythematosus 73

The misleading character of statistical statements is well illustrated by the fact that Sir Erasmus found lupus erythematosus rather more frequent than lupus vulgaris. No one believes that it really is so, and the subjoined statement will show how the facts on this point stand in Vienna:

Kaposi, in 6 years' hospital experience—

Lupus erythematosus, 22 { 7 males
15 females

Lupus vulgaris, 279 { 132 males,
147 females.

The startling difference in the proportionate frequency of the two diseases in Wilson's experience and in that of Kaposi is, I believe, to be explained by the circumstances that one drew his conclusions from private practice and the other that of a hospital. Lupus erythematosus being an almost incurable disease, it follows that it is likely to be sent to private consultants, whilst cases of lupus vulgaris more usually remain under the care of the family surgeon. My own experience during recent years has, I believe, been very similar to that of Sir Erasmus, and would show lupus erythematosus apparently as common as lupus vulgaris.

are liable to some error, inasmuch as lupus produces deformities of the visage, and scars in the neck which are precisely of the kind to suggest the offhand suspicion of scrofula. This may easily happen in cases in which, excepting the lupus itself, there may be an entire absence of all evidence of such taint.³

In spite of my own statistics, however, I cannot avoid the belief that lupus is, in very many instances, a scrofulous disease; but at the same time I am inclined to the belief that, in most instances, the tendency to disease of this type having begun in the skin, restricts itself to it, and shows little or no tendency to attack internal organs. I well remember a family of three sisters, whom I knew intimately in youth, and whose history may illustrate my meaning. The eldest of these had her neck dreadfully scarred by strumous abscesses in childhood, but she subsequently enjoyed excellent health through a long and vigorous life. The second, always delicate, died of phthisis at 50; and the third, who had never ailed anything else, lost her nose from lupus at about 45. There was a history of tuberculosis in the mother's family.

The more definite exemption from tuberculous antecedents or concomitants, the more likely it is, I think, that any individual case of lupus will prove non-inflammatory; but there are exceptions on all hands, and I dare not assert anything in this matter with confidence. If the mucous membranes suffer, there is, I think, almost invariably a tuberculous family history. On the other hand, I must admit that the evidence as to family history of phthisis is as strong, or even stronger in the case of lupus erythematosus, as it is in common lupus.

There is another peculiarity of personal health, which is of much importance, in predisposing to certain forms of lupus. I refer to the proclivity to chilblains. The tendency on the part of the tissues to inflame and become irritable, under the intermittent influence of cold and damp, which constitutes the chilblain proclivity, is so marked in many cases of lupus, that this disease might almost be regarded as being a modified chilblain. This statement concerns the erythematous form more frequently than it does the common lupus, but it is not without its importance as regards the latter.

In what I have been saying I have been speaking of scrofula and tuberculosis as if they were interchangeable terms, or, if not so, as if scrofula still enjoyed an existence, and had not been wholly merged by modern discoveries. It is desirable to explain a little on this point. Those who hold with the greatest firmness the modern doctrine that a bacillus is the one and the only cause of true tuberculosis yet admit that peculiarities in the state of health of the recipient are of very great importance in favouring the development of the parasite. For them tuberculosis is a disease of infection from without, and can never be self-produced; but still only those of certain idiosyncrasy or diathesis are capable of readily receiving the contagion. We have then two things—contagion and proclivity. It follows, I think, that it is quite possible that the state of system which constitutes proclivity may in itself and without tuberculous infection originate some forms of disease. Nothing is more probable than that persons vulnerable in the direction of easily affording a nidus for the tubercle bacillus may also be liable to peculiar forms of common inflammation. That such is the case I would submit we know well by experience. In such patients wounds, bruises, and chilled parts repair badly and are very apt to inflame. If exposed to cold, chronic catarrhs or states of local inflammation may readily follow. Thus ophthalmic surgeons recognise a scrofulous ophthalmia which they do not regard as tuberculous, but which occurs in patients who have tuberculous susceptibilities. I would venture to suggest that the terms struma and scrofula are very suitable for the designation of all such specialised types of common inflammation as we encounter in those who would easily become tuberculous if exposed to contagion, but who have not as yet had the

bacillus implanted. Whatever results from the implantation of the bacillus we may name tuberculosis, whatever results from the constitutional state alone we may denominate scrofula.

It would be of great value if we could obtain any trustworthy evidence as to the frequency of the association of lupus with cancerous tendencies. As yet, however, none such are forthcoming. Many observers have noticed that there is in persons of middle age, who have suffered from lupus, a definite tendency for the scars to become attacked by cancer. I have myself witnessed this repeatedly. I have also, in several cases, seen cancer and lupus existing in different regions and independently in the same patient. The number of such facts is, however, not as yet sufficient to justify us in feeling confident that they are more than coincidences, however strong may, nevertheless, be our suspicions. The observation of histologists (Sangster and others) that, in lupus scars, there is often a definite tendency to down-growth of processes from the Malpighian layer, much after the pattern of epithelioma, is not without its interest in this connection.

A METHOD OF GRAPHICALLY RECORDING THE EXACT TIME-RELATIONS OF CARDIAC SOUNDS AND MURMURS.¹

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INTRODUCTORY STATEMENT BY DR. BYROM BRAMWELL.

IN common with the great majority of physicians, I have been in the habit of thinking that the so-called presystolic mitral murmur is produced by a blood current flowing from the auricle to the ventricle through the stenosed mitral orifice; and I have repeatedly—both by (1) simple palpation with the flat hand; (2) combined auscultation and palpation; (3) combined binaural auscultation and inspection of the apex beat and movements of the cup of the stethoscope; and (4) combined binaural auscultation and inspection of the movement of the lever of a Galabin's cardiograph—investigated the relationship of the murmur to the cardiac impulse, with the result that, in the great majority of cases of presystolic murmur, which I have carefully and critically examined, I have satisfied myself (or, at all events, I have thought that I had satisfied myself) that the murmur does precede the first sound of the heart and the maximum impulse of the apex beat.

The publication of Dr. Dickinson's paper, in which he stated that, according to his observations, the murmur and impulse of the apex beat are synchronous, and in which he gave theoretical reasons² for believing that the murmur is ventricular systolic, and not auricular-systolic, seemed to show the hopelessness of getting all observers to agree even as to facts—to say nothing of the theoretical conclusions to be based on them—by means of our present methods of investigation, and to call for some new method by which the matter can be graphically demonstrated and finally and conclusively settled.

Some years ago, when the phonograph was first invented, the possibility of recording, on the same revolving drum, a tracing of the cardiac impulse (by means of a cardiograph) and a tracing of the cardiac sounds and murmurs (by means of a modified phonograph) had occurred to me.

The publication in the daily journals (just about the time when Dr. Dickinson's paper appeared) of the extraordinary results which Mr. Edison has obtained by means of his new modification of the phonograph, redirected my attention to the subject; and, with the object of bringing the matter to a practical conclusion, I explained exactly what I thought was wanted to my friend Dr. Milne Murray. Dr. Murray did not think that the phonograph or microphone, so far as their mechanism is at present known, could be made to record a tracing in the manner I desired; but he stated that he did not know the capabilities of Mr. Edison's new instrument, and he advised me to write to Mr. Edison himself.

¹ Communicated to the Royal Society of Edinburgh, on December 19th, 1887.

² It would be foreign to my present purpose to discuss the arguments which can be advanced both for and against the presystolic origin of the murmur of mitral stenosis. On some future occasion I may have to enter into some parts of the subject in detail. Suffice it for the present to say that the balance of evidence has seemed to me to be strongly in favour of the generally accepted or presystolic view.

³ I have, since this lecture was given, collated for statistical purposes some more recent notes which I had by me. The following statements will, I believe, convey a truthful impression of them. In rather more than half my cases the notes expressly state that the patient appeared to be in very good health, and had at no time suffered from any debilitating diseases.

In nearly half special inquiries on this head failed to disclose any particular delicacy or ill-health on the part of the brothers and sisters, or of the parents.

In only 9 per cent. was there reason to suspect phthisis in the individual, and in several of these the evidence was but slight. In nearly 30 per cent. there were enlarged lymphatic glands, but in some of these clearly the gland disease was secondary to the lupus. I am well aware that results of statistical inquiry have been published which differ considerably from mine.

Leloir (*Annales de Dermatologie et Syphilis*, vol. vii) brings considerable clinical evidence to prove that the two diseases are practically identical. Of 17 hospital cases treated by him in 1885, 10 showed unmistakable signs of lung tuberculosis, another suffered from white swelling of the knee. In two of them he proved the presence of tubercle bacilli in the lupus tissues, though inoculation experiments on the peritoneum of dogs failed. In one case lupus of the hand was attended by scrofulous lymphangitis (and formation of "tubercular gummata" along the lymphatics of the arm), followed by tuberculosis of the lung on the affected side. In four cases lymphatic oedema ("white erysipelas") accompanied lupus of the skin, and constitutional disturbance and phthisis resulted.