

49. Variola just as in Varioloid with crustules
48. Varioloid as in Varioloid
47. Varioloid

Variola, Varioloid, and Variocella.

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1.

In one of the London Medical Journals, there appeared, during the past summer, several letters, describing what were said to be severe cases of Varicella, and reviving the still unsettled question of the identity and non identity of Variola or rather Varioloid, and Varicella, and it then struck me that this would be a suitable subject for a Thesis.

In the following pages these diseases are severally described in detail, and finally a brief comparison of them is given, embracing the opinions of the principal authorities on the question.

Variola.

2.

Definition

An acute specific disease, characterised by a specific eruption peculiar to itself, running a definite course, anatomically papular, vesicular, and pustular; conveyable by inoculation, contact and infection.

History.

Some writers entertain the opinion, that Small Pox can be traced back to the writings of the Hebrews & Greeks; that it was seen by Hippocrates, and commented upon by Galen; this however is not well proved. It is now generally believed that Variola first appeared in China and Hindostan, and that it was known from a very remote period in those countries. This opinion is supported by the mythology, the religious institutions, the sacred and historical records, the medical works, and the uniform traditions of those countries. We hear of it first in the East, in Arabia, about the year 622, as breaking out among the wandering Arab tribes collected by Mahomet for the purpose of devastating the neighbouring nations.

From thence it gradually spread westward and its extension through the countries of Europe, was doubtlessly greatly contributed to by the successes of the Saracens in Italy & Spain. This portion of the history is still involved in a good deal of obscurity. The researches of antiquarians, lead to the belief that it reached England early in the 10th Century.

It was introduced into America in the year 1517, thirty-five years after the discovery of that continent by Columbus. From the descriptions of the older authors, it appears, that the mortality, from this disease was terribly great, and that it excited the greatest terror everywhere.

We are indebted to the Arabian physicians, particularly to Rhazes, who flourished in the beginning of the 10th century, for the first descriptions of the disease. By him and by Avicenna, another celebrated Arabian physician, it was thought that Morbilli and Variola were merely modifications of the same disorder. Hali Abbas, a third Arabian author, deserves notice as having made an approach to the doctrine of contagious

origin. All the above mentioned authors believed in the occasional occurrence of Small Pox twice in the same person. Sydenham, and various authors of the last century, paid great attention to the disease, owing to its increasing prevalence, and great malignity, and they have left minute descriptions of it.

Varieties

The following are described by authors: V. discreta, V. confluenta, - V. sine Variola, and V. Maligna. Of these the two former are the more important; and in them both six periods may be recognized, viz- incubation, invasion, eruption, suppuration, desiccation, and eventual changes in the affected skin. This last however has been questioned by some persons. Different opinions have been entertained regarding the various forms which Small Pox assumes. The distinctness or confluence of the pustules, is attributed by some to difference in the malignity of the contagion. Others attribute the differences to mere idiosyncrasy. Cullen and Sydenham deemed it to depend on the greater or less degree of inflammatory diathesis in the system.

Variola discreta.

Period
of
Incubation

The average duration of this period, appears generally to be from nine to twelve days. Heberden mentions six days, and others have made it two or three weeks. There does not exist any particular condition, denoting the onset of any special disease. The patient merely feels generally unwell, complains of muscular weakness, loss of appetite &c.

Invasion.

Rigors are usually the first symptoms, sometimes very severe, and lasting a long time, in other cases very mild, or scarcely existing at all. The temperature of the skin is rapidly elevated, the pulse increases in frequency, the tongue becomes covered with a thick yellowish fur, the appetite is very bad or nil, and there is great thirst. generally there is an uneasy sensation at the epigastrium, in some cases amounting to actual pain. Nausea and vomiting are occasionally very severe, and are a source of great annoyance to the patient. Cephalalgia, pain in the loins and lower dorsal region are prominent symptoms. There is marked failure of muscular force. The above are the more common

symptoms, but in some cases we have besides, sore throat, which may come on early, salivation, snuffling at the nose, chronic lachrymation, swelling of the face and flushing, glistening of the eyes, violent delirium, somnolence from the onset, jactitation, convulsions (not uncommon in children, and have been seen in adults), breathing laboured and difficult, pain in the post-sternal region, &c. The duration of this fever is about three or four days; it is usually continuous, but has been observed to remit distinctly.

Eruption.

This may be looked for at the close of the third, or at the latest on the morning of the fourth day. In the vast majority of cases, in fact there are very few exceptions, it first appears on the face, and according to many writers on the forehead; thence it spreads to the trunk, arms, hands, and finally over the lower extremities, in from 24 to 36 hours. During the epidemic in London last summer, I noticed several cases, in which the eruption was first visible on the chin, and about the angles of the mouth.

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In some cases the pyrexia moderates considerably, and in some cases may totally disappear for a time; The affection of the head and the vomiting cease, the pulse returns to about its normal standard; and the temperature of the skin falls several degrees.

Suppuration

Under this head, is considered the whole course of the eruption.

It appears as very small red specks, which from the first, are somewhat elevated above the surface of the cuticle, and at this stage, bear a certain amount of resemblance to some forms of Lichen. They increase in size both vertically and horizontally, and become distinctly papular, and on the second or third day of their existence, they assume a peculiar hard dry feel, which has been compared to the feel of shot in the skin.

Towards the close of the fourth or the commencement of the fifth day, there may be noticed a flattening on the top, and soon after a depression in the centre of the vesicle makes its appearance, and they become to some extent opaque; the base

at the same time becoming surrounded with an inflamed areola. This process has been called umbilication. The fluid contained in the vesicles, now rapidly assumes a yellowish colour, and becomes purulent, and eventually the flattening of the top of the pustules is obliterated, and they become again convex. The pustules have generally attained their maximum period of development by about the eighth day; their number varies according to the gravity of the case, from a few dozens to thousands, and it has been estimated that about one fifth of their number is found upon the face. In this variety they are always single.

is called the secondary eruption of

During the progress of the eruption, as just described, the following may be noticed. The face, skin, and scalp become swollen and intumescent, the eyelids frequently become so large as to close the eyes. An odour is emitted from the body of the patient, described as greasy and disagreeable, and according to Dr. Watson, "is sufficiently peculiar to enable one to diagnose the disease". There is

Coexisting phenomena.

considerable itching and irritation of the skin, and painful sores are produced by scratching. An eruption often appears about the mouth and fauces, which may extend to the larynx, trachea, and even to the bronchi. This exudation on the mucous membrane rarely leaves ulcers or cicatrices. The conjunctival mucous membrane is also affected, & in grave cases after the subsidence of the intumescence, evidences of it may be seen. Eczema rubrum has been seen in those parts of the body that are naturally moist, as the axilla, groin &c. Diarrhoea occurs occasionally.

The fever which remained in abeyance now returns, about the eighth day. It is called the Secondary, or Fever of Suppuration, and from its force, as compared with the eruption, it is evidently a sympathy with the state of the skin. The temperature and pulse rise again, a slight rigor may be developed, and delirium of a mild kind come on, from which the patient may be rapidly aroused. In graves cases violent cough, haemoptysis, and haematuria have been seen.

Dessication.

On the cheeks, about the eleventh or twelfth days the pustules become brown and dry on the top, and after this, two conditions obtained; either they remain entire, or they break up and the contained fluid escapes and dries on the surface forming a yellowish brown crust; this gradually dries up, leaving a scab, which itself falls off about the fourteenth day. The same processes are gone through in the other parts of the body, and are completed by about the sixteenth day. In some cases the pustules shrink, and collapse, and it would appear that the contained fluid is absorbed. In favourable cases the secondary fever gradually abates, the temperature and pulse go down, the intumescence of the face subsides, and those parts between the pustules, which had been inflamed, and of a rose red colour, now become pale and natural. The disease may be said to terminate by about the fourteenth or fifteenth day.

Final condition of skin.

Blotches of a reddish brown colour remain on the skin, and often prove a source of disfigurement for several months; sometimes they desquamate and the skin becomes

clear, but if there has been any ulceration of the cutis vera beneath the pustule, an indelible scar remains, and the patient is pitted for life.

Variola Confluenta.

This is altogether a more grave affection than the last. Sydenham describes it as commencing in a similar manner to the discreet variety, but the symptoms are more violent. The fever and eruption are more severe, the muscular pains in the dorsal region and limbs often agonising, and convulsions and marked stupor sometimes exist from the first.

The second stage or period of invasion is marked with severe rigors, considerable elevation of the temperature and pulse, pain in the epigastrium, nausea, and violent vomiting. Delirium exists, and is occasionally very violent. In children convulsions have been noticed the night before the appearance of the eruption.

The fever is shorter, but much more violent, and no sense of relief is felt on the appearance of the eruption. This generally comes out earlier, occasionally at the close of the second day, and is very often preceded by the spreading over the body of an erythematous, roseolous, or erysipelatosus rash. Its course is not regular; it is congregated more on the face as a rule; the pimples come out irregularly or in clusters as in Morbilli, and are not so prominent as in the discreet variety. The skin is habitually extremely ulcerated, occasionally even destroyed. There is often dark discoloration of its surface to a slight extent, and it feels cool to the touch in many cases. The effects on the mucous membranes are much greater. There is frequently cough with painful expectoration, and sometimes complete aphonia, (a dangerous symptom.). The respiration is sometimes interfered with, thickening of the epiglottis takes place, deglutition becomes difficult, the nostrils are stuffed. Sore throat is a very common symptom, and ptyalism is almost always present in adults; it is not so common in children. The face tonsils and fauces.

begin to swell, and the ptyalism commences about the time of the appearance of the eruption. At first it is thin and watery as in Mercurialism, but later on, about the eighth day it becomes viscid and is expectorated with difficulty. In children there is frequently seen a vicarious diarrhoea, sometimes profuse and lasting to the end of the disease. The extent of mucous and cutaneous inflammation is not always necessarily proportionate. The cutaneous eruption may be confluent, and there be scarcely any vesicles in the throat; and rare cases are met without mucous complications.

Phymosis, paraphymosis, and buboes in the groin, have been described as existing, quite independently of syphilis.

The secondary fever distinctly exists, but from the pyrexial state never having been entirely lost, its presence is not so marked. Rigors commonly announce its onset, and it is usually followed by a more or less adynamic state; the tongue becomes dry brown, or blackish, delirium of a violent character, muscular tremors, subultus tendinum, involuntary dejection, urine frequently retained, and afterwards incontinence

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from overflow. Death from exhaustion commonly follows these symptoms, but in some cases the fatal end is undoubtedly hastened by asphyxia. If the patient survives these great dangers, there are others in store for him; such as - inflammation of the larynx and pharynx of a diphtheritic character, pneumonia of an adynamic type, dysentery, enteritis, sloughing of the cornea with the escape of the humors of the eye, staphyloma of both eyes (of which variola has been shown to be one of the most common causes), otitis and abscesses which may give rise to caries of the temporal bone, producing a fatal result through meningitis and intra cranial abscess, eruptions of ecthyma, purpura and eczema rubrum to a grave extent, abscesses, boils, and carbuncles, in some cases diffuse inflammation of the cellular tissue of the limbs, spreading deeply into their substance, and converting them into mere bags of pus. In cases accompanied with such formidable symptoms, the issue is usually fatal, very few persons survive the crisis, and when recovery does take place, it is always very slow. You may however have confluent variola without any grave symptoms.

Variola sine variola.

It was observed by Sydenham and Frank, that during epidemics of Variola, a few persons, not previously having had the disease, were attacked with symptoms of the primary variolous fever, which subsided without the appearance of any eruption; and these persons afterwards were found to be insusceptible of the disease. Cases of this kind were observed with petechiae and haematuria, and they were described under the name of Variola - sine variola - sine eruptione. At the present time, when it occurs, it is more usually regarded as a modification of Variola, perhaps depending on vaccination.

Variola Maligna.

The *V. haemorrhagica - nigra* - of some authors. Under this head have been described those cases which are characterised by the following symptoms. They may be met with in both the discreet & confluent varieties, or even in Varioloid, but as a rule they accompany the confluent.

Partes. On the wines. p. 262

Adynamia of alarming intensity from the onset, grave delirium, intense prostration, somnolence and marked stupor begin early. The eruption as a rule appears earlier than usual, but does not come out well; or, it may come out well at first but soon retrogrades. Petechiae on the skin, haemorrhages from the mucous membranes, mouth, throat, intestinal canal, kidneys, vagina, uterus &c. The urine often contains a large quantity of blood, and renal cylinders are not uncommon. The bladder is also affected in a great number of cases, and there is increased mucus. If the urine be retained in torpid and semi-comatose cases, it soon becomes ammoniacal, as in all cases with catarrhal cystitis. All these symptoms may appear before the eruption, or on any subsequent day up to the sixth day of eruption. Death may take place before the eruption appears.

State
of the
Blood.

As a rule it is hypinotic, the fibrin is below the normal state both in quantity and plasticity. I am not aware of any peculiar microscopical characters, but in the malignant variety, the red corpuscles have been seen crenated at the edges, and some of them ruptured.

Urine.

During the eruption and the eruptive fever the quantity is smaller than natural, but notwithstanding the specific gravity is very little raised; it is usually about 1019-1021; a trace of albumen may sometimes be discovered. At the period of maturation it is febrile, high coloured, high specific gravity. During desquamation the reverse obtains. Blood, casts, &c. sometimes present, as before mentioned.

Coexistence
of
Variola
with
other diseases.

There can be no question that the variolous poison may coexist with other diseases, both acute and chronic. Several cases are mentioned of Rubiola and Variola appearing together, and each running its own course uninfluenced. (This is rare); more commonly one or both the diseases are modified. Ferguson mentions having

seen at the Small Pox Hospital several unequivocal cases of the simultaneous existence of Variola and Scarlatina Anginosa. It has also been noticed in conjunction with pertussis, syphilis, ague &c. Chronic skin diseases as eczema, lichen, lepra, proriasis, &c, as a rule hasten the spread of the variolous eruption. Variola has been known to exert a temporary curative influence on some chronic cutaneous diseases. Some chronic non-cutaneous affections, have been temporarily arrested or permanently cured by an attack of variola; eg. intermittent fever, epilepsy.

Cause.

There is but one real, viz- the specific virus. There appears to be some reasons for believing that variola, like some other diseases, had its origin in the inferior animals, and that it spread to man by contact or infection. However that may be, there appears little doubt that the disease is perpetuated, and communicated from man to man by a virus or miasm. The media by which it is spread about are called fomites; of which bed clothes, woollen & cotton stuffs are common examples. These possess the

power of receiving, preserving, and carrying the germs of the disease. There is no contagion so strong or so sure as that of small pox; none that operates at so great a distance. It has even been caught by passing in the street a person suffering from it.

Period
of
existence
of
infection.

On this point, there has been at different times much discussion. The following have been laid down by different authors.

1. During the whole disease, from the first of the fever. This is the opinion I believe, of most authorities on the subject.
2. Only after suppuration.
3. There is no practical proof, during the period of incubation.
4. With the death of the patient, the active transmissibility of the disease does not cease; even eleven or twelve days after it has occurred. An interesting example of this is recorded by Mr. Caesar Hawkins, of four students taking the disease from the cadaver of a variolous patient; of whom, only one had touched it.
5. It appears that the activity of the virus may be retained for years in fomites, provided they be excluded from the atmosphere;

but is rapidly evolved if they are exposed to free currents of air.

Predisposing Causes

1. Early age.
2. Not being protected, i.e. not having had the disease before, or been vaccinated.
3. Peculiarity of constitution. e.g. negroes.
4. Fear of infection.
5. Epidemic influenza.

It used to be taught by Sydenham that epidemics of Variola were more fatal in winter, but from the report of the Registrar general, this would appear not to be the fact.

Variola affords us a good example of the force of constitutional aptitude. A person may get the most confluent form from another, who is suffering under the mildest form of the disease; and if the opinion of Cazenave is correct, one person affected with Varioloid, may give the most confluent form of Variola to another.

Communication to foetus in utero.

We are taught that Variola is inoculable by the blood, and that the foetus in utero may be affected, the mother having it at the same time or being protected by

having had it previously. From the researches of Dr. George Pearson on this subject, it appears that the small pox does not often extend from the mother to the foetus; that whenever it does do so, it is fatal in almost all cases to the foetus; that inoculating a pregnant woman generally destroys the life of the foetus; and lastly, that the disease in the foetus + mother, is scarcely ever in the same degree of intensity."

Dr. Jenner has published two cases, in which the foetus in utero took the disease from the mother, without the mother herself being affected, though exposed to the contagion.

Recurrence.

As a general rule, one attack renders the constitution insusceptible of the future action of the poison, but there are some few exceptions. In an epidemic at Marseilles, it was calculated by Bosanquet, that about one per cent of those attacked had the disease a second time. A few cases are on record of its occurring 3, 4, or 5 times, and Dr. Baran relates the case of a surgeon who was so susceptible of the disease, that he always took it when attending a patient suffering from it.

Diagnosis.

During the febrile stage this is very doubtful, by some considered hardly possible. There is very little to guide one, and even experienced men will often hesitate. According to D. Barclay, "The primary fever is characterised by excitement rather than depression; and in adults, the muscular pains and pains in the back and loins, are more severe and intense than in ordinary fever. The pain in the back is central in its position, a spine ache, and is less affected by change of posture, than the pain which is characteristic of lumbago, which affects the muscles at the side of the spine, (often on one side only), and which is much aggravated by movement." In an acute febrile attack, attended with obstinate vomiting, and characterised by the eruption of papules on the face, on the third or fourth day, with at the same time the remission of the pyrexia; I think one would not err much in making the diagnosis of variola. In the papular stage it is much easier. Here we have to take into consideration the time of the eruption, the parts of the body affected, &c. Papular measles appears to be the disease which chiefly complicates

the diagnosis at this stage. It is distinguished by the following characters; the papules are larger and softer, their outline is irregular, they do not occur on the face, they do not make their appearance till later. At the pustular period, I do not think there could arise much difficulty, except perhaps with varicella. Petechiae have by some been mistaken for variolous eruption; in them there is no tendency to suppuration. In cases of fever in persons suffering from secondary syphilis, attention must be paid to the long duration of the eruption, its manner of appearance, its coppery colour generally present, and to the general history of the case.

Prognosis
and
Mortality.

Very bad, the mortality ranges from about 1 in 3 to 1 in 5 or 6. It is unfavourable as a rule, in a ratio to the amount of confluence. The malignant variety is almost invariably fatal. It is most fatal in childhood and old age. Those who are moderately robust appear to suffer least. In constitutions broken by dissipation,

and in pregnancy, it is very unfavourable. The patient cannot be considered safe, until he has passed through all the phases of the eruption, and then only, if he be not suffering from any complication.

The following are regarded as unfavourable symptoms.

1. Excessive dorsal and lumbar pains continuing for a length of time.
2. The long endurance of the stomach symptoms: the nausea and vomiting persisting after the appearance of the eruption.
3. The early occurrence in adults of cerebral symptoms, violent delirium, convulsions, or coma. In young children these do not appear to be of such evil augury.
4. Simultaneous appearance of the eruption all over the body, especially if it be confluent.
5. Sudden disappearance of the eruption without remission of other symptoms.
6. Absence of the usual redness in the interperistular spaces, and the occurrence of petechiae in those spots.
7. Copious eruption existing, but swelling of the parts absent.
8. Sudden disappearance of the intumescence of the face.

- 9. Salivation, and its sudden suppression.
- 10. Haematuria, suppression of urine.
- 11. Dyspnoea if continued and accompanied with hoarseness.
- 12. Tendency to diffuse cellulitis.
- 13. Any positive inflammation of any of the organs.

Of late years the prevalence and mortality of Small pox have considerably diminished. From the Registrar general's report for the three years preceding 1855 the deaths from this disease were 7.607 of 1000. from all causes. Death may occur at any period up to the end of the sixth week, but when so late may be generally referred to some complication. The days of greatest mortality or critical days, were much commented on by the older authors, and they believed the eighth and eleventh days of the eruption to be the most fatal. The following table from the records of the Small Pox Hospital for 1828 + 1829, shows the period at which 168 cases proved fatal.

	Then died on,	Cases,	
1 st week.	{	3 rd day of eruption	1.
		4 th -----	5
		5 th -----	10
		6 th -----	5
		7 th -----	11
		32.	

2 nd Week.	8 th	27	99
	9 th	15	
	10 th	14	
	11 th	16	
	12 th	11	
	13 th	11	
	14 th	5	

3 rd Week.	15 th	7	21.
	16 th	5	
	17 th	3	
	18 th	3	
	19 th	1	
	20 th	2	

4 th Week + after	22 nd	3	16
	23 rd	1	
	24 th	3	
	25 th	1	
	27 th	1	
	28 th	1	
	29 th	1	
	31 st	1	
	32 nd	1	
35 th	1		
38 th	2		

From the above it appears that 131 or two thirds died up to the end of the second week, so that after this, the chances of death would seem to be small. The eighth and eleventh days were the most fatal, particularly the former. The doctrine of critical days is I believe not supported by modern authorities.

Anatomical
characters.

The only characteristic ones are found on the skin and mucous membranes. Pleurisy, pneumonia &c. if they occur present nothing peculiar. The redness of the lining membrane of the arteries to which some have attached importance, appears to be due to mere imbibition of blood.

constituents
of the
pustule.

The cutis vera at its base is inflamed and ulcerated, and more or less destroyed, and on the surface of this ulcerated cutis and between it and the cuticle, is a disk of exudation matter of variable consistence. This at the pustules adheres more to the epidermis than the cutis vera; it is of a friable consistence, and dull white colour. After it has existed for some time as a simple disk, small areolae form in it; these contain a fluid,

thin at first, becoming sero-purulent and finally purulent. In the mean time the original disk softens and liquefies, and is to the naked eye quite indistinguishable from pus. The umbilication appears to depend on a small cellular filament, which connects the cuticle with the cutis vera, and by the breaking of this at a later stage the pustule expands.

The conjunctiva, and mucous membranes of the mouth, nose, pharynx, larynx, trachea, larger bronchi, labia, and prepuce, often exhibit post morbum traces of the eruption, either in minute exudations of false membrane, or in detached portions of epithelium, or grayish circular spots a line or two in diameter from which the epithelium has been removed. These spots contain no pus, do not scab, and leave no scar. The mucous membrane between them is more or less reddened. It has been said that true variolous pustules do not form on the mucous membrane of the intestines, but in a case noted in the Edinburgh Monthly Journal 1849 - page 549, genuine pustules were found by Dr. Faircler on the colon.

Other cases have also been recorded. The intestinal mucous membrane according to Dr. Wood, almost always presents signs of inflammation; and not unfrequently small elevations are observed on its surface, especially in the large intestines, in cases attended with diarrhoea and dysentery; but these eminences are said to be nothing more than inflamed and enlarged mucous glands.

Complications

Hæmoptysis is the most common affection of the lungs. Inflammation of the lungs and pleura. According to Dr. Ferguson the pleura is particularly disposed to inflammation, which comes on about the eleventh or thirteenth day, for the most part very suddenly, proceeds rapidly to empyema, sometimes destroying the patient in thirty six hours. Hæmaturia, abscess in the kidney, orchitis, ovaritis, menorrhagia, affections of the areolar tissue tending to the formation of abscesses, &c. &c.

Sequelæ

Variola is said to favour the development of phthisis and scrofula.

Treatment.

This may be considered under two heads, therapeutic or curative, and prophylactic or preventive.

Therapeutic.

There is no specific for the disease, nor have we any means of arresting it. Great changes have taken place in the mode of treatment; it was formerly considered, that the eruption was beneficial, that it was an effort of nature to rid the body of noxious material, and every endeavour was made by heating and stimulating measures to increase it. Hence the practice of excluding fresh air from patients, keeping them under piles of bedclothes, giving them hot drinks &c. Sydenham was the first to point out the errors of this treatment, and to suggest the opposite or refrigerant method, which is now universally adopted.

The principal objects of the treatment appear to be; to endeavour to diminish the amount of suppuration, to obviate the effects of accidental influences, to support the system, to study the comfort of the patient, to keep off all injurious influences, and to save the face if possible. During the whole of the disease, the

diet must be strictly limited to slops,
 sago, arrowroot, and ripe fruits. The patients
 bed rooms must be well ventilated, the
 bed clothes and body linens should be light
 and cool, and ought to be changed daily.
 In severe cases sloughing over the sacrum
 and nates must be carefully looked
 after. If the skin is hot & dry, it may
 be sponged with tepid water, but caution
 must be used on account of the proneness
 to visceral inflammations. Warm
 sponging seems to be safer, and can be
 more freely employed. For the itching
 of the skin, which is sometimes very
 troublesome (especially to children), cold
 cream, olive oil, and glycerine have
 been used. Chlorine lotions are recommen-
 -ded by Eiseuiman. The head should
 be looked to, and if there are many
 pustules on it, and the hair is matted,
 it would be better to remove the latter,
 not only for the comfort of the patient,
 but to facilitate the application of
 cooling lotions to the scalp, if necessary.
 In mild cases the patient must be
 kept in bed, and preserved from chills,
 Refrigerant medicines, as the Liq. Animon.

Acet, or Potassae Citras, may be given, and the bowels moved occasionally by a dose of ol Ricini or some other mild laxative. No stimuli are required at the commencement. In severe cases, on the appearance of the fever, it is advisable to give a full purgative, as Calomel & Colocynth, and afterwards the bowels must be carefully looked to daily. Saline diaphoretics may be given. Pot. Cit. is very useful, and if there be excitement of the pulse, and the stomach symptoms are not violent, small doses of Antim. Pot. Tart. may be advantageously combined. If the wine is scanty, diaphoretics are employed, such as Spi. Aeth. Nitrosi, Potassae Nitrosae. Venesection is employed by few at the present day, and then only when the pulse is strong and firm, and there is positive evidence of inflammation of some important organ. Local abstraction of blood is alone allowable in most cases, and this should never be had resort to for the pain in the back.

Bleeding it is now well known, will neither arrest the fever, nor diminish the amount of the eruption.

For the restlessness, delirium and insomnia the remedies are Lactucarium, Hyoscyamus, and opium. The nausea, vomiting, and epigastric pain, may be mitigated by effervescent draughts containing Acid. Hydrocyan., and by the local application of sinapisms and blisters; or these failing by a few leeches, or an anodyne enema. If symptoms of cerebral congestion are observed the hair should be removed, cold lotions applied to the scalp, dry cupping or leeches to the nucha, and sinapisms to the lower extremities. For laryngeal or lung inflammations, local depletion and emollient cataplasms are to be employed, along with sinapisms to the legs and the vapour bath. To invite as it were the eruption away from the face, some practitioners have advised warm pediluvia and sinapisms, I have never seen them employed, nor do I find the practice advised by the later authorities.

During the secondary fever, the diaphoretics and refrigerants should be continued. The occurrence of inflammations must now be carefully watched. If they

should occur, they are best treated with Opium, and if severe, it has been recommended to conjoin with this Calomel and Spécacchara, and even to go as far as salivation. The patient's strength at this stage generally begins to fail, especially if there have been violent suppurations.

Bleeding is not now advisable, and, if the pulse become weak, the tongue dry or brown, & the extremities cold,

Ammonia Carb., Quina, Stimulants and nutritious diet are called for.

In the malignant variety, stimuli must be given from the first.

Prevention
of
deformity.

The prevention of the great deformity which so frequently follows small pox, has been a subject which has severely attacked the ingenuity of physicians and dermatologists. It has been stated that the influence of the air is necessary for the development of the pustules, but this does not appear to be quite the fact, for while some cases have been benefitted by its exclusion, others have been unaffected. The most effectual means of prevention, appears to be, to moderate if possible the amount

of suppuration; for when this is violent, streaks are almost sure to form, and these dropping off leave indelible pits.

The following are some of the means that have been employed.

1. To apply Argent. Nit. in fine sticks to each vesicle as soon as it appears.
2. The same may be done at the pustular stage, or the face may be painted over with a strong solution of the Nitrate.
3. Mr. Startins method is to open each vesicle as soon as it appears, and to introduce under the cuticle a small quantity of ordinary blistering fluid on a camel's hair brush.
4. The application of the Emp. Hydrargyri as recommended by M. Briquet, is said to have the effect of producing resolution of the papules; if during the vesicular stage, of causing them to dry up into tubercles, or at least preventing suppuration and scars.
5. The Ung. Hydrargyri is said to have the same effect, and M. Briquet recommends that it be thickened with powdered starch. The good effects produced, are said to be owing to the specific action of mercury.

because other methods of excluding the air have not been so successful. Salivation does not appear to be often induced, and when so, is said not to have proved injurious. The following preparation in use at the Childrens Hospital in Paris, is said to have proved highly successful. Ung Hydrag 25 parts; yellow wax 10 parts; black pitch 6 parts.

- 6. Sulphur ointment used several times a day.
- 7. Tinct. Iodine painted over frequently.
- 8. Dr Bennet has employed Calamine mixed with olive oil, to form a coherent crust.
- 9. Oil olive alone has been used.
- 10. A saturated solution of futter percha in chloroform.
- 11. Collodion.
- 12. M. Serres has found the progress of the pustules arrested by covering them with cups of darkened glass, or by involving them in honey or fatty matters.

Prophylactic

There are two preventive modes of treatment, inoculation, and vaccination, the latter of which only is employed now.

Gregory. "Encyclopedia of Practical Medicine", Vol 3, 750.

Inoculation.

This consists in the application of the specific variolous matter or virus to the surface of the true skin by means of a puncture or scratch. We first hear of it at Constantinople about the year 1703. It was introduced into England in 1721 by Lady Mary Wortley Montague. At first it met with a great deal of opposition, and did not come much in vogue, before the middle of the century. It was found, that though beneficial to the individual, it was bad for the community at large, and it gradually fell into disuse, and on the introduction of vaccination was abolished. It is now illegal to perform it.

Phenomena.

On the second day after the operation, if the part be viewed with a lens, there appears an orange coloured stain about the incision, and the surrounding skin seems contracted. On the following day, a minute papular elevation of the skin is perceptible, which on the fourth day is transformed into a vesicle with a depressed centre. The patient perceives an itching in the part, on the sixth day, some pain and stiffness are felt

in the axilla, proving the absorption of the virus into the general mass of the blood. Occasionally on the seventh but oftener on the eighth day, rigors occur, sometimes accompanied with faintness, sometimes with a pain of the back, headache, or vomiting. The patient complains of a disagreeable taste in the mouth, and the breath is offensive; soon after which the eruption shews itself. The incision in the arm when viewed through a glass, now appears surrounded with an infinite number of small confluent papulae, which daily increase in size. On the tenth day, an areola or circle of inflammation forms around the inoculated point, now distended with matter. This areola is irregular in shape, and in its progress becomes interspersed with numerous minute vesicles. By the fifteenth day the primary pustule has scabbed, and the eruption on the body generally has begun to mature. By the twenty-first day, in the great majority of cases, the disease is wholly at an end. The number of papulae dispersed over the body is subject to great variety. In some cases not more than two or three

are perceived. It is important to know that an eruption is not indispensable to the success of inoculation. In some cases the full change has been produced upon the frame, and a complete insusceptibility to future attacks given, by means of a single pustule excited artificially upon the arms.

The mortality was very slight; of 5964 cases inoculated at the Small Pox Hospital only 9 died, or 1 in 662.

Vaccination

The immortal discovery of Jenner in 1798, that there exists in the cow a vesicular disease, which if inoculated in man is capable of affording to a great extent protection against Variola, was perhaps the greatest social benefit ever conferred by one man on his fellows. It was at first thought that this disease 'Vaccinia' afforded complete protection and for ever against small pox, but it is now known that a small percentage of those vaccinated do afterwards take Variola, but it appears in them in a much modified form. The protective influence of vaccination is also now believed to last a much

shorter time, and revaccination is recom-
-mended every 7 years, or when exposed to
various contagions.

Symptoms.

About the second or third day after vacci-
-nation the puncture looks red and inflamed
and a vesicle appears about the fifth day.
This gradually increases in size, and attains
its maximum on the eighth day, when
it appears distended with clear lymph,
is more prominent at the circumference
than in the centre, and is made up of
a number of cells. The redness around
the base forming the areola, increases in
circumference up to the tenth day, and
on the eleventh begins to fade, leaving a
feel of induration for a few days. Mean-
-while the vesicle has become covered with
a brownish crust, which gradually dries
and falls off about the twentieth day,
leaving a large distinct cicatrix.

During the progress of these local changes
slight pyrexia manifests itself about the
eighth day, corresponding apparently to
the secondary fever of variola.

The mortality from small pox since the
introduction of vaccination has immensely
diminished. In the 10 years ending in 1760

of 1000 deaths of all causes 100 were from small pox, while in the 10 years ending in 1850, they were reduced to 16. This reduction great as it is, might undoubtedly be increased if the compulsory vaccination law was properly carried out, due care taken in securing good lymph, and revaccination more commonly performed.

The average percentage mortality from variola among the vaccinated, according to Mr. Mason, is 5.24; but when vaccination is known to have been perfectly performed as shown by the cicatrices, the mortality is found to be reduced to less than half of one per cent.

Varioloid.

Is small pox appearing in those who have been vaccinated. It has been stated by some to be a distinct affection, having a peculiar contagion of its own, and bearing to variola the same relation as varicella; but that it is nothing more than a modified variola is proved by the facts, that it is produced by exposure to the contagion of small pox, and is itself capable of producing small pox in the unprotected. It is a disease exhibiting very various phases, sometimes it is so mild that the patient does not keep his bed, and appears to bear a very remote affinity to the genuine variola; in other cases the symptoms are very violent, greatly resembling variola; it occasionally even proves fatal. To explain this great difference it has been supposed that the term varioloid is only applicable to mild cases, and that in the others you have true variola coming out from imperfection of vaccination.

The following are the most noticeable varieties.

1. A person is attacked with fever lasting about three days when variola is epidemic in the neighbourhood, but no eruption appears because he is all but protected by vaccination, or by previously having had variola.

Abrupt cessation of flow on
appearance of eruption

No secondary flow even in extensive
crowded eruptions

2. More commonly the following occurs.

An eruptive fever occurs, which is very variable in intensity, as grave an attack may precede a confluent eruption, as may prelude a single pustule. † Before the eruption appears, a rosaceous or erythematous rash occasionally spreads over the body. True papules not unfrequently appear on the trunk instead of the face, and in some cases they remain as papules, but more frequently they go on to vesication and imperfect suppuration. About the fifth day they begin to dry; umbilication is very rarely noticed. Within a given area of skin you may sometimes see patches of eruption in different stages of advancement, papules, vesicles, and pustules. The eruption may be slight in amount, and according to some authors, may be confluent. The pustules are small in diameter and soft.

During the process of desiccation, thin flat brownish crusts form, sometimes hard shining scabs imbedded in the skin, which take some time to separate, and continue to be reproduced till the twentieth day. Sometimes the pustules are replaced by tubercular or warty elevations of the skin, which may last about the body

for months. Scars are rarely left after this disease. The odour exhaled from the body is very slight in amount compared with unmodified cases with a similar amount of eruption. Secondary fever on the whole is rare, but does occur in severe cases. The mucous membranes do not suffer, and complications in the milder forms are rare.

Diagnosis.

In some cases from variella may be rather difficult. Dr. Wood says, "the shorter duration of the eruption, and the comparative absence of odour, may be considered as diagnostics of varioloid. Any case without these must be looked upon as genuine small pox."

Prognosis.

Very favourable, death rarely occurs, and it is generally in consequence of some accidental complication.

Treatment.

Precisely the same as in a mild case of variola.

Varicella.

45.

Definition.

An acute specific disease, characterised by a specific eruption, attended with fever, which runs a definite course in eight or ten days.

Varieties.

Willow describes three, *V. Lenticularis*, *V. Conoides*, and *V. globata*. The symptoms of these varieties appear to be the same, their only differences consisting in the size of the vesicles. They are largest in *V. globata*, which is also known as Swine Pox or Hives.

History.

From the earliest periods at which Variola was described, we read of a mild eruptive disease liable to be confounded with it, but requiring attention in the diagnosis, because not presenting it. This has gone by the several names of *Chrystalli*, *Varicellae Lymphaticae*, *Spuriae Volaticae*, and *Pusilloe*. By Riverius it was called *Varicella*. Morton in 1690 detailed several cases of it, and it was from him that the name Chicken Pox arose. In the 18th Century, Heberden was the principal writer on the disease; he

described it minutely, and though denying the identity of Variola and Varicella, applied to the latter the name Variolae Pusillae. Since his time it has been described by numerous authors, among whom may be enumerated, Vogel, Frank, Heilm, Willan, and Thompson.

Symptoms.

There appears to be generally some amount of premonitory fever, which lasts from one to three days, and disappears or nearly so, on the appearance of the eruption. No mention of this is made by Heberden, and Jergoy says - "In the true Varicella Lymphatica there is no premonitory fever." The eruption usually commences on the shoulders, neck, and breast; the scalp and back are almost invariably occupied, but the face appears to be very slightly affected, compared with other parts of the body. There is a difference of opinion as to whether the eruption is vesicular on its first appearance, but apparently none as to its becoming so on the second day. As a rule the number of vesicles is considerable, but they are rarely if ever confluent. The appearance of the body

has been compared to that of a person on whom drops of boiling water had fallen. Fresh crops of the eruption appear as a rule about every twenty-four hours, and die away in the order of their occurrence. The number of crops it is said, may vary from two to ten or twelve. The vesicles at first are quite transparent, but by the third day, they become opaque and filled with straw coloured lymph. They attain their greatest magnitude about the fourth day, when they are acuminated, and shortly afterwards burst and shrivel, on the fifth day they begin to crust, and in four or five days more the crust falls off, leaving for a time spots on the skin, but only occasionally causing pitting. It is said they do not suppurate, unless the constitution be in a low state at the time of seizure, or they have been irritated or scratched; that they never scab, or only slightly occasionally. It is a disease almost peculiar to early childhood and youth, only occurs once, and is supposed to spread by contagion and infection. It is generally stated that it is inoculable, though the affirmative has been maintained.

No fever

Fully vesicular on 3rd day

No scab

No protection by variola or vaccinia

It does not appear to be affected by previous vaccinations.

Eruption
v. globata.

Large vesicles not quite circular in form, but often a little larger than the pustules of variola, surrounded with a red margin, and containing a transparent fluid, which on the second day of the eruption resembles milk whey. On the third day, they subside, shrivel, and present a yellow tint. Before the conclusion of the fourth day, they are converted into thin blackish scabs, which dry and fall off in four or five days more.

Urine.

Is usually little affected in the early stages, when it is often as limpid as in hysteria, but when the fever runs high, it assumes the usual febrile characters.

Diagnosis.

The only disease causing any difficulty in this respect appears to be varioloid.. This subject is considered hereafter.

Treatment.

Very little is required, the disease is so slight; merely keep the patient from exposure, light covering, antiphlogistic regimen &c.

"Commentaries. p. 449."

Thompson?

Identity of Variola and Varicella.

49.

From the clear account of these diseases by Heberden and Gregory, who studied them before the introduction of vaccination caused any confusion, there do not appear to be any grounds for believing in their identity. The following distinguishing marks are given by Heberden.

1. "The appearance on the second and third day from the eruption of that vesicle full of serum upon the top of the Pock.
2. The crust which covers the pocks on the fifth day; at which time those of the small pox are not at the height of their suppuration."

Varioloid and Varicella.

The identity of these two diseases is still a debatable subject. Formerly it gave rise to much dispute, and indeed cannot be said to be entirely settled at the present time. The principal authors who argued for the identity, have been Van Swieten, Sauvages, and S. Thompson

of this city, who in his "Account of the Varioloid Epidemic of Scotland", endeavoured to prove, that the contagion of varicella is not sui-generis, but merely a modification of the variolous virus; in other words that the mildest lymphatic chicken pox and the most confluent small pox, have a common origin. The following principal arguments are brought forward by Dr. Thompson in support of his idea.

1. "That he finds in the records of medicine, no unequivocal examples of chicken-pox prevailing epidemically, without cases of small pox appearing at the same time.
2. That the most strictly vesicular eruptions have occurred after exposure to the variolous infection, and where in point of time, it was reasonable to refer the disorder to such a source.
3. That he had never witnessed chicken-pox in those who had undergone small pox,
4. That chicken pox and varioloid run into each other by such minute shades of difference, that no unerring diagnostic mark between them can possibly be assigned."

With regard to the first proposition, it

"De Varioloidibus et Varicellis"

may be said to be entirely disproved by Möhl, who observed, " That from the year 1809 to 1823, chicken pox was annually observed at Copenhagen without concomitant small pox. Since that time both diseases have prevailed at intervals epidemically; but always under circumstances which satisfied the physicians of the Town, that their sources were distinct."

The further arguments adduced in favour of the specific nature of varicella, are

- 1st That the characteristic marks of chicken pox, particularly during the first three days of the eruption, are well defined, and easily distinguished.
- 2^{ndly} That chicken pox is not propagable by inoculation; whereas every case of eruption elevated on a solid tubercular base, and possessing a cellulated structure, however mild in its aspect and accompanying symptoms, is yet capable of communicating genuine small pox to others by inoculation.
- 3^{rdly} That the vericulous chicken pox occurs equally in those who have and those who have not been vaccinated; that prior vaccination in no degree alters its characters or course, while on the other

"Practica of Physic, Vol 1, P 613."

hand, vaccination proceeds with perfect regularity after the occurrence of chicken-pox; a circumstance that never happens after small pox.

This subject has been fully considered by Dr. Craipie, who has given us the following statements, as embracing the most important pathognomonic characters.

1. Chicken pox emits a peculiar odour different from that of small pox, and less decidedly partaking of the variolous foetor.
2. Chicken pox appears indiscriminately, and almost equally all over the person, beginning first on the trunk in general, and then appearing on the face and scalp; while small pox appears first on the face and neck, and are more numerous on the face than any other part.
3. Chicken pox eruption is generally completed in the space of 24 hours, or solitary vesicles come out irregularly afterwards in different points; but in small pox the eruption begins in the evening of the third or morning of the fourth day, and proceeds regularly for the ensuing three days, until it is completely established.
4. While variolous pustules are on the first

and second day of the eruption small, hard, globular, red, and painful, and communicate to the finger a sensation similar to that which would be excited by the presence of small round seeds under the cuticle; in chicken pox, every vesicle almost has on the first day a hard red margin, but communicates to the finger a sensation like that from a rounded seed flattened by pressure.

5. On the second or third day of the eruption of chicken-pox, the individual bottles are vesicles containing serous fluid, and giving them a whitish aspect.
6. These vesicles are surrounded by little or no inflammatory redness, and do not naturally and independent of external violence proceed to suppuration.
7. Chicken pox may be confidently distinguished from small pox on the third and fourth days by the state of the vesicles, some of which being left entire are shrivelled and wrinkled, while those whose ruptured tops have been closed by incrustation of their fluid, are marked by radiating furrows. Some present depressions on their apices; and as they do not suppurate, they

inoculated and disappear sooner than variolous pustules.

- 8. The marks left by chicken pox, when they do leave marks, present a peculiar conformation, being round or elliptical, and less frequently irregular than those of small pox, and in general smooth and shining. Lastly; it is said by Luder, that while small pox is found in the cutis vera or corium, the chicken pox eruption is formed in the cellular tissue situate between the corium and cuticle.

The statements here adduced, appear to me to furnish a sufficient number of characters, whereby the diagnosis may be made between a well marked case of varioloid, and one of varicella; and though there may be cases in which the symptoms would seem as it were to glide into one another, still there are many others in which, so far as mere observation is involved, the respective characters of each are distinct.