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ON

THE PATHOLOGY AND TREATMENT

OF

THE CONTAGIOUS FURUNCULOID.

BY

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ON
THE PATHOLOGY AND TREATMENT
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THE parasitic, and therefore communicable, nature of certain diseases of the skin is now well established. For this most important advance in pathology, we are mainly indebted to microscopic research. Much remains to be done, however, before the nature and treatment of several cutaneous diseases, especially those of an inveterate and intractable character, can be fully elucidated. Future researches into the pathology of these diseases, will have a twofold direction. Firstly, a wider application will be given to the doctrine of a parasitic origin and contagious nature. Secondly, the merely local characteristics will have to be more carefully studied in reference to constitutional states. The result will be, considerable changes in the nosological arrangement of cutaneous diseases, in so far as it is founded upon mere differences in visible characteristics. In short, it will be found that, just as specific inflammations of the skin, like the syphilitic, variolous, etc., present every variety of character, so also it is with other cutaneous diseases dependent upon a common cause or class of causes. In sycosis, favus, and pityriasis, we have examples of the different forms of disease induced by *epiphytes* or parasitic vegetable growths; in the varieties of morbus pediculosus, scabies and acne, illustrations of the varieties of inflammatory action induced by *ectozoa* or parasitic animals. In all these, the inflammation may be transitory or inveterate, congestive, effusive; suppurative, or desquamative, according to the constitution, age, habits of the individual; or, according to the mode of propagation, the development, or the instincts of the parasitic organism.

There are other cutaneous diseases of a chronic and obstinate character, in which, although microscopic research has failed to demonstrate a parasitic cause or a contagious nature, observation and analogy would lead us to classify in the same group. In particular,

may be mentioned, chronic inveterate eczema, psoriasis, lepra, and the furunculoid disease. Every experienced practitioner is aware of the intractable character of each of these last-mentioned forms of cutaneous affection, of the uncertain results of treatment, and of the multifarious and heterogeneous remedies that have been adopted. Recent observation and experience having led me to simpler views of the pathology of these diseases, and therewith to greater success in treatment, as well as to a more simple method of cure, I am inclined to think that an account of these views will interest the profession, and I therefore shall now consider the pathology and management of furunculoid disease, leaving the discussion of inveterate eczema, in all its forms, in both adults and children, and of psoriasis and lepra, to some other opportunity.

Previously to the publication of a clinical lecture, which I delivered to my class at York, on the 25th February 1851, on the epidemic furunculoid, it was not generally understood, in this or any other country, that boils were ever epidemic; still less, that they were ever associated, as to cause, with those other eruptive diseases with which I then observed it to be associated as to cause; and although I have found one or two incidental notices of the unusual prevalence of boils, and which I shall mention, the general pathology of the disease, as it occurred epidemically, had certainly never been discussed previously to the delivery and publication of that lecture.¹ I then ventured to express the opinion that it was a communicable disease; and, although that opinion has been almost wholly disregarded by succeeding observers and writers, I still, but more decidedly, entertain it, having satisfied myself as to its soundness, by careful observation. Little having been added to our knowledge of the origin, nature, and affinities of the affection, since the publication of my lecture, I shall, at this time, adduce some interesting facts in relation to these points—observing, however, that up to 1851, the epidemical relation of the *materies morbi* to malignant pustule, phlegmon and onychia, had not been manifested. The disease has usually been designated “furuncular” simply. I at first named it “a new epidemic exanthem,” seeing that the furuncular inflammation was by no means the necessary, or even most common form, of the disease. Perhaps the term I now adopt, namely the CONTAGIOUS FURUNCULOID, will be found as little objectionable as any, to those at least who may agree with me in opinion. The term furuncular is no more exclusively appropriate than carbuncular, and, as now used, is calculated to mislead the reader as to the true nature of the disease.

In my published lecture of February 25, 1851, I illustrated several varieties of the disease by cases, and indicated the following principal forms:—1. Simple furuncle. 2. Effusive inflammation

¹ It appeared on March 7, 1851, in the *London Medical Gazette*, and in the same month in the *Medical Times* and the *Dublin Medical Press*.

of the derma, manifested in the form of eczema, pemphigus, and phlyctenæ. 3. Suppurative inflammation of the derma, resembling impetigo and ecthyma. 4. Carbuncular inflammation. 5. Two or more of these occurring coincidentally. More recent observation shows that we may add to these—6. Sloughing gangrene of the lip, eye, tongue, vagina, scrotum, etc. 7. A diffused inflammation of the cellular tissue returned to the Registrars, as a cause of death of late years, under the term phlegmon; and, 8. Another form, seldom fatal, that of whitlow. I will now refer to each of these specially.

1. *Simple Furuncle*.—The course of the simple furuncle is very definite. An itching is usually first experienced, and then a small hard pimple may be felt in the skin, not larger commonly than a small pea. This enlarges from day to day, and the skin becomes red over it. About the fourth day the centre softens, and on the fifth suppuration is established, with partial destruction of the subcutaneous cellular tissue (the slough or “core”). By the seventh day there is commencing cicatrization. Rarely more than four or five of these occur at once.

2. *The Furuncle, with vesication or pemphigus*.—In the furuncle with vesication, the inflammation is preceded by a vesicle; the pruritus is greater, the erysipelatous redness more extended, and, in bad cases, true phlyctenæ form. These may be prolonged to the fourteenth day. In a few rarely occurring cases there is a phlyctæna only.

3. *Ecthyma*.—In the impetiginous and ecthymatous form, the boils are usually interspersed with ecthyma, impetigo, or eczema. It is not uncommon to find this variety preceded by a pemphigoid eruption, in which the serum is opaque and purulent, and terminating in crusts. This sometimes attacks the eye, constituting a styce.

4. *The Carbuncular form*.—When the disease is carbuncular, it may appear as true carbuncle, or as a spurious form, in which there is, in fact, a confluence or blending of furuncles. Both these are usually seen on the nucha, back, or loins. The true carbuncle may be either solitary, or, as is most common, may arise amongst a number of furuncles.

The eruption in all these forms is usually seen on the back nates, thighs—less frequently on the legs and face, still less so on the trunk. The bend of the joints, or the ends of the fingers (as in whitlow), are not unusual situations. The seat of the disease will, however, depend upon the nature and locality of the exciting cause. Wherever a local irritation is induced, there will most probably be the seat of the specific inflammation. A blister is one of the commonest of the exciting causes; the application of a poultice, or of an irritant

ointment, a slight blow, and the like, will also act as exciting causes of the disease. A crop of boils is a not unfrequent occurrence after an eruptive fever, as variola, scarlatina, the "dengue," etc. In these cases the cutaneous inflammation operates as an exciting cause, in the same way as the inflammation consequent upon a blister.

The accompanying constitutional disturbance varies much. In healthy individuals it is not at all well marked—in the cachectic the tongue is usually coated, sometimes brown, the appetite impaired, the bowels constipated; occasionally rigors and febrile reaction are manifested, and great debility felt.

This disease became prevalent in the clinical wards of the Royal Infirmary of Edinburgh during June, July, and August last, subsequently to the admission of a Dane, resident in Leith for nine months, who was affected with the pemphigoid and impetiginous form. In him it appeared principally over the sacrum, as a vesicle, followed by a superficial ulceration, surrounded by an inflamed areola, and covered by a thick crust. Interspersed amongst these were isolated pustules, with an indurated inflamed base. Under the use of quinine, with mineral acids and warm baths, the pemphigoid characteristic disappeared, but the impetiginoid furunculi were more numerous and larger. Unfortunately, other patients in the ward used the same bath in which this patient bathed, and when some of the crusts from his body (it was reported) were floating upon the water. Several of these were attacked with the same furunculoid eruption. The following history illustrates the origin and varied forms of the disease:—

On the 3d June, George Stewart, Ward XI., had a blister applied between his shoulders, which ran the usual course. On 11th June he complained of pain in the seat of the blister, and on examination, it was found that a number of pustules, with an indurated base, had appeared there, principally upon the upper and right edges of the space which the blister had occupied. They varied in size from a pin's head to a fourpenny piece; some got no larger, but others increased in size, and suppurated, so that a whitish tenacious fluid could be squeezed from them. On the evening of the 16th June a large poultice was applied; next day blebs, like those seen on the Dane, were observed to be intermingled among the furuncles, containing an opaque purulent fluid, while near the angle of the right scapula, one of the furuncles was fully an inch in diameter. This at last became a large carbuncle, about three inches in diameter, containing the usual sloughy tissue. Another large boil also showed itself on the back, lower down, which, on being incised, was found to contain blood only. The treatment ordered in this case was the water dressing to each separate boil, the careful removal of their contents, and the most sedulous attention to cleanliness. The result was a check to any further formation of furunculi.

5. *The Phlegmonous, Phagedænic, and Gangrenous Forms.*—These

seem to occur in individuals who, from some pre-existent morbid state of the blood and of the nutrient forces, are already in such a condition that the ordinary sloughing inflammation of the phlyctena, furuncle, or carbuncle, becomes exaggerated into rapid death of the tissue. The lip and vagina in children are specially prone to become the seat of phagedenic inflammation, not unlike hospital gangrene; more rarely, the scrotum and perineum in the aged. The late Mr Harvey Ludlow (when House-Surgeon to St Bartholomew's), called the attention of the profession, in 1852, more particularly to carbuncular inflammation of the lips and other parts of the face; Mr Stanley and Mr Lloyd have also observed the affection, and noted its alliance to carbuncular and furuncular inflammation. Happily, these cases are comparatively rare, for the destruction of the tissues is frightful as to extent and character.

6. *Onychia or Whitlow, and Suppurative Inflammation of the Fingers and Palms, and the Palmar and Digital Sheaths of Tendons.*—These forms seem to be of rarer occurrence in the United Kingdom than in the United States and on the Continent. They are not unfrequently followed by contractions of the fingers, caries, etc. They are probably due to circumstances which bring the poison into immediate contact with the hand and fingers. I shall shortly adduce facts in illustration of this view. Dr Hamilton Kinglake of Taunton, has specially recorded the prevalence of whitlow in Somersetshire, in conjunction with boils and carbuncles.¹

I have been favoured by Dr Farr with tables of the deaths from carbuncle and phlegmon, in England and Wales (exclusive of London) during the seven years 1848–1854. These valuable documents will be found overleaf; they merit more attention than the London returns, because they extend over not only a larger but a more mixed population of both town and rural districts. It will be seen at a glance, that the mortality throughout the country from phlegmon did not advance *pari passu* with that from carbuncle, as seems to have been the case in London. On the contrary, it has been in an inverse proportion to that of the latter, as is shown by the following abstract of the tables of deaths in England, exclusive of London, in the seven years, from the two diseases:—

Year.	Carbuncle.	Phlegmon.
1848	91	426
1849	81	645
1850	134	422
1851	161	481
1852	233	365
1853	252	309
1854	300	239

¹ *Edinburgh Monthly Journal*, 1852.

ENGLAND AND WALES.

DEATHS FROM CARBUNCLE IN THE YEARS 1848-54.

AGES.

Years.	Sex.	Total Deaths.	Under one Year.	1.	2.	3.	4.	Total under 5 years.	5.	10.	15.	25.	35.	45.	55.	65.	75.	85.	95 and upwards.	Ages not specified.
1848.	Males.	58	5	1	...	...	...	6	...	...	...	...	4	9	20	11	7	1	...	...
	Females.	33	3	...	...	...	...	3	...	...	1	...	2	3	7	9	4	1	1	...
1849.	Males.	64	...	...	...	...	...	...	...	1	...	4	6	20	7	19	5	1	...	...
	Females.	17	2	1	...	...	...	3	...	...	...	2	3	2	3	1	3	...	...	...
1850.	Males.	102	3	...	1	...	...	4	...	...	4	2	10	17	19	31	13	2	...	...
	Females.	32	2	1	...	...	1	4	...	...	...	...	6	2	8	6	3	3	...	...
1851.	Males.	112	1	...	...	...	...	1	...	...	2	...	10	14	43	27	11	4	...	...
	Females.	49	4	...	...	...	...	4	...	...	2	3	4	4	13	12	7	...	...	...
1852.	Males.	167	3	...	1	...	...	4	...	...	8	5	17	21	49	38	22	3	...	...
	Females.	66	1	1	...	...	...	2	1	1	1	3	6	10	12	15	11	3	1	...
1853.	Males.	190	4	...	...	1	...	5	...	...	7	7	18	41	47	41	21	3	...	...
	Females.	62	3	...	...	...	...	3	...	...	7	6	5	11	7	10	13	...	...	...
1854	Males.	218	2	1	...	...	...	3	...	2	3	12	21	41	56	50	26	4	...	...
	Females.	82	6	...	...	...	...	6	1	...	3	6	7	10	11	23	10	4	1	...
Totals,	Males,	911	18	2	2	1	...	23	...	3	25	30	86	163	241	217	105	18	...	...
	Females,	341	21	3	...	...	1	25	2	1	14	22	33	42	61	76	51	11	3	...
Grand Totals,		1252	39	5	2	1	1	48	2	4	39	52	119	205	302	293	156	29	3	...

ENGLAND AND WALES.

DEATHS FROM PHLEGMON IN THE YEARS 1848-54.

AGES.

Years.	Sex.	Total Deaths.	Under one Year.	1.	2.	3.	4.	Total under 5 Years.	5.	10.	15.	25.	35.	45.	55.	65.	75.	85.	95 and upwards.	Ages not specified.
1848.	Males.	245	71	12	9	2	11	105	8	8	12	12	12	25	17	23	20	3	...	...
	Females.	181	38	14	9	7	6	74	5	6	11	13	15	14	17	16	10	...	...	...
1849.	Males.	356	152	25	9	10	8	204	18	15	18	9	14	23	26	18	7	3	...	1
	Females.	289	99	22	14	11	4	150	11	5	20	11	21	15	21	22	11	2	...	...
1850.	Males.	245	74	23	11	7	1	116	18	6	20	10	16	18	14	14	10	3	...	...
	Females.	177	49	20	12	6	3	90	9	3	10	12	8	6	19	15	5	...	...	...
1851.	Males.	285	72	25	12	2	7	118	15	6	16	17	19	18	28	35	11	2	...	...
	Females.	196	52	15	11	5	1	84	17	4	12	16	16	8	14	16	6	3	...	...
1852.	Males.	201	68	6	10	2	1	87	9	9	8	7	13	17	21	21	7	2	...	...
	Females.	164	47	9	9	4	2	71	9	7	6	9	15	5	13	18	8	3	...	...
1853.	Males.	166	46	9	3	2	2	62	16	9	12	5	6	13	13	17	13	...	...	...
	Females.	143	47	17	10	4	1	79	3	10	7	10	4	5	9	9	6	1	...	...
1854.	Males.	134	33	5	1	1	2	42	7	3	9	5	15	14	15	12	10	2	...	...
	Females.	105	26	11	3	3	1	44	7	3	2	9	6	4	11	11	7	1	...	...
Totals,	Males,	1632	516	105	55	26	32	734	91	56	95	65	95	128	134	140	78	15	...	1
	Females,	1255	358	103	68	40	18	592	61	38	68	80	85	57	104	107	53	10	...	...
Grand Totals,		2887	874	213	123	66	50	1326	152	94	163	145	180	185	238	247	131	25	...	1

As a proof of the great development of these two diseases, I sub-join a table of the deaths from carbuncle and phlegmon during the five years 1838-1840; in this, however, I have included the returns of the metropolis as well as of England, so as to balance, in some degree, the difference of population during the two periods:—

Year.	Carbuncle.	Phlegmon.
1838	35	16
1839	33	82
1840	33	127
1841	28	118
1842	40	98

The average of these five years is for carbuncle 34·8, for phlegmon 88·2; but 645 died of the latter in 1849, and 300 of the former in 1854.

The London tables of mortality also show, in some degree, the extent to which this disease, in the carbuncular and phlegmonous forms, has been developed of late years in the metropolis, and the conditions (in part) under which it has taken place; but the deaths, I need hardly say, must be in a very small proportion to the numbers attacked, inasmuch as it is rarely fatal unless complicated with serious cachectic states. The deaths in London, from carbuncle, during the four years, 1840-1843, averaged 3·75 annually; during the year 1854 they amounted to 91. The deaths in London from phlegmon also averaged 3·75 annually, during the four years 1841-1844; in 1855 they amounted to 51. The increase for both began markedly with 1845, but while the deaths from carbuncle fell from 9 in that year to 3 in 1846, the deaths from phlegmon rose from 10 to 31. The mortality in London from both was nearly uniform during the five years subsequently (1847-1851), that from carbuncle averaging 17·6, from phlegmon 25·4 annually. This was for both an enormous increase on the usual mortality, but in 1852 another sudden increase in the mortality took place, and the deaths from carbuncle and phlegmon were, respectively, 50 and 32. This increase was progressive, in the subsequent years, to a maximum of 91 deaths from carbuncle in 1854, and of 51 from phlegmon in 1855.

The deaths in London from carbuncle, during the ten years ending 1855, were more numerous during autumn and winter than in spring and summer, in the proportion of 19 to 17. In September, December, and March they were at a maximum, the average being 37; during April, at a minimum of 18. The maxima of deaths from phlegmon, for the same *decennium*, occurred in December and March, being 34 and 35; the minima in May, 18—and August and October—each 19 deaths. How far the varying mortality of the different months is due to variations in temperature and other meteorological conditions, or to changes in the food, or to the outbreak of epidemics, is not made out.

There is a noteworthy difference between carbuncle and phlegmon, in the ages of the persons dying from them. Of 1252 deaths from

carbuncle during the seven years, 1848-1854, only 50 were aged under ten years, or 4 per cent.; but of the 2987 deaths from phlegmon, 1478 were aged under ten years, or more than 49 per cent. This is probably due, in part at least, to infantile fevers acting as predisposing or exciting causes of phlegmon, but due also, probably, to the low vitality of infantile life, for it will be seen, on reference to the table, that of the 50 deaths from carbuncle under ten years of age, 39, or 78 per cent., occurred under one year; and of the 1478 corresponding deaths from phlegmon, 874, or 59 per cent., were under one year. It is probably in consequence of the complications, which render the disease fatal, occurring more frequently in men than in women, that carbuncle, like other diseases of its class, is more fatal in men than in women, in the proportion of about three to one. It is for the same reason, probably, that the fatal cases of carbuncle are, for the most part, in persons of both sexes, above the age of forty.

Before entering upon the etiology, it will be useful to examine the pathological anatomy of the disease. It is primarily an inflammation of the derma and of the subjacent cellular tissue, ending variously, in accordance with varying conditions. When it attacks the surface of the derma, effusion of serum, of a sero-purulent fluid or of a bloody ichor, is the result; when it attacks the derma proper, the various forms of furuncle, carbuncle, or anthrax occur. It is an almost universally accepted theory, that the "core" of the suppurating tumour known by these names consists of sloughing cellular tissue, combined with exudative deposit; and that the slough is consequent upon strangulation of the blood-vessels of the part by the distended and resisting tissues that surround them. There are various reasons for adopting this theory, if it were only necessary to explain the simple furuncular or carbuncular form of the disease. For example, it is in accordance with the theory that carbuncles and large furuncles are the most prevalent in those portions of the surface where the skin is the most dense, as the neck, back, nates. It is, also, in accordance with the theory, that the sloughing should be most extensive in those individuals in whom the vital energy is feeble, and a cachectic state is present which predisposes to inflammation of an asthenic type, such as that complicating nephria. But there are various phenomena which the theory does not explain. It does not explain the more diffuse inflammation and suppuration of the cellular tissue known as *phlegmon*, or that gangrenous form which attacks portions of the skin not at all dense, as the lip, vagina, and scrotum; and, above all, it gives no explanation of that rapid and fatal gangrenous form of carbuncle known as the *pestis carbuncularis* of horned cattle, and which, when that disease is communicated to man, is *charbon* or the malignant pustule.

These residual phenomena point, therefore, to another cause of the characteristic inflammation. This is probably a specific and communicable *materies morbi*, the operation of which, upon the living

tissues, is to devitalize them. Experience and observation as to the spread of the epidemic, have convinced me that this doctrine is so important an element in the etiology, that without it we have, in fact, no trustworthy clue to the pathology and treatment.

I have observed that the *materies morbi* of the contagious furunculoid is communicable—

1. From one individual to another.
2. From one portion of the skin to another portion, in the same individual; and,
3. That if this communication be thoroughly prevented, the progress of the disease in a family or in an individual, is arrested.

I have already mentioned examples of the probable communication of the disease from one individual to another, as having occurred in the clinical wards of the Royal Infirmary of Edinburgh. In a similar way, it has been repeatedly observed to spread through families, schools, asylums, etc., where no precautions have been taken to prevent contagion. In such examples, it will usually be found that the affection, although slow in its progress through the population, attacks equally in succession the strong and the feeble, going on unmodified by diet, temperature, seasons, etc. Often, on inquiry, it will be found that the members of a family have had the disease subsequently to the admission into the family-circle of a person affected with it. And, inasmuch as no other reason can be assigned for its spread, which shall with equal comprehensiveness explain it (all theories as to peculiar atmospheric conditions, peculiarities of diet, etc., proving insufficient), it is a reasonable and philosophical conclusion, that it is communicated from person to person.

The mode in which that communication takes place is not so clear, as the following instance will show:—A gentlewoman being confined unexpectedly, had to “borrow” a monthly nurse. In about a week after the latter arrived, the patient had a boil on the forehead; to this succeeded another on the cheek, over the malar bone; and to that a third on the upper lip. Upon inquiry, it was found that the nurse had been in attendance, for the two months previously, upon an infant which had numerous boils, and that in the same house with the infant (a boys’ boarding-school) many of the inmates were similarly affected. In this instance, the nurse had had to feed her puerperal patient only, and to wash her face and hands, so that one might almost conclude that the *materies morbi* had dropped upon her from the nurse. On the same hypothesis, we can explain the occurrence of boils on the *margins* of blistered surfaces rather than on the central portions, the latter being well covered up, the former not.

It is certain, however, that immediate contact of the skin with the morbid fluids of a person dying with the disease will induce it. A very decisive proof of this is to be found in a recent number of the *Lancet*. A patient in the Devon County Asylum died Nov. 19th, with a large anthrax on his back. Mr Kirkman (assistant medical

officer) made a *post-mortem* examination fifty-six hours after death. The morning following (Nov. 23) he felt heat and smarting on the back of both hands, and on the right eight or nine angry-looking furuncles were observed; on the left two. Afterwards, fresh ones were developed concurrently with abscesses in the palm, until December 21, when from fifteen to twenty boils appeared on the wrist (subsequently to the application of a poultice) with pain up the arm and shoulder. These appeared in two distinct forms; some, like the first crop, beginning "red, hot, and painful, with a small white ring around each internal to the inflamed base; others by little vesicles, at first unaccompanied by any active inflammation, but itching most intolerably, and containing a translucent glairy fluid. On the right hand, they all end in the same manner, viz., by the formation of a little purulent core which does not escape, but, on being removed, leaves a very deep small hole;" these, if allowed to scab over, get a second core. On the left hand, the boils had no core, but burrowed deeply and discharged an offensive sanious pus. After the parts were healed, the hand would bleed profusely from the most trifling prick or abrasion.¹ It would appear from this, that extent of application of the *materies morbi* increases its development, for the right hand, being the hand most extensively exposed, had the larger number of furuncles.

Dr W. B. Richardson had a case which in some degree supports the idea that the *materies morbi* may be communicated to the *fœtus in utero*. A child, born of a mother with boils, had a suppurating tumour on the breast at birth; it suffered also from a succession of boils.

The proofs that the *materies morbi* spreads from one portion of the skin to another portion, consist—1. In the actual extension of the affection from a parent boil as from a centre, so constantly observed in cases in which there is a continued succession of them. 2. In the fact that appliances, which facilitate the application of the morbid fluids to the surrounding portions of the surface (such as poultices, as in Stewart's and Mr Kirkman's cases, above mentioned), conduce to the extension of the disease; and, 3. In the fact, that a method of treatment well adapted to prevent such application of the morbid fluids to the sound skin, equally prevents the spread of the disease.

The popular pathology as to the nature and origin of boils, is that of medical science, and they have been so constantly associated with a depraved condition of the "humours" of the individual, and so generally considered to be the result of a depurative effort of the "*vis medicatrix*," that the possibility of their origin in a *contagium* has hardly ever been conceived. It appears, however, that on a solitary occasion, suspicions as to both the epidemical and contagious

¹ On a Curious Case of Inoculation from a Dead Body. By Wm. P. Kirkman, Esq., etc. *Lancet*, 19th April 1856.

character of the disease, have been entertained. A similar affection, I find, was prevalent in England in 1818-1821, and was then suspected to be contagious. In a "Description of a Variety of Carbuncular Furuncle," by John Fosbroke, Surgeon of London,¹ it is stated as "being then, and for three years past, generally prevalent, and as coincident in its origin with the appearance of the great epidemic" (Query Variola?). Mr Fosbroke remarks, "its universal diffusion has disposed some intelligent individuals to think that it affected peculiar idiosyncracies by contagious properties."

An instance of the endemic prevalence of the disease is detailed by a French military surgeon,² Dr Martin, who observed it in the 57th French Regiment of the line, then making part of the army of observation collected on the Spanish frontier. I am indebted to a paper read by Dr Tholozan to the Société de Biologie, for the following details.³ It first began in the spring of 1834, continuing into summer. At the approach of winter it ceased; but began again in the following spring (1835), and ceased altogether on the removal of the regiment to garrison. There appeared in succession "eruptions dartreuses," various forms of erythema and erysipelas, abscesses on various parts of the body, but particularly on the limbs, boils, carbuncles, some cases of malignant pustule ("charbon"), and phlegmonous inflammations, complicated with gangrene. The most striking and predominant affection, however, was suppurating inflammation of the fingers, the palms of the hands, and sometimes the anterior surface of the fore-arm and the outer surface of the upper-arm. The inflammation was very acute and intense, being developed with great rapidity, accompanied with enormous swelling, and often threatening gangrene, which indeed occurred in two or three cases. It not unfrequently terminated by sloughing of the tendons and caries. The similarity between these cases and that of Dr Kirkman, is striking; and the spread of the disease was probably due to the same cause, that is, direct contagion.

I have, from time to time, made a few experiments in inoculation with furunculoid matter, but without results. During the last summer session, one of my clinical clerks, Dr Ritchie, had pus taken from Stewart's carbuncle inserted in his arm, on two occasions, but without effect. My experiments in this way have, however, been much too few and too imperfect to determine the question of furuncular contagion experimentally. To do this, indeed, would require a long and careful series of experimental researches, certainly not less extensive nor less difficult than those by which Jenner established the truth of his great discovery. Comparative pathology may, however, be made available to this purpose as well as to the elucidation of the nature and source of the *materies morbi*, which,

¹ *Edinburgh Medical and Surgical Journal*, vol. xvii. (1821).

² *Recueil des Mémoires de Médecine Militaire*, Tom. 57, Ann. 1844.

³ *Gazette Médicale de Paris*, Ann. 1853, p. 2.

in some instances, is probably of *epizootic* origin, and to this I will now turn.

Happily, Great Britain and Ireland are exempt from a pestilential epizootic which prevails on the continent of Europe, and especially in the south of France, Italy, Germany, Poland, Hungary, and Russia, and which is allied, or analogous, in several respects, to the epidemic furunculoid disease. It is known under various names, as gangrenous splenitis or *milzbrand*, from the fact that a predominant pathological change is a pultaceous or gangrenous-like inflammation of the spleen; or as *febris carbunculosa*, contagious carbuncle, anthrax, etc., from the special cutaneous inflammation which characterizes it, although the inflammation is not always carbuncular. It is a disease which attacks the herbivora and omnivora amongst the quadrupeds, and birds and fishes as well as man. It spreads with great rapidity, and, like all similar diseases, is seen under various forms and in various degrees of intensity. There are two principal forms, namely, as it occurs with or without the carbuncular or cutaneous inflammation. The fever, without the eruption or cutaneous inflammation, appears—1. As a malignant intermittent, the milzbrand fever. 2. In a *rabid* form, when the animal becomes suddenly delirious, dying within four days. 3. In a peracute form, in which death takes place in a few hours. This is known as the “*stroke-like milzbrand*,” and is most frequently seen at the commencement of an epizootic. It usually terminates in hæmorrhage from the nose, mouth, bowels, anus. Sometimes a bluish appearance of the hairless surfaces, and an intense rigor precedes the attack.

The eruptive form of the disease is either erysipelatous or carbuncular. The former variety is known also as milzbrand rose, *ignis sacer*, and *pseudo-erysipelas carbunculorum*. The inflammation appears first as red spots, which become confluent, and then swollen and hard. The swelling is œdematous, vesicles or phlyctenæ form, and gangrenous softening of the subjacent tissues takes place. Sometimes the death of the tissue is accompanied by an evolution of gas, and an accumulation of it beneath the hide; this constitutes the *emphysema carbunculorum*.

In the true carbuncular form, the carbuncle may be either deep-seated or superficial. If superficial, the skin above is soon livid, and becomes hard and dry, as if mummified; a sphacelus line of demarcation marks its extent. If deep-seated, there is great infiltration of the tissues, and the surface is pale; this is termed the “white carbuncle.”

There is a variety of the fever characterised by the outbreak of a vesicular eruption over the tongue and buccal mucous membranes, antecedently to the appearance of the carbuncle. This eruption ends in *noma* or gangrenous *stomatitis*.

Perhaps the variety which is the most interesting in relation to the epidemic or contagious furuncle, of late years, is that in which there are carbuncles without the acute putrid fever, so characteristic of the disease. In this apyretic variety, the carbuncles appear, for the

most part, on the side of the neck or on the dewlap; they are seen, occasionally, however, on the head, chest, loins, and anus, and on the tongue (*glossanthrax*) and larynx.

Mr Gamgee, of the Veterinary College, informs me that this variety occurs in the United Kingdom, as anthrax of the tongue and anus, or as "black quarter." It is known to be communicable to man. The *milzbrand* occurs also in a mild and sporadic form.

There can be no question whatever, that this epizootic pest is a highly contagious disease, nor that the *materies morbi* has, in the more intense forms, a singular energy in devitalizing the blood and living tissues. The saliva, the discharges from mucous membranes, the serum, and the blood itself, all communicate the *materies morbi* of the disease. The peritoneal serum, and the gangrenous fluids from the carbuncles or phlegmons, are in especial highly contagious. Greve states, that dogs which lap the serum poured from the ruptured abdomen of cattle dead of the disease, will die on the spot. A few drops of the warm fluid, dropped into the eye of a pigeon, killed it in three hours. A horse was accidentally sprinkled with some on the chest, and although the fluid was washed off immediately, by the following day an enormous carbuncle was formed, and the life of the animal endangered. All things smeared with the flesh, blood, or fluids of diseased animals, as clothes, instruments, the hands of persons, etc., constitute *fomites*; it is even believed to be communicable through the atmosphere. Horses and black cattle suffer the most fatal attacks, but it is communicable from them to man, from man to man, and from man to dogs and rabbits. (Hoffmann's and Grense's Experiments.)

The carbuncular fever in man is somewhat similar in its phenomena to an intense form of gastric typhus, or to the true plague; if the carbuncles are not freely developed, death may take place in twenty-four hours, or not until the lapse of two or three days. If they form freely, the case is more favourable.

The carbuncle may, however, be wholly local and apyretic. In this case, it is not dissimilar in its character from some of the worst forms of the current epidemic furunculoid. First, a spot like a flea-bite appears, with a black point in the centre; this itches or is painful, swells, becomes red, and has the appearance of a raised papula, over which there is formed a small bleb or vesicle containing a yellowish or bluish-red fluid. In twenty-four to thirty-six hours, the carbuncle is formed, the centre of which dries and turns black, and round it a circle of vesicles. If the disease is severe, the inflammation extends, and the centre becomes gangrenous and sloughs. If it be a mild form, the morbid process is circumscribed, as in ordinary carbuncle. Sometimes extensive erysipelalous inflammation, ending in gangrene, is the chief characteristic of the local disease. In this way, great destruction of an eye and eyelids may take place; or the lip may be entirely destroyed, if that be attacked, etc. Besides these parts, the neck, tongue (*glossanthrax* of Pliny),

and the arm and hand, are particularly the seats of the inflammation in man.

The modes in which the *materies morbi* is communicated to man, are various. Besides those mentioned, it has also appeared, after flaying an over-driven animal, or after inserting the arm into the throat of sickly cows or oxen, into the rectum of cattle with dysentery, into the vagina of parturient cows, etc.

I have already referred to the observations by Mr Ludlow, Mr Stanley, and Mr Lloyd, in 1852, of a carbuncular inflammation of the upper lip, altogether similar to this communicated epizootic form. I am not aware, however, that any case of this kind, occurring in Great Britain, has been attributed to the *materies morbi* of the epizootic carbuncle. When we consider, however, the active commerce of the United Kingdom, in hair and hides, with those countries which are the seat of the disease, it does not seem improbable that the *materies morbi* has been imported. And this surmise acquires the more probability from the facts mentioned as to this point, by French writers. M. Trousseau states that, in two factories at Paris, where hair from Buenos Ayres is used, twenty persons have died, in about ten years, from carbuncle, although only six or eight were employed daily. Rayer saw several cases of the disease while attached to the Hôpital St Antoine, all of which came from the same factory, and where hair from Russia was worked up. It is more than probable, therefore, that at least some of the worst cases of carbuncle which have occurred in the United Kingdom have been really due to direct contagion from imported fomites, although we may not be justified in attributing all to this source.

The following case, for the details of which I am indebted to my friend Mr Pridie, of South Clerk Street, Edinburgh, is interesting, as being singularly similar in its symptoms, course, and termination, to cases of the epizootic carbuncular fever, as developed in man :—

A little girl, aged six years, the daughter of respectable parents, presented, when convalescent from a mild attack of measles, the following symptoms :—

1856. *April 30*, 6 A.M.—Head hot, and complains of pain extending from temple to temple. Pulse extremely rapid, skin hot and dry; has not slept during the past night, and was so delirious as to require to be held in bed.

May 2.—Last evening complained of pain in the left arm. This morning there is externally a cellulose-cutaneous swelling above the elbow, of a bright red hue, painful to touch, and on the slightest movement of the joint. On the left side of the tongue there is a large vesicular-looking pustule; tongue and gums much swollen; fœtor of the breath most offensive.

May 3.—The swelling and redness have nearly disappeared from the left arm, but the right is now similarly affected in the same region; there is also a large vesicle on the right thigh.

May 10.—Profuse hæmorrhage has taken place from the tongue, which is deeply excavated to not less than one-fifth of its entire extent. The seat of the vesicle, on the right thigh, has become a deep cavity, with black sides and a livid hue about it. There is a vesicle on the left ankle.

May 12.—The vesicle on the left ankle is as large as a pigeon's egg, and the surrounding surface has the appearance of a broad inky ring. The upper lip, and each side of the nose, presents a deep erysipelatous blush, swollen up and hard, but only slightly tender to the touch.

May 13.—Two vesicles have formed on the palate, and one on the nose; the deep red blush is disappearing from the upper lip.

May 16.—Seven teeth have fallen out; the alveolar processes of both the upper and lower jaw are completely denuded; the upper lip is becoming of an inky appearance.

May 15.—The upper lip, to the level of the sore, has the appearance of a piece of burnt wood that has been pierced in different places with a hot iron. Some of the holes are completely through and perfect.

May 21.—Died. Previously to death the lower lip was in the same condition as the upper. The whole of both lips sloughed away, the sphacelus extending to both cheeks, so that the site of the mouth was a black chasm. All the teeth but one in lower jaw had fallen out. It was a most lamentable sight.

This case was remarkable in extending over twenty-one days. The child was always in delicate health. Her complexion had long been of a remarkably waxy and sallow tint, and in her diet she was most peculiar, being at all times particularly fond of every kind of fruit. If she knew there were oranges in the house, she would cry until she had ate three or four at a time, and this oftener than once during the day. This was probably an instinctive appetite, arising from the state of the blood, which appears to have been analogous to that of scorbutus. It is also probable that it was this morbid condition of the blood which predisposed to that rapid devitalization of the tissues which characterized the case.

The facts detailed are interesting in their relations to the present subject, for, although no connection can be actually traced between the epizootic carbuncle of the continent and the epidemic carbuncular furuncle of late years, they are certainly sufficient to establish such hypothetical analogies as may constitute a clue to further researches. 1. We clearly establish the probability *a priori* that the latter is a contagious disease; and this probability approaches certainty, when connected with the facts and observations I have detailed, as to the mode of spread of the affection. 2. If we compare the laws of spread and general pathology of variola and vaccinia with the laws of spread and general pathology of the epizootic carbuncle and epidemic furunculoid, we can comprehend the probability, at least, that the latter, as to some of its forms, may after all be only a medi-

fication of the former; and, 3. Consequently that we must extend our inquiries into the comparative pathology of the epizootic carbuncle, if we would acquire a satisfactory knowledge of the epidemic form. I trust our veterinary schools of medicine will, ere long, contribute largely to this branch of human pathology—I mean, Epidemiology.¹

There is another epizootic source of simple furuncle, which is worthy of mention in this place. It is well known that the cavalry of armies are particularly liable to suffer from furunculi. Alibert mentions the case of a Cossack, upon whose nates and lower extremities he counted above a hundred boils. The sacral region is, in fact, specially the seat of them in cavalry soldiers. But grooms and others, who have to work amongst horses, are also peculiarly liable. It is not improbable, therefore, that the *materies morbi*, in cases of this kind is of equine origin, and this class of furuncle is to be discriminated, at least etiologically, from the epidemic form.

I have already indicated some of the exciting and predisposing causes of the epidemic—I will now add a few more statements.

One of the most remarkable instances of the epidemic, is recorded in Holy Writ, as being one of the plagues of Egypt. There has been a good deal of discussion by classically learned commentators, as to the nature of this plague. To the medical reader it appears to be analogous to the carbuncular fever I have just briefly described. It followed upon a very fatal epizootic, which attacked horned cattle, sheep, horses, asses, and camels, indiscriminately—as is the case with the carbuncular pest; and it was characterised in man by furuncular inflammation and *phlyctides*, as the word (translated blains in the English version) stands in the Septuagint. This furuncular epidemic was not probably a transitory disease in Egypt, for in Deuteronomy xxviii. 27, it is one of the affections with which the Jews are threatened under the phrase, “botch of Egypt.” It is noticeable, that the word there translated “botch,” is the same as that (*shechin*) which in Exodus is translated “boil.”

The recent furuncular epidemic appears to have been generally prevalent throughout the world—certainly in the European and American continents, throughout the United Kingdom, and in all the British colonies. In England and the United States its appearance has been coincident with various epidemics. Typhus, influenza, cholera, small-pox, scarlatina, measles, hooping-cough, and croup, were epidemic in London, in successive years, coincidently with a largely increased mortality from phlegmon and carbuncle. In the years of the maximum mortality, namely 1853 and 1854, the prevailing epidemics were cholera, scarlatina, measles, hooping-cough, and croup.

¹ The reader will find in *Virchow's Handbuch der Speciellen Pathologie and Therapie*, 2. Band. 1. Abtheilung, from the able pen of the editor, an excellent summary (to which I am indebted for some of the foregoing facts) of some of the more important epizootics.

In the summer of 1850, boils were widely epidemic throughout the United States; they were described as being "almost universal," and carbuncles as being common. The epidemic was co-extensive with a lichenous febrile eruption, termed "prickly heat," and with the "dengue"—an eruptive fever, having points of similarity with both influenza and scarlatina. In this epidemic the furuncular eruption was often a substitute for the ordinary cutaneous inflammation.

This connection of the furunculoid with other epidemics, has been noticed by several writers. Mr Hunt, in a notice in the *Lancet* (May 24, 1851) states, that a similar affection prevailed after the epidemic cholera of 1832. The epidemic in Somersetshire (1852) observed by Dr Hamilton Kinglake, followed upon an epidemic of a malignant scarlatina; and variola and scarlatina were particularly fatal in the metropolis in that year, coincidentally with a much wider extension, and at the same time greater intensity of the disease. In 1854 the cholera prevailed so extensively in London as to destroy more than 10,000 persons; in the same year scarlatina was remarkably fatal, carrying off 3439. Concurrently with these, the mortality from carbuncle rose to the maximum of 91.

In like manner, in 1849, the cholera in Ferrara was followed by the epidemic furunculoid.¹ Phlyctenæ and phlegmons were observed, as well as carbuncles and furuncles. It is remarked that, at the same time, cattle were the subjects of destructive epizootics, and that variola, influenza, and parotitis, were epidemic, besides cholera and furunculoid.

Although the epidemic furunculoid is thus closely associated with other epidemical diseases, it is not at all probable that it is other than an epiphenomenon. Were it *necessarily* allied to those just mentioned, it would always *necessarily* follow an epidemic outbreak of them; but this is by no means the case. The more logical view to take is, I think, this, namely that a communicable *materies morbi* of the character demonstrated, being introduced amongst the population, its activity has been favoured and its fatality increased, partly by the same general agencies or conditions which, during the last twelve or fourteen years, have been so remarkably in operation as predisposing causes of the spread of epidemics generally; and partly, in the case of the infantile eruptive fevers, by the local predisposition to the action of the contagion, consequent on the morbid condition of the derma induced by these fevers. It is the latter which would facilitate its spread, while the former would increase its fatality. To these may be added the cachectic condition of convalescents from epidemics. A moment's consideration of the London tables of mortality is sufficient to show that depressing agencies (how originating we need not now inquire), have been affecting the health of the population for several years past, coincidentally with the increased

¹ *Relazione sul Cholera-Morbus che domina nella Città e Provincia di Ferrara nel 1849*, quoted in *Gazette Médicâle de Paris* (by Tholozan), loco citato.

mortality from the furunculoid epidemic. Deaths from purpura and scurvy, which in London were 12 in 1841, rose to 21 in 1844, to 20 in 1846, and to 80 in 1847—the latter being also the year in which the deaths from carbuncle were increased five-fold. The mortality in these diseases fell 25 per cent. in 1848, but during the years 1848 to 1855 inclusive, it still averaged 53·4 annually. Other cachectic diseases manifested the same remarkable increase in mortality. Thus the deaths from scrofula, which were 105 in 1841, rose to 166 in 1844, and averaged 380 annually from 1846-1855, inclusive. The deaths from tabes mesenterica (a disease allied to scrofula), are returned as being 261 in London in 1841. From that date there is a continuous increase, until the annual average for 1853-55 is 1023. In like manner the deaths from cancer have rapidly increased. The number of deaths stood at 473 in 1841; the mortality gradually increased until, in 1848, they were double that number; while during the last three years (1853-55 inclusive), they have averaged 1053. Perhaps the particular form which has been most fatal is the encephaloid. Indeed, every practitioner in extensive practice must have noticed this increase, independently of the public statistical returns. In short, the deaths from carbuncle and phlegmon, and from scorbutus, scrofula, tabes mesenterica, and cancer, were all simultaneously increased in number, but more especially during the last four years, 1854 being the year of maximum mortality.

The etiology of the ordinary, sporadic form of the cutaneous inflammations I have considered, does not throw much light upon the etiology of the epidemic. The recognised pathology of boils is, I am inclined to think, in a great degree erroneous; it is certainly a fallacy that they are depurative. Those which occasionally supervene in persons undergoing a rigid course of hydriatics, are usually mentioned as illustrations of this theory; but it appears just as reasonable a conclusion, that the copious imbibition of water induces such a cachectic state as constitutes a highly predisposing cause of this peculiar form of inflammation. I certainly think that a patient is free from a fertile source of depressing irritation when he is free from them, and that if they occur, the sooner they are cured the better. One great fact, however, stands out distinctly—the severe forms of furunculoid are constantly associated with cachectic states.

The treatment of the contagious furunculoid resolves itself into two divisions. 1. The treatment of the cachectic states with which it may happen to be associated; and, 2. The local treatment, including the prevention of the spread of the disease. As to the treatment of the cachectic states, I need say nothing here, the general principles being sufficiently well understood. It is of importance, however, that the diagnosis of the particular cachexia in each case be carefully established, otherwise the treatment may be wholly unsuccessful.

The second indication, namely, to prevent the spread of the disease, merits more careful examination. It may be fulfilled either by rendering the furuncles abortive (if the disease be in that form), or by protecting the sound skin from the influence of the diseased portion. According to my experience, the application of the concentrated tincture of iodine over the incipient boil, rarely fails to abort it. How far the tincture may be useful in the erysipelatos forms, I have no experience. The reports of others are much in its favour. The tincture of the sesquichloride of iron and the nitrate of silver, has been also used for the same purpose, with alleged beneficial results. The gangrenous form would be best treated by the application of strong nitric acid to the sloughing margin.

When the furuncle or carbuncle is well advanced in size, the tincture of iodine may still be used, but a slight puncture at the apex, so that it may be inserted, is advisable. The need for a crucial incision will depend much upon the extent to which sloughing has taken place—a free exit for this is undoubtedly requisite. If there be no large amount of sloughing, the incision may be altogether dispensed with. If suppuration and sloughing seem inevitable, the water dressing is the simplest and most comfortable application. Care should be taken, however, so to apply it that the lint used shall not slip about, and any slough or pus that may be formed, should be carefully removed as soon as possible. In short, the most scrupulous cleanliness should be aimed at. When the pain is great, a lotion may be used instead of simple water, but still in the way of a water-dressing. A combination of the acetates of lead and morphia in solution, is simple and efficacious.

Probably any method of dressing the boil which excludes the air, secures warmth and moisture, and prevents the morbid fluids extending upon the sound skin, will serve as well as the water-dressing. Collodion may be applied to this end. Mr Flint, consulting surgeon to the Stockport Infirmary, recommends that the boil be well covered with the emplastrum plumbi spread on leather, the plaster being reduced in size at the edges as the swelling diminishes. He has found this method useful for carbuncles as well as boils.¹ No application is worse than a common linseed poultice, for it usually is followed by fresh crops of boils; nor do oleaginous applications do much better.

The *prophylaxis* merits a few words. I have already indicated some of the sources of the *materies morbi*, but it is certain, I think, that these are not all. The local inflammation is of a kind induced by various septic poisons. Of these, that which appears to be generated during a severe and prolonged parturition, is one; probably the poison of puerperal fever is another,² and of the Levant plague

¹ *Medical Association Journal*, July 1853.

² Dr Simpson's *Obstetric Memoirs*, etc., vol. ii., p. 26. Virchow, *op. cit.*, p. 403. The case referred to by Dr Simpson is remarkably interesting, inasmuch as it clearly shows that the pus of a phlegmon (pelvic abscess) may be the communicable *materies morbi* of puerperal fever.

another. It remains to be determined whether the variolous poison may not, under certain circumstances, be the *materies morbi*; it may be equally a question whether the flesh of animals, dead of dysentery, typhus, pleuropneumonia etc., may not, when used even as food, be a means of communicating the disease. As to all these points, there are analogies in the natural history and behaviour of epidemical and communicable fever-poisons, such as to warrant cautious and careful inquiry.

Postscript.—Epidemics of Anthrax or Carbuncle are noticed by several writers, both ancient and modern. I mention Hippocrates, Galen, Pliny, Paul of Egina, Eusebius, amongst the ancients; amongst modern writers, Brensky, Bayle, Fournier, etc. Compare Littré's "Œuvres Complete D'Hippocrate, Tom. v., p. 48;" Bouillaud, article "Charbon," Dictionnaire de Med. et de Chir. Pratiques; and Rayer in his work on Diseases of the Skin.

RUTLAND STREET, EDINBURGH,
7th October 1856.











