On the vegetable nature of tinea favosa (porrigo lupinosa of Bateman) : its symptoms, causes, pathology, and treatment / by John Hughes Bennett.

Fig 1.

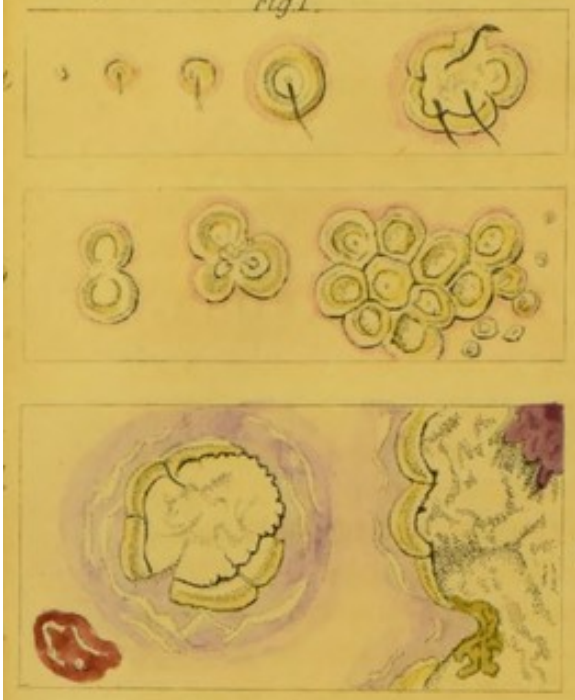

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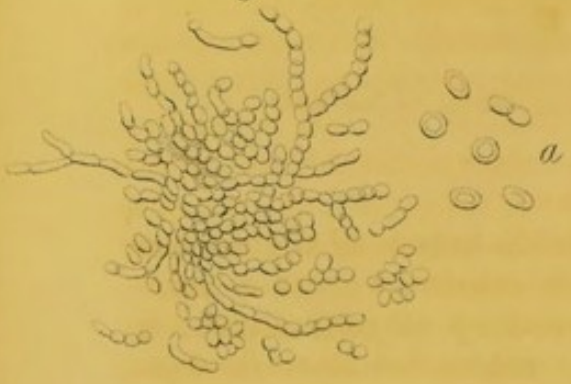
Fig. 3.



a

Fig. 4.

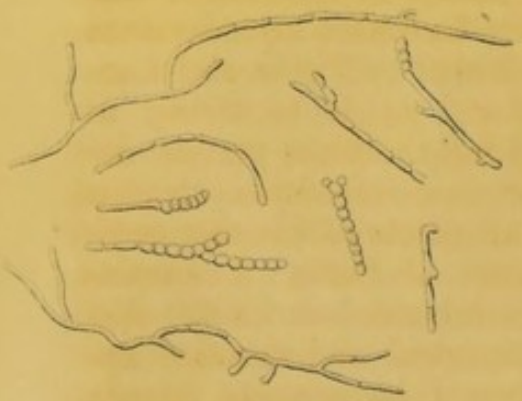


Fig. 5.

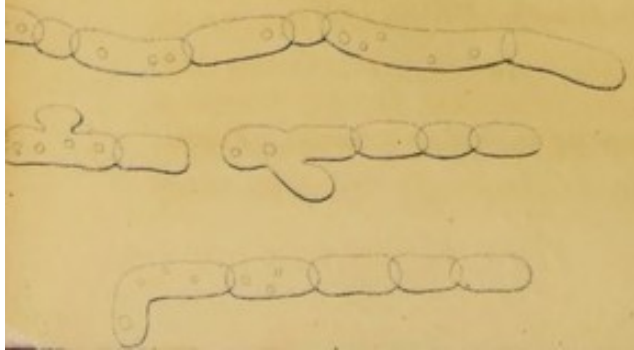


Fig 2.

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ON THE

VEGETABLE NATURE OF TINEA FAVOSA,

(PORRIGO LUPINOSA OF BATEMAN);

ITS SYMPTOMS, CAUSES, PATHOLOGY, AND TREATMENT.

By JOHN HUGHES BENNETT, M.D. Edin.,

LECTURER ON CLINICAL MEDICINE, ETC. ETC.

(Extracted from the London and Edinburgh Medical Journal for June 1842.)

The discovery by Bassi [1] of the vegetable nature of the disease named muscardine in silk-worms, which causes so great a mortality amongst those animals, has opened up to pathologists a new field for observation. More recent researches have demonstrated, not only in insects, but in higher animals, and even in man himself, that certain diseases owe their peculiar characters to the growth of fungi or cryptogamic plants in the animal textures. Schönlein of Berlin [2] was the first to detect mycodermata in the tinea favosa, an observation confirmed by Fuchs and Langenbeck [3] of Göttingen, and by Textor. It is to Gruby of Vienna, however, that we are indebted for the most perfect description of these vegetations, and for new researches on this subject. On reading last autumn the abstracts of his communications, made to the Academy of Science of Paris, [4] I examined the crusts on the head of a boy who laboured under the disease, and immediately detected the cylindrical and ramified appearances he has described. Since then I have made minute observations on thirteen cases which have come under my notice, and some of the results formed a portion of a memoir read last January to the Royal Society of Edinburgh. [5] In the present com-

[1] Del Mal. del Segno Calcinaccio o Muscardino, sec. ed. Milano, 1837.
[2] Müller's Archives, 1839, p. 82.
[3] Comptes Rendus de la Polyclinique de Göttingen, 1840.
[4] Comptes Rendus, tom. xiii. p. 72 and p. 309.
[5] On Parasitic Vegetable Structures found Growing in Living Animals.. Edinb. Philos. Trans. vol. xv. p. 277.

munication, however, I shall endeavour to give a succinct history of the disease, as I have observed it at the Hôpital St Louis in Paris, and in the cases just alluded to, bring forward a new view of its pathology, and point out a line of treatment based upon this, which has succeeded in every case where it has been fairly tried, even when all other methods had failed.

Mode of Development and Symptoms. — By most writers, amongst whom may be cited Willan, Bateman, Biett, Cazenave, and Rayer, tinea favosa is described as commencing in a pustule, which breaks and forms the peculiar scab. Others, such as Baudelocque, Mahon, Alibert, and Gibert, deny its pustular nature, and state that it commences in a crust. With a view of determining the mode of its commencement, I made the following observations.

Observation 1. All the crusts were removed from the head of a boy, labouring under the disease, by the application of poultices. In a few days the scalp was quite clean, presenting here and there, anteriorly, patches about the size of half-a-crown, deprived of hair. In these bald portions of the scalp, the skin looked somewhat injected and glossy on the surface; but there was no pain on pressure, no abrasion on the skin, or other symptom of inflammation or local lesion. The disease was now allowed to take its natural course, and I watched its development daily. In two days, minute pustules were observed to be thinly scattered over the surface, the contents of which, when examined under the microscope, were found to consist of normal pus. In two days more, the number of pustules had considerably increased, and those formerly observed had become larger. I surrounded several of the latter with a ring of ink, in order that there might be no difficulty in following the changes they underwent, and distinguishing them from others. In another day two of the pustules under observation broke, and the matter exuded formed a scab, which, under the microscope, was found to be composed of epidermic scales, and irregular amorphous masses, without any trace of vegetable structure. In the interstices of these scabs, the scalp was covered with a furfuraceous desquamation, consisting only, as shown by the microscope, of epidermic scales. On the sixth day the scabs were of a dirty yellow colour, but not of the peculiar tint or form of the porrigo crust. Only a few pustules remained, and the injected appearance of the skin was gone. On the tenth day, the head was covered with irregular agglomerated scabs, similar to those produced from impetigo. The furfuraceous desquamations also continued. On the twelfth day, I detected, for the first time, at the posterior part of the scalp, where the hair was most abundant, small bright yellow spots, the size of a pin's head, somewhat depressed below the surface. On removing one of these spots with

the point of a lancet, and examining it by means of a biconvex lens of an inch focus, I found a smooth, cupped-shape, bright yellow capsule, the diameter of which was about $\frac{1}{20}$ of an inch. Its margin was continuous with several epidermic scales, which it was necessary to cut or tear through before the capsule could be removed. Having done this, it was readily separated from the parts below, except where the hair, which usually perforates these crusts, connected it inferiorly with the dermis. On pulling this out, or cutting it through, the capsule could be removed entire, leaving behind it a reddened inflamed concave depression, corresponding to the convexity of its inferior surface. On placing this capsule in a drop of water, pressing it between two slips of glass, and examining it with a magnifying power of 300 diameters, it was found to be composed of a finely granular mass, in which were numerous long-jointed filamentous tubes. These were seen coming from the edge of the capsule, as M. Gruby has described. At this time the round and oval sporules were few in number, and did not appear in groups or chains until three days later.

From this observation I was led to suppose that those pathologists who had classified the porrigo lupinosa among the pustulæ were correct. Further examination, however, convinced me that these are not essential to the disease.

Observation 2. In a boy of well-marked scrofulous habit, who laboured under the tinea favosa in its most characteristic form, the crusts over the two anterior thirds, and bald portion of the scalp were numerous, round, and isolated, but matted together posteriorly, where the hair was still abundant. When these were examined microscopically, the mycordermatous vegetations were immediately detected as in the last case. All the crusts were removed by the application of poultices, and the head rendered perfectly smooth and clean. In three days a furfuraceous desquamation of the cuticle appeared, which became more and more abundant until the eighth day, when the small bright yellow spots of the porrigo made their appearance, not having been preceded by the formation of any pustules. The crusts were removed several times in succession, and the disease again allowed to appear; but in this case the presence of the peculiar favus crusts was never preceded by that of pustules.

In the other cases which have come under my observation, I have satisfied myself that the formation of pustules is not essential to the disease, although they are often present. Hence the mistake of those pathologists who classified porrigo favosa amongst the pustulæ. M. Gruby says that they are *never* present, which is equally erroneous, although they appear to be a secondary result, attributable to the irritation the disease produces in some individuals. On the other hand, I have never

seen this affection produced, without having been preceded by desquamation of the cuticle, an observation which appears to me of some importance, inasmuch as if true, the disease would be allied to the order *squamæ*.

It would appear, then, that the first morbid change is increased vascularity of the skin, accompanied with a desquamation of the cuticle; and that in a period varying from six to twelve days, small spots of a bright yellow colour, resembling sulphur, may be detected. These gradually augment in size, but even at the earliest period, may be observed, with a lens, to have a central depression, through which a hair may generally be observed to pass. The crust or capsule may enlarge to about the size of a shilling, and if it be isolated, still retain its rounded form. Usually, however, its edges come in contact with other capsules, and then it loses its rounded shape, and assumes the hexagonal or honeycombed appearances described by authors. I consider, then, that the porrigo lupinosa, and porrigo favosa, constituting different forms or varieties of some writers, to be merely different stages of the same disease, or to be dependent upon the greater or less aggregation of the crusts. On the first appearance of the capsule, its edges are somewhat depressed below the surface of the cuticle, but as it increases in size, they become more and more elevated, and at length are very prominent. At first, also, the whole capsule appears of a homogeneous bright yellow, but when further developed, its centre assumes a whiter colour. This arises from the aggregation of the sporules of the pant, which are more abundant in this situation. As the development proceeds, this central yellow whitish mass assumes a mealy, powdery consistence, encroaches upon the edges of the capsule, which gradually disappear, whilst its upper concave form becomes convex, as Gruby pointed out. In general, an inflammatory ring is seen round the crust, which, as the capsule becomes elevated above the skin, enlarges, and assumes a deeper colour, indicative of the increased local irritation. At length the whole cracks or splits up; all regular form is lost; a dense thick crust covers the scalp; an odour like the urine of cats or mice, is evolved; and in chronic cases, vermin deposit their eggs in the interstices, and crawl in large numbers over the surface.

The other local symptoms are merely those which result from the greater or less degree of irritation produced in different persons by the changes above referred to. At first, scarcely any uneasiness is felt; perhaps occasional slight itching of the part. As the disease progresses, however, the itching becomes more intolerable, and induces the patient to rub and scratch the scalp. By these means, several of the crusts are forcibly torn from their attachments, and considerable effusion of serous fluid and blood is produced. Sometimes inflammation is thus occasioned, ter-

minating in ulceration, and the discharge of an ichorous fluid from beneath the crusts. At an advanced stage of the disease, the ammoniacal odour exhaled is insupportable to those who surround the individual, and the ichorous discharge, vermin, and crusts, which cover the affected parts, present a most disgusting appearance.

Although the disease most commonly attacks the hairy scalp, it may occur on the forehead, temples, cheeks, nose, chin, ears, shoulders, arms, abdomen, lumbar region, sacrum, knees, and legs. Alibert gives a plate in which it is figured in all these situations. I have myself seen it on the back, arms, and inferior extremities, where I could detect no hairs perforating the capsules.

The constitutional symptoms are of the utmost importance, but, generally speaking, receive little attention from practitioners. In every individual affected, who has come under my notice, the general health has been greatly deranged, and a scrofulous or cachectic constitution has been more or less evident. In some the *facies scrofulosa* of authors has been well marked; in others there were engorgements of the lymphatic glands of the neck; and in the only fatal case which has come under my observation, there were found tubercular depositions in the lungs, mesenteric glands, and other textures. Indeed, the generality of individuals who die labouring under tinea favosa, perish from phthisis, or other form of tubercular disease. The beautiful plates published by Alibert, are in this respect far from being true to nature; for whilst the capsules and crusts are accurately drawn, the individuals affected are evidently ideal personages, enjoying the most robust health, and possessing even the utmost beauty of form and feature. In the generality of cases, on the contrary, the patient is thin, the countenance is of a dirty yellow colour, and the whole aspect betrays depression of the vital powers. The appetite is often impaired, the alvine evacuations irregular, and the functions of digestion and nutrition are impeded. Numerous writers have observed the physical and mental development of the individual to be retarded; and Alibert gives instances where the epoch of puberty was considerably delayed.

By those not well accustomed to the diagnosis of skin diseases, tinea favosa has often been confounded with other eruptions of the scalp, more especially eczema and impetigo, or the combination of these diseases known as the eczema impetiginodes. In none of these forms of porrigo, however, do the yellow crusts or scales present traces of vegetations when examined microscopically. This, therefore, furnishes the real diagnostic and pathognomonic character of the disease, and must be considered of great value, when, as I shall subsequently attempt to show, it

has been occasionally mistaken by the most practised dermatologists.[1]

Causes.—Alibert considered the disease hereditary, and gives cases confirmatory of this view. As regards age, it is by far most common in children between the ages of three and twelve years. In infancy, and after puberty, it is more rare, although sometimes present; and in a few instances it has been observed in persons advanced in years. In almost all the cases which have come under my notice, the individuals have been exposed to causes which depress the vital powers, and are well known excitants of tuberculous disease. Close questioning will usually elicit that they are of a scrofulous family; have been exposed for some time to infected or corrupted air; inhabited small rooms, or confined streets, or dwellings situated in unhealthy situations; that the aliment has not been very nutritive, &c. &c. Hence why the disease is common in workhouses and jails, and most prevalent amongst the poorer classes of the population, and individuals who obtain a precarious existence.

Almost every writer on the disease considers it to be contagious. Bateman, Guersent, and others, speak of its spreading amongst school-boys, from the employment of the same towels, combs, caps, &c. Gibert has seen it propagated in the wards of St Louis from the same cause. It has been observed, he says, two or three times to be communicated by young people kissing each other, when it has appeared in the chin or neighbourhood of the mouth. Mahon even pretends to have contracted favus incrustations on his fingers, from having neglected to wash them after dressing the heads of those affected. Alibert, in his early writings, also thought it to be contagious. In his later works, however, he evidently doubts it, says that much exaggeration has been made use of on this subject, and states that the *amour propre* of parents usually induces them to ascribe the origin of so disgusting a disease to external communication. He further observes, "Mes éleves ont souvent tenté d'inoculer en notre présence, le produit de l'incrustation faveuse, sous plusieurs formes, et en variant les procedés. Le plus souvent il n'en rien resulté, dans d'autres cas est souvenu une inflammation passagère, qui s'est bientot évanouie—parfois une suppuration semblable qui pourrait s'établir par tous irritant mechanique, ou par l'insertion d'une substance étrangère dans le tegument."[2] Gruby also, on discovering its vegetable nature, inoculated thirty phanerogamous

[1] I am not aware that this peculiar disease has ever been observed in any of the lower animals. I may therefore mention that I have observed it in a common house mouse, in which animal the same mycodermatous vegetations were to be detected as in man.

[2] Traité des Maladies de la Peau, fol., p. 443.

plants, twenty-four silk worms, six reptiles, four birds, and eight mammifera, but only produced the disease once, and then in a plant. The human arm was inoculated five times, but, independent of a slight inflammation and suppuration, no effect was produced.

Remembering the ill success of these experiments, I thought it right to try whether the disease could be propagated in another part of the individual already affected; because if not susceptible of extending in a person already predisposed, it was not likely to be caught by one in perfect health. I accordingly made a small oblique puncture in the neck of a boy labouring under the disease, about an inch below the occipital protuberance, and an inch and a half from the large masses of crusts connected with the scalp. I introduced through this puncture, under and into the cuticle, some of the broken-down yellowish-white friable matter found in the centre of the capsules, which consists principally of the sporules of the plant. The wound healed up in a few days without presenting any thing abnormal. I also inoculated my own arm in the same manner, but without any result. I repeated these inoculations twice on the boy and on myself with the matter of the pustules instead of that of the crusts, but in every case without success.

It then occurred to me, that, as the disease usually appeared in the hairy scalp, it might be more readily produced in that part of the integuments. I therefore had my own scalp inoculated in two places with the pus taken from one of the pustules. It excited inflammation, suppuration, and ulceration. The matter discharged formed hard scabs, which, however, in no way resembled those of the porrigo, or exhibited vegetations when examined with the microscope. After continuing three weeks, during which period one of the sores extended to the size of a shilling, and both ulcerations still spreading, they were destroyed by the frequent application of caustic. I subsequently had my head inoculated with the sporules of the mycodermata, but the wound healed up completely without producing any appreciable result.

I afterwards rubbed a mass of the white friable matter, constituted of the sporules, upon the arm, so as to separate several of the epidermic scabs, and induce erythematous redness. Slight superficial abrasions were produced, which healed in a few days, without presenting any evidence of mycodermata having germinated. I also sprinkled the sporules over an extensive accidental abrasion on the leg, which, however, healed up in the usual manner.

Thus, in none of these experiments, performed in various ways, and frequently repeated so as to avoid fallacy, could I succeed in causing the plant to germinate on parts different from those which

originally produced it. In other words, I could not communicate the disease to other individuals, or from one part of the same individual to another.

I do not consider that these experiments are decisive of the question,—they require to be repeated by others more extensively and under varied circumstances; but I am of opinion, that more exact observations should be made on this point. In the majority of instances, the vague assertions of parents, or of the patients themselves, are accepted as the evidence of its contagious nature, and as children, either in their sports or at school, associate with those who may be supposed to be affected, nothing can be more easy than thus to account for its appearance. It may happen that the disease is produced in schools and hospitals, not so much from contagion, as from the circumstance that all are exposed to the same hygienic and endemic causes. In short, the objections urged at different times against every contagious disease, might be brought forward here. Another circumstance ought also to be taken into consideration. It is evident that Biett, Cazenave, Rayer, and other dermatologists have occasionally confounded the pustules of impetigo, which are accidental, with the peculiar favus crusts. Thus, Rayer gives the case of a nurse who contracted, he says, favus *pustules* on the arm, which supported the head of a child affected with the disease.[1] Now, the experiments detailed show, that the purulent or ichorous matter of the accidental pustules may occasion inflammation, suppuration, and ulceration when inoculated, without inducing tinea favosa, and I cannot but consider it likely that ordinary yellow scabs on the head from impetigo, have often been confounded with true favus.

The question of the contagious or non-contagious nature of tinea favosa is important, not only as one affecting the health of communities, but as influencing the future character of the individual. At an age when children are most open to general and moral instruction, the occurrence of a local disease which causes them to be shunned by their playmates, shut out from the active sports of childhood, and regarded from no fault of their own as an object of disgust, not only retards the corporeal development, but reacts most unfavourably upon their minds. Debarred from the feeling of emulation, which forms so powerful an incentive to the educational advancement of youth, they evince no desire to excel, the temper becomes soured, and there is every reason to fear that ignorance and a sense of mental and bodily inferiority has only fostered malice, and been the origin of more prominent vices in after life.

Pathology.—I have shown, when describing the symptoms and mode of development of the disease, that it is not essentially

[1] Dict. de Méd. Prat., art. *Teigne*.

pustular, and that the pustules occasionally present are accidental. On the other hand it has been shown, that the peculiar favus crust is composed of a capsule of epidermic scales, lined by a finely granular mass; that from this mass millions of mycodermatous plants spring up and fructify; and that the presence of these vegetations constitutes the pathognomonic character of the disease. In order to examine the development of these vegetations microscopically, it is necessary to make a thin section of the capsule, completely through, embracing the outer layer of epidermis, amorphous mass, and light friable matter found in the centre. It will thus be found, on pressing this slightly between glasses, and examining it with a magnifying power of 300 diameters, that the cylindrical tubes spring from the sides of the capsule, proceed inwards, give off branches dichotomously, which in turn terminate in round or oval globules. These tubes are from the $\frac{1}{400}$ to $\frac{1}{600}$ of a millimetre in thickness, jointed at regular intervals, and often contain molecules, varying from $\frac{1}{10000}$ to $\frac{1}{1000}$ of a millimetre in diameter. The longitudinal diameter of the sporules is generally from $\frac{1}{300}$ to $\frac{1}{100}$, and the transverse from $\frac{1}{300}$ to $\frac{1}{150}$ of a millimetre in diameter, (Gruby.) I have seen some of these oval and round, twice the size of the others. The long diameter of the former measured $\frac{1}{75}$ of a millimetre. The sporules agglomerated in masses are always more abundant and highly developed in the centre of the crust. The cylindrical tubes, on the other hand, are more readily found near the external layer. I have occasionally seen swellings on the sides of the jointed tubes, which are apparently commencing ramifications.

Mr Erichsen,[1] a recent writer on favus, has treated its vegetable nature as a mere hypothesis, "founded merely," he says, "upon the outward appearance, sufficiently strong certainly, which the cup-shaped crust of favus offers to lichens, or vegetations of a similar description." But surely had this gentleman read the observations of Gruby, to which he alludes, he never could have imagined that such were the grounds on which the proofs of its vegetable nature rest. Still less could he have fallen into so singular an error, had he demonstrated the structure of favus under the microscope, as is absolutely necessary in order to see the mycodermatous plants. If long hollow filaments, jointed at regular intervals, containing molecules within their cells, springing from an unorganized granular mass, and giving off towards their extremities round oval bodies or sporules, arranged in bead-like rows, be not vegetables, what are they? The animal tissues present nothing similar, while numerous plants, long known to botanists, present the same identical

[1] Medical Gazette, December 1841, p. 415.

structure. But not only must they be referred to the vegetabl kingdom, but to a considerably elevated position among the cryptogamic plants. The *protococcus nivalis* and *torula cermisiæ*, universally considered as plants, together with the *sarcina ventriculi*, lately described by Goodsir, are immeasurably beneath them in complexity of structure; and many of the *mucores* or moulds, growing in damp places, are, as I have satisfied myself by personal examination, much more simple in their organism. Any one who looks over the cryptogamia of Greville, will at once detect the strong analogy between the mycodermata found in tinea favosa, and the *penicilium glaucum* of Link, the *aspergillus penicillatus*, *acrosporium moniloiddes*, *sporotorium minutum*, *nostoc cæruleum*, and other plants therein figured. The vegetable nature of these structures, indeed, cannot for a moment be doubted, by any one who has personally examined them, or who is accustomed to microscopic researches.

The seat of favus has been much disputed by authors. By some it has been located in the piliferous bulbs or follicles, (Duncan, Baudelocque, Rayer), by others in the sebaceous glands, (Sauvages, Underwood, Murray, Mahon), and by a third party in the reticular tissue of the skin, (Bateman, Gallot, Thompson). According to Gruby, the plants grow in the cells of the epidermis, the true skin is compressed, not destroyed, and the bulbs and roots of the hairs and sebaceous follicles are only secondarily affected.

I have made observations to determine the correctness of this statement, and found that the whole inferior surface of the capsule is formed of epidermic scales, thickly matted together. These are lined by finely granulated matter, from which the plants appear to spring, and which unites the branches and sporules together *en masse*. Superiorly, however, the epidermic scales are not so dense; and I have always found them more or less broken up, and not continuous. This observation is valuable, as indicating the probable mode in which these plants, or the sporules producing them, are deposited on the scalp. It will be seen, that the appearance of the peculiar porrigo capsule, was invariably preceded by a desquamation of the cuticle, that is, a separation or splitting up of the numerous external epidermic scales which constitute its outermost layer. Hence it is more probable, that the sporules or matters from which the vegetations are developed, insinuate themselves between the crevices, and under the portion of epidermis thus partially separated, than that they spring up originally below, or in the thickness of the cuticle.

One important point connected with the pathology of this disease appears to have escaped all previous writers except Mr Erichsen, namely, its connection with tubercle. This gentle-

man, while he treats the *fact* of its vegetable nature as hypothetical, says, referring to the views of those who preceded him, "I hope to be able to show that all these opinions are incorrect, and that the matter of favus is a modification of tubercle—that it is a tubercular disease of the skin. By tubercular I do not mean a disease like lupus, characterised by small firm tumours, but a disease, the nature of which consists in the deposition of that *heterologous* formation called tubercle." This view of the nature of tinea favosa I have long held; and it was distinctly stated by me, when treating of the pathology of scrofula, in a work published last autumn.[1] The crust of tinea favosa, however, is not constituted alone of tubercular matter, as Mr Erichsen supposes. This peculiar effusion only constitutes the soil from which the mycodermatous vegetations spring, as I shall now endeavour to show.

Gruby describes the mycodermata of tinea as springing from an amorphous mass, of which the periphery of the capsule is composed. This mass, according to my observations, is composed of a finely granular matter, and identical in structure to certain forms of tubercle. The cheesy matter, for instance, so frequently found on the secreting surface of serous membranes, and into tubercular cavities and other structures in chronic cases of tuberculosis, or general tendency to tubercular deposition, presents this character. Every pathologist who has minutely examined tubercle, recognises a granular form, in which there is no trace of nucleus or cell, and which, therefore, we are warranted in considering as unorganised.[2] I have myself repeatedly examined this tubercular matter, and been unable to detect any difference between it and the mass in which the vegetations of tinea appear to grow. Chemical analysis of this form of tubercle demonstrates it to be composed principally of albumen, with a minute proportion of earthy salts; sometimes there is combined with it a small quantity of fibrine or gelatine. If this general result be compared with the analysis, by Thenard, of favus matter, the identity between it and tubercle must appear highly probable. He found in 100 parts—coagulated albumen, 70; gelatine, 17; phosphate of lime, 5; water and loss, 8 parts. Thus the evidence furnished by morphology and chemistry, agree in determining the granular matter found in the crusts of tinea favosa to be tubercle. If in addition to this we add the predisposing causes of the disease, which are the same as those tending to tubercular deposition in general, remember the cachectic constitution of those affected, and the uniformity with which pulmonary or mesenteric tubercles are found in those who die labouring under it, it appears to me that the circle of evidence is complete.

[1] Treatise on the Oleum Jecoris Aselli, p. 94. [2] Gerber, Gulliver.

I consider, therefore, that the pathology of tinea favosa is best understood by considering it a form of scrofula, understanding by that term a peculiar state of the constitution accompanying tubercular deposition in one or other of the animal textures: that in this particular disease the tubercular effusion takes place amongst the cells of the epidermis, and there constitutes a soil for the germination of mycodermatous plants, the presence of which is pathognomonic of the disease.

Treatment.—Almost every species of treatment has been had recourse to, in order to remove this disagreeable and intractable disease. My object, therefore, at present, is not so much novelty, as it is an endeavour to recall principles and modes of treatment, which have been much lost sight of by practitioners, and to which the symptoms, causes, and pathology of tinea favosa, as previously described, naturally lead.

Before entering, however, into the mode of treatment which I have myself found successful, I must remark, that every author who advocates a particular line of practice, has published cases successfully treated by his plan. No doubt, cases have been cured by all or any of the methods recommended. In some instances, tinea favosa wears itself out, or rather, as the development of the frame proceeds, and the constitutional strength improves, the conditions necessary for its production and maintenance are removed, and it consequently disappears. In every case, however, it must be our object to remove the disease permanently as soon as possible, and this is only to be done by removing the pathological conditions on which it depends.

For the most part, practitioners have principally trusted to local remedies, and every medical man had his favourite application in such cases. Citron, sulphuric, tar, and iodine ointments, are those most commonly used in this country, all of which, it is stated, are highly successful. No exact results, however, so far as I am aware, have been arrived at, nor has any particular treatment been tried in Britain on such an extensive scale as to induce any great confidence in its success.

The notion that it originates in the bulbs of the hair caused an attempt to remove the disease by radicating the structures with which it was supposed to be connected. Hence the barbarous and cruel treatment by means of the *Callotte*. A modification of this plan is still extensively practised in Berlin. In Paris this practice has generally been put aside, for the milder and empiric treatment of the frères Mahon. Between the years 1807 and 1813, 439 girls, affected with tinea favosa, were cured by them at the Bureau Central des Hôpitaux, and the mean duration of the treatment was 56 applications. During the same lapse of time, 469 boys were cured, and the mean duration of the treatment was 56 applications. These applications are generally

made every other day, so that the average length of treatment by this much boasted and successful method is three months and a-half.

I have endeavoured to show, however, that it is a constitutional disease, and dependent upon the causes which induce scrofulous diseases in general. The treatment, therefore, ought to be constitutional, and directed to remove the tendency to tubercular deposition, on which the malady depends. No doubt, however, a local treament in this, as in all disorders which are at the same time general and local, is of the utmost service.

I consider, then, that the chief indications of treatment are, 1st, To remove the scrofulous disposition; and, 2dly, To employ such topical applications as tend to prevent the development of vegetable life. This line of practice may be thought similar to that recommended long ago by Lorry, who advises, 1st, A modification of the fluids and solids of the economy by a general treatment; 2dly, A vigorous attack upon the local disease by topical applications, capable of removing the crusts, causing the skin to suppurate deeply, and substituting a solid cicatrix for the morbid ulceration of the hairy scalp. For the most part, however, the general treatment of physicians has been confined to diluent drinks, blood-letting, purging, and remedies which depress the vital powers, whereas it must be evident, that if the views of its pathology I have brought forward be correct, and it is in its nature allied to tubercular affections, a treatment exactly opposite ought to be pursued. The development of vegetable life may also be prevented by the application of much milder remedies than the escharotics, or irritating ointments usually employed.

The treatment of scrofula has been fully entered upon by me in another place.[1] Suffice it to say at present, that I endeavoured to show how this peculiar cachexia is caused and kept up by some fault in the digestive process; that the blood is secondarily affected, and its albuminous constituents proportionally increased; that the albumen at length becomes effused into the different structures of the economy, causing the various forms of tubercular disease; and, lastly, as the albumen in the blood becomes excessive, and its effusion into the textures increases, the fatty constituents of the frame diminish. It was shown, by an appeal to numerous facts, and the recorded experience of the most eminent German practitioners for the last twenty years, amongst whom may be cited the names of Hüfeland, Schönlein, Dieffenbach, Graefe, Rieke, Rust, Jüngken, Jäger, Chelius, Naegele, and others, that under such circumstances the internal and external exhibition of cod-liver oil has been attended with the most marked advantage, and often been made the means of

[1] Op. cit.

cure when all other remedies had failed. Among other forms of scrofulous disease, tinea favosa was particularly alluded to, and cases cited from Brefeld and Guérand, in which this remedy had succeeded in removing it, under peculiarly unfavourable circumstances. The action of the oil appears to be the same in this as in other forms of scrofulous disease, and should be given combined with appropriate diet and exercise, and with reference to the same indications and contra-indications. As these have already been laid before the profession, it is unnecessary for me to dwell upon them at present. I shall conclude this paper, therefore, with the particulars of a case which will serve to describe and illustrate the treatment I have found most successful.

John Mackay, aged nine years, only son of a chairwoman who is healthy-looking and robust. The father died five years ago, as it is stated, labouring under consumption. The boy and his mother have since then frequently changed their residence, and lived in different parts of the town. His nourishment has principally consisted of porridge, and potatoes, and milk, and this had not always been very abundant. Three years before I saw him, an eruption appeared upon his head, which gradually spread over the scalp. He has been under the care of numerous dispensary practitioners, who have ordered the head to be poulticed, and various applications to be made to it, which from the description of the mother, seem chiefly to have been citron ointment, tar ointment, and creasote. When he first came under my notice last October, the whole scalp was covered with a yellowish-white crust nearly a quarter of an inch thick, the margin of which still presented here and there the rounded form of the favus capsule. It emitted a highly disagreeable smell, similar to that of mice, and vermin crawled in large numbers over its surface. Examined microscopically, the crusts presented the mycodermatous vegetations in a high state of development. He complained of intolerable itching and a burning sensation in the scalp, which often obliged him to tear off large masses of the crust, and thus occasion effusion of blood and ulcerations, traces of which could be detected among the crusts. This boy was of a well-marked cachectic constitution, but had never been affected with engorged lymphatic glands. The face and surface generally were of a dirty-yellow colour. The appetite was not good, and he did not eat much. The bowels were irregular; pulse moderate and of good strength. Latterly, he had wasted away rapidly, and appeared to be falling into a state of marasmus. Percussion and auscultation elicited nothing abnormal in the chest. The abdomen was not swollen, and neither by percussion nor palpation could enlargement of the mesenteric glands be detected. His intelligence did not appear great for a boy of his age, and his bodily activity seemed latterly to have been much diminished.

As the appetite was much impaired in this case, I commenced the treatment by ordering him to take, twice-a-day, 15 drops of the Tr. Ferri. mur. in two ounces of Inf. gent. In addition to his usual food, he was to have broth and fish, and I insisted upon his going out in the open air as much as possible. A large poultice, to be changed twice daily, was ordered to the scalp, to remove the crusts. I did not see him again for a week, during which period he followed regularly the advice given. At this time all the crusts were removed, and the scalp presented a clean and bald surface, with here and there patches of erythematous redness containing several pustules of impetigo. As I was at that time making observations on the mode in which the disease commenced, I ordered the poultices to be discontinued. As the appetite was now much improved, and the tongue perfectly clean, I ordered two tablespoonfuls of cod-liver oil to be taken twice a-day. I now saw him every two days. He vomited the first two doses of the oil, and felt considerable nausea after the third, fourth, and fifth. This, however, soon disappeared, and he subsequently took it without repugnance. The disease appeared again on the scalp in eight days, and during the next 48 hours it became pretty thickly sprinkled with sulphur-coloured spots, generally about the size of a pin's head. These presented under the microscope the cylindrical jointed tubes formerly described. I now ordered a poultice to be applied every night, and the scalp to be covered over with the oil three times a-day, by means of a large camel-hair pencil. During the day he was to wear an oil-skin cap. The internal dose of the oil was also increased to three tablespoonfuls twice daily, and in a week subsequently to four tablespoonfuls. He persisted in this treatment for a month, at the end of which time the general appearance had undergone a wonderful improvement. The cachectic aspect, and dirty yellow colour of the skin, had given way to a clear lively colour, and the cheeks were tinged with the hues of health. The appetite was good; he voluntarily took exercise, and played with his fellows in the streets. The bowels were open regularly, and the tongue clean. I now ventured to see if the disease had been subdued, and ordered the local applications to be discontinued. At the termination of a week, the head was covered with thick scales of desquamated cuticle, and I expected daily to see the appearance of the bright yellow favus capsules. Nothing of the kind, however, occurred, even after waiting another week, and I anticipated that the disease had been radically cured. He continued taking 4 oz. daily of the oil for ten days longer, when it was discontinued. During the ensuing three weeks I saw him from time to time, and had the satisfaction of observing that some of the hairs had escaped destruction, as they were appear-

ing thinly over the scalp, especially posteriorly. At this time he left Edinburgh for Glasgow.

I could readily give more instances where this remedy cured the disease, when numerous others had failed. The utility of any particular plan of treatment, however, can only be tested by trying it on a large scale; hence I have brought it under the consideration of those whose opportunities of meeting with the disease being more extensive than my own, may better enable them to confirm or nullify its value.

Explanation of the Plate.

Fig. 1.—Mode of development, and appearance of the favus capsules; *a* the different stages which the capsule goes through from the time it is first seen until it breaks up; *b* the honey-combed appearance caused by the junction of several capsules; *c* desquamation of the cuticle previous to the appearance of the capsule; *d* large favus capsule which was found on the shoulder; *e* most advanced period, when numerous capsules have been broken up, and form a uniform thick crust.

Fig. 2.—Thin section of a favus capsule, as seen with a magnifying power of 300 diameters; *a* epidermic scales, constituting the periphery of the capsule; *b* finely granular matter lining this, and found between the filaments and sporules; *c* jointed tubes springing from the granular mass; *d* the same tubes larger, more separated, branching dichotomously, and giving off sporules towards their extremities,—fragments of these tubes may also be seen, and numerous sporules loose or collected together; *e* mass of sporules towards the centre of the capsule.

(It is seldom that such a fine view of the plants is obtained as that figured, because, in making the section, it is rare that the cut surface corresponds exactly with the course taken by these vegetations; more generally, therefore, the tubes are cut across, and fragments of them, more or less long, according to circumstances, may be seen floating loose in the field of the microscope. In a hundred sections and demonstrations, such an appearance may probably be met with once or twice.)

Fig. 3.—A small fragment from the centre of the capsule, composed principally of sporules; *a* large sporules distinctly nucleated.

Fig. 4.—Isolated branches, showing the mode in which the branches and sporules are given off.

Fig. 5.—Small portions of the beaded filaments, magnified 800 diameters, showing the molecules occasionally found within them.