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OUTLINES
OF
INFECTIOUS DISEASES

James W. Allan

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OUTLINES OF INFECTIOUS DISEASES

By the same Author
NOTES ON FEVER NURSING

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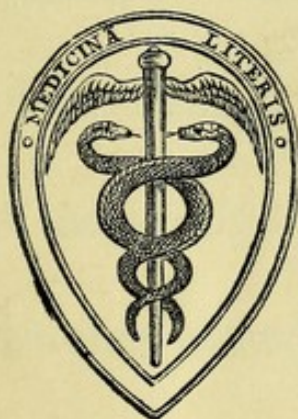
OUTLINES OF
INFECTIOUS DISEASES

For the Use of Clinical Students

BY

JAMES W. ALLAN, M.B.

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PREFACE.

My primary object in preparing this epitome has been to furnish the students attending my course of clinical instruction at the Hospital with the salient points in the diagnosis and treatment of the diseases which are likely to come under their observation.

It is hoped that it may prove useful to students attending similar clinics elsewhere.

J. W. A.

BELVIDERE, *January*, 1886.

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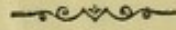
1. The history of the disease
2. The pathology of the disease
3. The symptoms of the disease
4. The diagnosis of the disease
5. The treatment of the disease
6. The prognosis of the disease
7. The prevention of the disease
8. The cure of the disease

J. W. A.

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AUTHORITIES.



AMONG the many standard works which the student may consult with advantage, the following are named:—

- (1) Clinical Lectures by Dr. Graves, of Dublin.
- (2) Clinical Lectures by Dr. Trousseau, of Paris (New Sydenham Society's Translation).
- (3) Typhoid Fever, by Dr. Wm. Budd.
- (4) Continued Fevers of Great Britain, by Dr. Murchison.
- (5) Text Book of Practical Medicine, by Dr. Felix von Niemeyer (Translated by Drs. Humphreys and Hackley).
- (6) Cyclopædia of Practice of Medicine (Edited by Dr. H. von Ziemssen).
- (7) A Manual of Pathology, by Dr. Coats.
- (8) Cholera Epidemics in East Africa, by Dr. Christie.

OUTLINES OF INFECTIOUS DISEASES.

INTRODUCTORY REMARKS.

THE *clinical study* of infectious diseases is likely, from its importance, to claim more and more of the attention of the medical profession. It is unnecessary in this place to adduce arguments in support of this statement; suffice it to say that such study will result in benefit, not only to the profession, but to the public.

It is to fever hospitals, naturally, that students must look for their practical training in the diagnosis and treatment of infectious diseases. To students attending such clinics, the following rather meagre and fragmentary pages are addressed, in the hope that they may serve as useful memoranda, keeping before their minds

the chief phenomena of the diseases likely to be brought under their notice, and the leading lines of treatment.

The student is strongly urged to give his attention to the following points:—

1. *As regards his Personal Safety.*—He should avoid visiting fever wards when tired out or fasting; he should avoid inhaling the breath of patients, and beware that they do not cough in his face when their chests are suddenly exposed. When examining rashes closely, he should, if not protected by previous attack of the disease under observation, hold his breath.

In Glasgow the sanitary authorities forbid students to enter small-pox wards unless they have been revaccinated. Dr. Russell, Medical Officer of Health, insists on the faithful observance of this rule.

2. *In consideration of the Public Safety.*—He should *always* wash his hands carefully after handling an infectious case, using Condy's fluid or other disinfectant; and he should avoid unnecessary handling of small-pox and scarlet fever cases,—especially the former. He should *not* place his hat or overcoat* on the bed of a

* Students attending a fever clinique will find it convenient to provide a smoking-cap and old coat for ward work. These can, if desired, be thoroughly washed and disinfected, and returned when the course is over.

fever patient; and it is to be hoped that he will never so far forget himself as to *sit* on a patient's bed.

Our profession, which is so strict in its injunctions to the public regarding infection, should be consistent, and set a good example.

With such precautions, especially in clean, lofty, well-ventilated wards, such as those of the City of Glasgow Fever Hospital, at Belvidere, there is practically no danger whatever, either to students or public.

The student, while in the wards, should make good use of his golden opportunities for observation, the true value of which he will better appreciate when he enters practice. He should keep his eyes and ears open, and learn all he can from the demonstrations of his teacher. Pertinent questions addressed to the teacher frequently bring out some important and necessary explanation; and such inquiries, if properly conducted, are beneficial to all concerned.

He should make careful notes of the cases which are pointed out to him as worthy of study, and special attention should be given to cases difficult of diagnosis, and *abnormal* cases; the normal cases are usually easy to deal with.

In noting cases, the following scheme may be made use of in lieu of a better:—

First, the history of the case should be obtained,

and *the exact day of illness* should, if possible, be determined, as this is the key to the case; by it the phenomena are interpreted. Of course, the prodromata should be carefully recorded, as they help materially in forming a diagnosis. Side light may often be got in doubtful cases by ascertaining the *association* of the patient with other cases. Inquiry should, for example, be made as to whether there is infectious disease at home? at school? in the workshop? has the patient recently visited any sick person? lent or borrowed clothing? etc.

In the second place, he should note the patient's *present* condition, including physiognomy, state of pupils, pulse, temperature,* state of tongue, bowels, and abdomen, character of fæces and urine (the latter being tested, if necessary); if rash is present, he should note day of appearance, character, and distribution; failing rash, he should examine the skin for (*e.g.*) stains of the skin, desquamation,

* In taking temperatures, the following points should be attended to:—Take care that the index of the clinical thermometer is shaken down before using it; make sure that the axilla is dry before placing the instrument there; put the bulb carefully into the armpit, and fold the arms so as to keep it in position. The thermometer should be left in the axilla ten minutes or a quarter of an hour.

The temperature may also be taken in the groin, mouth, or rectum. The last is the best position; the time required is shorter, and the observation more reliable. The reading is higher than in the axilla.

dried crusts, enlargement of glands, etc. The condition of the heart, lungs, liver, and spleen should not be neglected. The materials for a diagnosis having thus been collected, he should note the treatment which is being adopted in the case, together with such hints on prognosis as may be given by the teacher.

He may, with the permission of the physician-superintendent, and the medical officer in charge of the ward, obtain the recorded temperatures of any given case from the nurse's note-book or the journal, and he can afterwards construct for himself temperature charts from the material so obtained.

Of course, it will readily be recognized that the visits of students to the wards of a fever hospital must necessarily be made under strict supervision, and always with the presence of a responsible medical officer; otherwise such a practice might, very naturally, be objected to by the public, and forbidden by the authorities.

With these hints and explanations, the following pages are placed in the hands of the student, with the reminder that they constitute only a *pocket memorandum book*, and that he is referred for fuller information to such splendid works as (*e.g.*) that of "Murchison on the Continued Fevers." He is specially recommended to read the delightful "Clinical Lectures" of Graves, of

Dublin, and Trousseau, of Paris, and to study the wonderful recent researches of Pasteur, Koch, and others.*

Above all, he is strongly advised to *see, and carefully observe, as many cases as possible*, since this is, after all, the most essential part of his clinical education.

* Such researches, from their direct bearing on the etiology of infectious diseases, are necessarily of the greatest interest for the student ; but the subject cannot be discussed here.

TYPHUS FEVER.*

Latin : Typhus. *French* : Typhus. *German* :
Exanthematischer Typhus; *Syn.*, Fleckfieber.
Italian : Tifo peteciale.

THE DISEASE.

Etiology.—(a) *Predisposing Causes.*—Poverty, dirt, want of ventilation. (b) *Exciting Cause.*—A specific *contagium*, derived from the sick, conveyed by atmosphere of sick room, carried by fomites, fostered and intensified by overcrowding and want of ventilation, weakened and ultimately destroyed by cleanliness and fresh air, killed by boiling or high dry heat (204° F. according to Henry, quoted by Murchison). The *de novo* theory, *i.e.*, that the disease may originate simply from filth, destitution, and overcrowding, although advocated by Murchison, is more than doubtful.

Symptomatology.—The period of incubation varies (according to Murchison, “usually about twelve days, frequently shorter, but rarely longer,”

* The names and synonyms in this book are taken from the revised “Nomenclature of Diseases, drawn up by a Joint Committee appointed by the Royal College of Physicians of London” (1885).

p. 91). Onset of disease usually somewhat sudden; headache, shivering, pains in back, chest, and limbs, sickness and vomiting; patient likes to be near the fire, thinks he has got a "bad cold"; face flushed and heavy, eyes bloodshot, tongue foul; thirst, loss of appetite, rise in pulse and temperature; frequently a troublesome cough; sleeplessness.

On 5th or 6th day rash appears; spots at first fresh red; disappear on pressure; seen on trunk, limbs, and sometimes on face; generally thick and strong on back. Temperature 103° or 104° F.; morning and evening temperature approximate. During the first week generally severe headache, intense thirst, restlessness. As disease advances spots coalesce or shade away into neighbouring skin, mottling of skin as well, the whole with a dull *blurred* appearance; spots finally become fixed—*petechial*. In second week delirium generally takes the place of headache—noisy talkative delirium; patient carries on conversations; is engaged in his usual avocation; insists on getting out of bed; insists on having his clothes; wants to get away to his work at once; still he can, as a rule, be controlled and restrained by gentle persuasion, tact, and good-humoured remonstrance.

Delirium may be very violent, and patient become unmanageable. Delirium may pass into stupor, coma vigil, with carphology (grasping at imaginary objects), floccitatio (picking at bedclothes), and

subsultus tendinum: hiccup may occur; pupils contracted; tongue contracted, dry, brown, crusted; urine and fæces passed unconsciously; patient lies "like a log"—asks for nothing, merely stares and moans or mutters. Pulse rapid, soft, compressible.

The bowels are usually constipated; but there may be diarrhœa.

The temperatures still range 103° to 104° , or 105° , night and morning; the morning temperature generally rather lower; pulse rapid, *soft, and compressible*.

Crisis about 14th or 15th day; may be 16th 17th, 18th. Change generally distinct and striking: copious perspiration; temperature falls; pulse lessens in frequency, gains in strength; tongue moistens and cleans, consciousness returns, appetite comes back; patient feels better, but complains bitterly of his pains and weakness. Appetite voracious (as a rule),—astonishing amount of food taken with keen relish. Young subjects quickly restored to health and vigour.

After crisis, patient's mental condition usually clears up; sometimes mind remains clouded, or patient labours under delusions, sometimes painful delusions which haunt and distress him—dear friend dead, wife unfaithful, etc.

Disease may assume mild form; slight rash, foul tongue, thirst, transient delirium or sleeplessness; early crisis (typhus febricula).

Complications and Sequelæ.—Bronchitis, hypostatic congestion of lung, pneumonia, pleurisy, uræmic convulsions; violent muscular pains, bed sore, partial paralysis, dementia, etc.

Death, as pointed out by Murchison, comes by asthenia or coma, by a combination of these, or by complications. Second attacks of typhus practically unknown.

Diagnosis.—Among diseases likely to be confounded with typhus are enteric fever, measles, scarlet fever, uræmic poisoning, broncho-pneumonia, etc.

Points of distinction between typhus fever and enteric fever: Typhus, sudden onset—enteric, gradual; (*temperature*) typhus, temperature rises quickly—enteric, rises slowly; in typhus, morning and evening temperature approximate—in enteric, morning temperature decidedly lower than evening temperature; in typhus, temperature drops suddenly at end of fever (*crisis*)—in enteric, it falls gradually (*lysis*);* in typhus, the disease runs about a fortnight—in enteric, as a rule, at least three weeks; (*rash*) typhus spots begin to come out on 5th or 6th day—enteric, on 7th or later; both rashes disappear on pressure when *fresh*, but typhus spots become fixed, while enteric spots are affected by pres-

* Occasionally enteric fever terminates in a crisis, and if the disease has run a short course—say fourteen or fifteen days—the case may readily be mistaken for typhus.

sure all through their existence; typhus rash comes out once for all—enteric rash comes out in successive crops; typhus spots are common on backs of hands and feet—*enteric spots rarely or never seen in those situations*; typhus spots generally look rather *in* than *on* the skin, are irregular in outline, melt into each other or fade away in the neighbouring skin, are surrounded by an indefinite mottling, the typhus rash, when matured, looks blurred, blotted, and dull—enteric spots (“rose papules,” “lenticular spots”) are raised to the touch, are distinct, definite, and isolated, generally few in number, and stand out clearly on the skin.

Again, in typhus the *tongue* is at first furred, latterly (in severe cases) contracted, brown, and crusted; in enteric, the tongue is at first covered in centre by a white or yellowish fur, it is red at tip and edges, latterly (in severe cases) it is bare, red, glazed, “beefy,” with deep transverse hacks or fissures. The *bowels* generally constipated in typhus, are relaxed in enteric; motions may be loose and yellow in typhus, but different from *the peculiarly offensive “pea-soup stool”* of enteric.

Intestinal hæmorrhage common in enteric fever, practically unknown in typhus.

N.B.—In *rare* cases there is a bloody oozing from bowel in typhus, which *might* give rise to mistake.

The occurrence of epistaxis and *taches bleuâtres*, commoner in enteric than typhus fever.

Typhus may be mistaken for measles, especially when rash appears on face; injected eyes and cough tend to confirm mistake.

Error corrected by history of case, development of rash, and course of temperature.

Typhus may be mistaken for scarlet fever at beginning of attack, when there is reddening of skin as well as rash. Examination of throat, course of temperature, absence of scarlatinal sequelæ (desquamation, albuminuria, glandular enlargements) will correct the error.

URÆMIC POISONING may closely simulate typhus; dull heavy appearance, low muttering delirium, etc. The temperature the key to diagnosis: normal or subnormal.

BRONCHO-PNEUMONIA, or other pulmonary affection, frequently sent into hospital as typhus. Pardonable mistake. Elevation of temperature, history of headache, rigors, etc., liability to mistake freckles on a dirty skin for typhus rash—conspire to mislead; besides, pulmonary catarrh and congestion are common in typhus. Course of temperature and duration of disease generally clear up case; some cases left in doubt.

Prognosis.*—Percentage Mortality.—Murchison

* See interesting statistics of fever mortality in Belvidere Hospital, published by Dr. Donald Macphail, in the "Glasgow Medical Journal" (Oct., 1879).

says (p. 235) "the actual death-rate of typhus is probably not more than 10 per cent." For obvious reasons it is higher in hospitals (say 12 to 18 per cent.). Various in different years, etc.

(a) *Favourable Circumstances and Signs.* — Youth; children seldom or never die of typhus pure and simple. Ability to take nourishment and stimulant, ability to change position, freedom of respiration, maintenance of heart's action and of pulse—good signs.

(b) *Unfavourable Circumstances and Signs.* — Mature or advanced age, obesity, intemperate habits, visceral diseases (particularly renal disease), previous hardship and starvation, failure of pulse and heart's action, respiratory embarrassment, lying "like a log," coma vigil, subsultus tendinum, carphology (grasping at imaginary objects), involuntary evacuation of bowels and bladder, inability to swallow, last, not least, persistent hiccup (indicative of deep nervous disturbance)—are bad signs. Profuse strong rash indicates *severe* case; dark, purplish, blotchy rash *very bad* case.

Pathology.—Post-mortem appearances not pathognomonic. No "characteristic lesion." Morbid appearances found in other diseases as well; engorgement of intracranial vessels, paleness of heart, hypostatic congestion of lungs not peculiar to typhus. Petechial rash persists after death.

Treatment. — (a) *Prophylactic.* — Cleanliness, ventilation, and isolation of sick. (b) *Curative.* — Most essential part of treatment, *good nursing*; medical skill and judicious use of drugs very valuable; active and heroic treatment not only useless but hurtful; importance of complete knowledge of the *normal course* and *natural history* of the disease; stand by with watchful eye and ready hand till nature wants help. In ordinary case patient to be kept dry, clean, and comfortable in *well-ventilated chamber*; regular administration of nourishment and stimulant; milk, beef-tea, soup: wine, whisky, or brandy in fixed doses at stated intervals, say tablespoonful every two hours, total in twenty-four hours ℥vj. to ℥x., according to requirement of each particular case; young subjects and mild cases, *no stimulant required*; stimulant conveniently given in milk—good plan. Patient to have his position in bed frequently changed — danger of hypostatic congestion of lungs if allowed to lie on his back “like a log;” if lung becomes congested, jacket poultices, or patient may be laid on back on a large thick linseed poultice; if cough is severe, chloral cough mixture; dry crusty tongue may be moistened with glycerine; hardened glut at back of mouth may be loosened by steaming and use of glycerine, and, with aid of finger covered with lint, removed like a cast—great relief to patient; for relief of

thirst, cold or iced water *in moderate quantities*—mineral acid (*e.g.*, gtt. v. or x. of acid. sulph. dil.) and vegetable bitter (*e.g.*, ʒss. tinct. gent. co.) may be added, *occasionally* lemonade or soda water; danger of patient refusing milk when he can get iced water or lemonade; if patient inclines for food may have porridge and milk, tea and toast, or bread and soup; if bowels are constipated, dose of castor oil; if loose, boil milk, give lead and opium pill; state of bladder to be examined; retention of urine—for relief try enema; failing that, use catheter.

HEAD SYMPTOMS.—*Headache* may be treated by shaving head, use of head lotion (sulphuric ether—rectified spirit and water), iced cloths, ice bags, cold affusion. Failing these, warm applications, fomentations, may be tried.

Insomnia.—Foregoing treatment. In addition (for adults), chloral* in gr. xx. or gr. xxv. doses, repeated in an hour if necessary; if dose is too small, or interval between draughts is too long, patient is *excited*, not soothed.

Delirium.—The foregoing. In addition, slowly rubbing a lump of ice over shaven scalp; administration of draught containing chloral and morphia, say gr. xxv. of chloral and ℥v. to ℥x. sol. mur.

* Dr. J. B. Russell, of Glasgow, was among the first, if not the first, to call attention to the great advantages of chloral as a hypnotic in typhus fever.

morph., to be repeated in an hour if required. (N.B.—This is a powerful weapon, to be cautiously used and carefully watched.*) If patient is suspicious and refuses draught or drink, give morphia or chloral suppository—hypodermic injection—or, in extreme cases (ferocious delirium), administration of chloroform to get patient under control; application of mechanical restraint (“jacket” and “sheet”) till patient is under influence of narcotic; mechanical restraint never to be applied without sanction of medical officer, and to be dispensed with as soon as possible; “watchful” and “suspicious” delirious cases to be incessantly supervised—mischievous brewing; sudden violence to be feared; may dash through a window.

If temperature runs high, cold sponging (? cold pack).

Failure of the Heart's Action is the chief cause of anxiety in typhus, and must be met with stimulation in proportion to the requirements of the case.

COMPLICATIONS AND SEQUELÆ must be treated on general principles, only bearing in mind the fact that the patient is a *fever* case. Depressing drugs and severe external applications should be avoided. Pulmonary complications treated by poulticing—stimulants and suitable cough mix-

* Or Grave's mixture may be given, *also with care and caution.*

tures—and (when there is tendency to hypostatic congestion) frequent change of posture.

Uræmic Convulsions.—Hot poultice over kidneys; sharp purge.

Violent Muscular Pains.—Apply warm camphorated oil; rub with warm laudanum. Bedsores (*vide* “Enteric Fever”). Post-febrile dementia; cured by time; patient must be guarded, humoured, and well nourished.

RELAPSING FEVER.

(Syn., FAMINE FEVER.)

Latin: Febris recidiva. *French*: Fièvre à rechutes. *German*: Typhus recurrens. *Italian*: Febbre recidive.

THE DISEASE.

Etiology.—(a) *Predisposing Cause*—Destitution, starvation. (b) *Exciting Cause*—Infection from previous cases.

Murchison, so justly esteemed as the great authority on British fevers, gives his support to the theory that hunger and dirt alone are capable of developing relapsing fever *de novo*: he says (p. 332), “although relapsing fever is undoubtedly

contagious, it is highly probable that it can be generated *de novo*." Again (p. 347), "of all the causes that can be assigned for the origin of relapsing fever, it seems to me that destitution is the most tenable"; but while admitting that relapsing fever, in common with typhus and other zymotic diseases, finds a congenial field where there are squalor, starvation and filth, it is difficult to understand how these conditions *alone* are capable of giving rise to a *specific* disease such as that under consideration. Murchison thinks that *starvation* is the essential factor in relapsing fever, and *want of ventilation* is the cause of typhus. But we see every day in our large cities extreme destitution and *no relapsing fever*! a total absence of ventilation and *no typhus*! We seem forced, then, to the view that relapsing fever is fostered and favoured by famine, but that like other zymotic diseases we must have the specific germ before we can have the specific disease. A starving population may be perfectly free from relapsing fever, but introduce one case of that disease, nay merely the fomites from a case, into such a community, and the malady will spread like fire among dry grass. The etiology of relapsing fever is particularly interesting from the fact that adherents of the "germ theory" can here walk by sight as well as by faith; that is to say, they can see in the blood the organisms which give rise to

the fever. At the beginning of a relapse there are found in the blood numerous spiral filaments (the spirillæ of Obermeier), and that the febrile access is due to these organisms there can be no reasonable doubt: they are seen only in cases of relapsing fever, and they are seen only immediately before or at the beginning of an attack.

Symptomatology. — At the beginning the patient suffers from headache, sickness, and shivering; the temperature rises very quickly and attains a high figure, 107° and even 109° ; the feeling of cold gives place to one of great heat; the patient suffers from severe pains; the tongue is foul, and there is great thirst; jaundice is frequent, and there is generally more or less epigastric tenderness; there is no characteristic rash, although rash has been seen by some observers in certain cases, notably by Dr. Tennant of Glasgow.

The fever runs its course in a few days—five or seven—and ends in a distinct crisis, which is marked by very copious perspiration, and it may be epistaxis; the temperature falls rapidly. After this abrupt termination of the fever the patient may feel pretty well, but very weak; his appetite returns, and he wishes to get up. For a few days all seems to go well; the convalescent appears to be rapidly returning to health, when

suddenly he is again seized by headache and shivering, and his temperature runs up rapidly; this "relapse" is practically a "repeat" of the primary attack; it ends abruptly, as it began, and convalescence is again established. This recovery may be permanent, or other attacks may follow; in some cases there is no relapse. One attack of relapsing fever does not give protection from subsequent attacks, and in this respect the disease offers a striking contrast to typhus.*

The disease inflicts much suffering and misery on the patient, but it cannot be regarded as a dangerous malady; the death-rate is small, say from 2 to 6 per cent. Among the complications and sequelæ of relapsing fever may be mentioned jaundice, rheumatism, pneumonia, pleurisy, and ophthalmia; abortion is sure to occur in pregnant women.

Diagnosis.—In the first case of an outbreak of relapsing fever there may (before the relapse occurs) be some doubt regarding the true nature of the disease under observation; it may very possibly be set down as a doubtful case of typhus "febricula." But the short run of the disease, the quick recovery, and especially the "relapse" will point out clearly enough the true

* Murchison (p. 331): "Contrary to what was found to be the case with typhus, one attack of relapsing fever confers little or no immunity from subsequent attacks."

nature of the malady; additional help may be obtained from the presence of jaundice and tenderness over the liver and spleen.

Prognosis.—The prognosis in uncomplicated relapsing fever, occurring in a person of sound constitution, is very favourable: it is a remarkable fact that although the temperature runs very high in the disease (104° to 108.5° F., according to Murchison), the mortality is very low. “Relapsing fever,” says Murchison (p. 349), “is far from being mortal; uncomplicated cases almost invariably recover, and the total mortality rarely exceeds 1 in 25 or 1 in 50.” He goes on to state, however, that in some cases prostration and sinking set in, and collapse takes place; in others, suppression of urine, “delirium, coma, and occasionally convulsions,” prove fatal, while in females abortion is sometimes a cause of death. Murchison (p. 391) gives the following interesting statement in connection with abortion: “On the supposition that relapsing fever is but a mild variety of typhus, it would be very remarkable that in the former abortion is almost invariable, and the foetus dies, whereas in the latter abortion is the exception, and when it occurs, the child, if near the full time, usually lives.”

Pathology.—The presence of organisms in the blood is the central interesting fact in the pathology of this disease; there can be no reason-

able doubt that these *spirillæ* are the actual specific cause of the fever.

Murchison says (p. 407): "The *post-mortem* appearances of relapsing fever may be summed up as follows:—

"1. There is no specific or constant lesion.

"2. The most common lesions are enlargement and infarcti of the spleen, slight leukæmia, congestion of the liver and kidneys, jaundice, dysentery, and pneumonia.

"3. In most cases nothing can be discovered in the liver, or in the bile-ducts, to account for the jaundice. In exceptional cases only there is acute atrophy or catarrh of the ducts.

"4. No lesion can be discovered in the brain or its membranes, even when cerebral symptoms have been most marked."

Treatment.—As yet no *specific* treatment for relapsing fever has been discovered; the ideal cure would be a substance which should destroy organisms in the blood which give rise to the disease, and this without doing injury to the patient's system. But so far the disease is only treated on the usual expectant system; light diet (chiefly milk), acid drinks, cold sponging, and good nursing generally constitute the ordinary treatment.

Murchison says (p. 408): "It is important to bear in mind that most cases of relapsing fever

recover without treatment of any sort. As Ratty long ago observed, those who are abandoned to the use of whey and God's good providence, for the most part recover."

ENTERIC FEVER.

(Syn., TYPHOID FEVER, GASTRIC FEVER, PYTHOGENIC FEVER.)

Latin: Febris enterica. *French*: Fièvre typhoïde ou Dothiésentérie. *German*: Abdominaltyphus. *Italian*: Tifo enterico; *Syn.*, Febbre tifoide.

THE DISEASE.

Etiology.—(a) *Predisposing Causes.*—Adolescence, autumnal season (? affluent circumstances).

(b) *Exciting Cause.*—"There is only one cause of enteric fever, and that is the specific particulate contagium, or seed" (Dr. J. B. Russell); *contagium* thrown off in the alvine evacuations of the sick (characteristic lesion found in the bowels); common cause of disease, drinking water tainted by enteric excreta—or milk* exposed to influences of

* Dr. Russell, Med. Off. of Health, Glasgow (Reports); Dr. Duncan, Crosshill, Glasgow ("Typhoid Fever, its Cause and Prevention," 1875).

sick room, or contaminated by dilution with tainted water, or kept in vessels "washed" with tainted water; aërial infection probably occurs as well—dust of dried fæcal matter, carried by atmosphere, inhaled, swallowed; sewer gas, badly trapped W.C.'s, overflow pipe of water cistern leading into soil pipe, *and acting as a conductor of sewer gas to the drinking water*: danger of fixed wash-hand basins in bedrooms communicating with drains, especially when badly trapped. "*De novo* theory" (*i.e.*, disease may arise spontaneously by decomposition of fæcal matter, under certain conditions), advocated by Murchison, who proposed to call enteric fever *pythogenic* fever; this theory, strongly opposed by (*e.g.*) Budd, of Bristol, who studied disease in rural districts, and who contends that decomposing ordure *alone* will not cause the fever; the *specific contagium* must be added by agency of enteric fever excreta. Mysterious—supposed "*de novo*"—outbreaks explained by "ambulant" cases of enteric fever (*i.e.*, cases in which patient is able to travel about during the whole course of attack, depositing the specific poison wherever he defecates); also by obscure or unrecognized cases of enteric; infective motions thrown into ash pit, in dry hot weather converted into dust, and blown about, or finding their way to leaky cesspools or defective drains, ultimately soak into well which furnishes water

supply.* N.B.—Drinking-water polluted with faecal matter, but free from enteric germs, gives rise to diarrhoea, but *not* enteric fever.

Symptomatology.—*Period of Incubation.*—Murchison says (p. 469): “1. The period of incubation of enteric fever is most commonly about two weeks; 2. Instances of a longer duration are more common than in typhus or relapsing fever; 3. It is often less than two weeks, and may not exceed one or two days.”

One attack, as a rule, protects.

At beginning of attack patient suffers from languor, loss of appetite, loses pleasure in work, etc. Insidious onset; tongue foul; headaches frequent and severe; rigors occur, may be merely shivering or feeling of cold; epistaxis not uncommon; abdominal uneasiness, or actual pain; diarrhoea, elevation of temperature (gradual), great prostration; patient probably takes to bed, but may keep up for a long time; some cases (“ambulant”) go about all through attack; about 7th day first “rose spots” (“rose papules”—“lenticular spots”) may appear (sometimes preceded by a “scarlatiniform” blush on skin; may be delayed till later; *may never appear at all*. Rose spot is of a light red colour, raised above skin, can be distinctly felt, and is affected by pressure all through its existence; never becomes

* For “Grundwasser theory,” *vide* “Cholera.”

petechial, like typhus spot ; some enteric spots do not entirely *disappear* on pressure, but merely become paler ; enteric spot frequently lenticular in form ; in some cases (*a few*), bears a minute vesicle on its summit (? might be mistaken for acne). Spots come out in successive crops, usually a few at a time, seen on chest, abdomen, and back ; occasionally on arms and legs ; *seldom or never on hands and feet* (important in differential diagnosis between typhus and enteric, *vide* “Typhus”). As a rule, number of spots visible at one time small, say half dozen or dozen ; in some odd cases abundant, nay, profuse, rash ; such cases apt to puzzle and mislead,—*may readily be mistaken for fresh typhus rash*. Besides rose papules we may have faint purple or bluish spots (“*taches bleuâtres*” of the French), compared to marks of light finger touches through a dyed glove ; these spots merely interesting (not confined to enteric fever) ; generally observed to occur in mild cases ; sometimes very faint,—might easily be overlooked. With regard to head symptoms, insomnia is a frequent and serious feature, demanding careful attention. Delirium sometimes violent ; as a rule, very mild, or altogether absent. Patient usually quiet ; flushed cheek, clear eye, dilated pupils, intelligent look. Headache sometimes severe ; vertigo common ; putting it broadly, head symptoms not severe in this disease ; occasionally delirium is

maniacal in character. Pulse commonly soft and compressible, ranging from 90 to 120 ; its value as a clinical guide lessened by fact that patient is generally conscious and nervous. Tongue at first moist, covered in centre by yellow or creamy fur, while edges and tip are red ; in mild and favourable cases these appearances may persist all through the attack ; if case proves severe, fur dries, and forms a brownish crust, or clears off altogether, leaving a smooth, glazed, "beefy" tongue, with transverse fissures ; this is characteristic enteric tongue. In earlier stages usually no appetite ; towards end of attack frequently fierce craving for food ; thirst varies very much in intensity. Abdominal uneasiness or tenderness pretty common, particularly on pressure over right iliac fossa ; in this region we may also have "gurgling" ; in bad cases tympanitis may occur. State of bowels varies very much in different cases, or even in one case at different times ; in some instances constipation, instead of diarrhoea ; in others diarrhoea so frequent and profuse as to exhaust patient ; characteristic enteric motion, aptly compared to "pea-soup" ; *very offensive smell* ; in some severe cases motions are greenish.

Sudden fall * in temperature, and poor compressible pulse lead us to fear intestinal hæmor-

* The temperature rises again.

rhage ; according to Murchison, of commonest occurrence in the third and fourth weeks ; blood may appear fresh and liquid, or clotted, or mixed with fæcal matter, so as to give latter dark bloody appearance, not unlike strawberry jam ; or, if long retained in bowel, may, when passed, look like coffee grounds, or tar. Quantity of hæmorrhage varies extremely, from suspicious coloration of motion on one hand, to pints of pure blood on the other ; to be borne in mind that extensive hæmorrhage may be retained in bowel for some time ; non-appearance of blood externally must not dissipate suspicion of hæmorrhage ; care must be taken not to mistake for intestinal hæmorrhage—(1) menstrual discharge ; (2) bleeding from hæmorrhoids ; or (3) melæna from blood swallowed during epistaxis.

If ulceration goes deep we may have perforation of the bowel—3rd, 4th, or 5th week (Murchison). This dreaded complication usually announced by severe abdominal pain, vomiting or retching, sunken look, feeble flickering pulse ; generally the temperature rises, but when the shock is great the temperature drops and rises again ; patient's appearance alone may give warning of grave mischief. Intestinal perforation gives rise to peritonitis, but latter may arise from other causes—Murchison mentions the following : Inflammation by continuity from mucous to peri-

toneal coat of bowel *without perforation*; softened infarction in spleen; bursting of softened mesenteric gland; bursting of an abscess inwards; ulceration and perforation of gall bladder.

Temperature* in enteric fever a matter of prime importance—often the key to diagnosis, certainly the only reliable guide in treatment. Physician in charge of enteric case deprived of clinical thermometer, like pilot in charge of ship deprived of compass. Thermometry of this disease extensive subject; only few leading points referred to here. Temperature in enteric goes up gradually, offering contrast to other febrile disorders, *e.g.*, typhus fever; also comes down gradually, as a rule, indicating *lysis* of this disease, as contrasted with *crisis* of typhus; but, rising or falling, morning temperature is generally decidedly lower than that of evening; this morning “remission” and evening “exacerbation” characteristic of disease under consideration; zig-zag of thermal line in a typical enteric chart is very striking; in some cases morning “remission” is

* In taking temperatures care must be taken (1) that the index is shaken down; (2) that the bulb is put right into the axilla, which should previously be wiped dry; (3) that it is kept in position for a sufficient length of time (ten minutes to a quarter of an hour). The temperature may also be taken in the mouth, groin, or rectum; the latter is the most satisfactory and trustworthy; the reading is higher in the rectum than in the axilla.

slight, morning and evening temperature being both high. (N.B.—In the milder forms of the disease the morning temperatures do not go high and if they alone are seen by the medical attendant he may dismiss idea of “fever,” and be completely led astray in diagnosis; *the evening temperature is essential.*) In severe cases evening temperature may range 104° or 105° Fahr. marked hyperpyrexia only a very occasional occurrence; death seldom due to hyperpyrexia alone. Cases with high temperatures frequently observed to run favourable course. At end of attack temperature, as a rule, comes down gradually, and during this *lysis* morning temperature may be practically normal for a week before the evening temperature reaches the healthy standard. If, after temperature has been normal morning and evening for some time, we find it go up again, we fear (1) a “relapse,” or (2) the occurrence of some sequela, such as abscess, “swollen leg” (venous thrombosis), or erysipelas. If it should prove a “relapse,” the phenomena of the disease will be repeated,—the pyrexia, diarrhoea, and very likely rose spots will reappear. Ten days or so constitute a common interval between end of “primary attack” and beginning of “relapse.” Relapse sometimes slight, sometimes more severe than original attack; evidently very desirable that thermometric observation

should be prolonged till convalescence is well advanced.

With regard to complications and sequelæ, the following is a brief summary from Murchison:—"Bronchitis not uncommon; pneumonia, pleurisy, and tubercular disease more frequent than in typhus; pleurisy may end in empyema; laryngitis an occasional and grave sequela; venous thrombosis more common, arterial thrombosis less common than in typhus; former gives rise to well known "swollen leg," or *phlegmasia dolens*, which occasionally crops up to prolong patient's stay in bed; otorrhœa not uncommon, especially in children; peritonitis, already mentioned, generally due to intestinal perforation, of which Murchison thus speaks (p. 565):—"Perforation of the bowel, with escape of the intestinal contents into the peritoneum, is the most important and dangerous complication of enteric fever"; intestinal hæmorrhage has already been referred to; epistaxis not uncommon, supposed to have some diagnostic value; if slight, is of no moment; if severe, may prove fatal; erysipelas of face and head,* serious sequela, fortunately not common;

* ERYSIPELAS. — Besides occurring as an occasional sequela in enteric fever and other diseases, erysipelas, especially of the head and face, is largely sent into Belvidere Hospital. These cases are sometimes idiopathic and sometimes traumatic; in the latter case, a common history is that the patient is a person of intemperate habits,

in severe cases retention of urine may occur; albuminuria common. Pregnancy not so serious and during a drinking fit has had a fall and received a cut on the face or scalp. Sometimes the lesion is very trifling. At the beginning of the attack there is usually marked shivering and vomiting; the face becomes swollen and red (frequently on one side first); it is hot and painful; blisters and bullæ may appear on the surface. The affection spreads over the forehead, may pass over the scalp; in some cases down over the neck, shoulders, and upper arms, stopping with a well-defined margin. When the disease is at a height, the face is greatly swollen, the eyes closed up, and the ears enlarged; indeed, the victim ceases to be recognizable, his countenance being a gross caricature, bearing only a distant resemblance to the human face. With all this there are great constitutional disturbance, foul tongue, loss of appetite, great thirst, quick pulse, high temperature, and in many cases delirium, sometimes of a very violent character. Among the dangers to be feared in erysipelas of the face and head are—(1) inflammation of the meninges of the brain, and (2) extension of the disease down into the larynx.

The *treatment* of erysipelas is somewhat unsatisfactory; so many methods have been advocated, and it is so difficult to arrive at an estimate of their actual value. The following line of treatment may be tried:—Patient to be kept in a room of regulated temperature, free from draughts of cold air; bowels to be kept free; plenty of easily digested nourishment (milk, eggs, porridge and milk, chicken soup, etc.) may be given; internally, tincture of the muriate of iron, with quinine, say two grains of sulphate of quinine to fifteen or twenty minims of tinct. mur. ferri, in an ounce of water, every two or four hours, while the affected part may be smeared with carbolic oil or vaseline, and, if need be, covered with a *thin film* of cotton wadding. Heavy masks of lint or cotton-wool should be avoided, as they are very distressing to the patient, and seem to do no good. If

as formerly supposed; abortion probable—not imperative.

Murchison points out that death comes in this disease, as in typhus, by coma or asthenia, or by a combination of them, or through the complications.

One attack of enteric fever is believed to give protection.

Diagnosis.—A well-marked case of enteric fever is easily diagnosed. When we have characteristic “rose spots,” diarrhoea, pea-soup stools, and typical temperatures—no room for doubt. In practice we find many cases which do not conform to the standard of the books; thus, we may have cases of this fever in which no rose spots appear; cases with no diarrhoea, but, on the contrary, obstinate constipation; cases in which temperatures tend to throw us off the scent. In slight cases many have merely loss of appetite, foul tongues, slight elevation of temperature, the

abscess forms underneath the scalp it should be opened and dressed antiseptically. The delirium may be controlled by the cautious administration of chloral and morphia, just enough being given to keep the patient quiet and manageable. Mechanical restraint should be employed reluctantly, and only under the personal supervision of the medical attendant. When the mischief spreads to the larynx, if suffocation is imminent, the method of Dr. Macewen, of Glasgow (“tubage of the larynx”), should be resorted to, or tracheotomy may be performed.

morning temperature closely approximating to normal; such cases generally termed "enteric febricula." True nature of such cases might readily be overlooked; no doubt are often overlooked or mistaken. Our eyes may be opened to true nature of illness by onset of severe relapse with full display of all the phenomena, or occurrence of well-marked cases of enteric fever in the same family.

On account of its insidious beginning and "protean forms," no disease offers greater difficulties in diagnosis than the treacherous malady called enteric fever.

Among diseases which have been mistaken for enteric fever may be mentioned typhus fever, scarlet fever, acute tubercular disease, the post-choleraic febrile condition, malarial disease, etc.

The differential diagnosis between enteric and typhus fevers have already been discussed (*vide* "Typhus").

Diagnosis, at beginning of illness, between enteric and scarlet fevers, sometimes matter of difficulty; enteric patients sometimes complain of "sore throat" (probably dry or irritable throat). If, on examining the skin, we find a red blush, we are apt to jump to conclusion that case is scarlet fever; idea may possibly be strengthened by finding tongue with somewhat of "strawberry" appearance. In a few days the error is corrected

genuine "rose spots" appear through the "scarlatiniform" blush, and persist after it has faded; pea-soup stools, abdominal pain or tenderness, and persistent pyrexia with characteristic enteric temperatures set us completely right; possibility of actual combination of scarlet and enteric fevers not to be lost sight of; still many supposed cases of this combination may be explained by foregoing remarks.

Tubercular affections sometimes very closely simulate enteric fever; task of distinguishing between them may (*in practice*) prove very difficult. Subject too wide for discussion here; only brief references to more important points. Tubercular meningitis at beginning apt to be mistaken for enteric (and *vice versâ*); the languor, headache, and vomiting are supposed to usher in an attack of fever, from undefined character of attack supposed to be enteric fever. As disease advances its true nature becomes manifest; slow and irregular pulse, dilated pupils, perhaps unequally dilated, the strabismus, hydrocephalic cry, erratic temperatures, all point to tubercular meningitis; when convulsions supervene our diagnosis is confirmed. Acute tuberculosis may puzzle. Of course, advanced phthisis pulmonalis may be readily detected by physical diagnosis; even then the possibility of the presence of enteric fever and tuberculosis in the same subject

must not be overlooked, the one masking the other.

Sub-acute or chronic tubercular peritonitis may keep us for a long time in doubt; here we have pyrexia, abdominal pain, diarrhoea, tympanitis, and, it may be, blood in the motions; but the protracted course of the disease, the evidence of tubercular mischief in other organs, the anomalous character of the temperatures, the progressive emaciation of the face and limbs, with progressive enlargement of the abdomen, and the blue veining of the latter may help us to a decision; the detection of fluid effusion in the peritoneal cavity confirms the diagnosis. It is noteworthy that the post-choleraic pyrexia has been mistaken for enteric fever, to which it bears some points of resemblance; careful inquiry into history of illness would clear up difficulty provided honest statements were made.

Malarial disease is frequently confounded with enteric fever; the theory has even been advanced that the diseases, so to speak, displace each other. More than questionable view, but it shows in a strong light the practical difficulty of differentiating the two diseases in an aguish district; it only remains to be said here (for the subject cannot be discussed), that while malarial affections and enteric fever present many points of resemblance, they also present strong points of contrast; the evi-

dence of identity breaks down, but the difficulty of diagnosis remains.

Prognosis.—It is a question whether the word prognosis should not be struck out in connection with the disease under consideration.

Enteric fever is such a treacherous, insidious, uncertain disease, that he must needs be a very bold, or very skilful, man who can indulge in a prognosis; at same time there are certain features which justify us in giving a qualified opinion as regards the probable issue of case.

Percentage mortality in hospitals say, roughly speaking, 12 to 18.

(a) *Favourable Circumstances and Signs.*—Calm and patient temperament in the sufferer,—it will stand him in good stead during his long trying illness; ability to take and retain nourishment and stimulants; good sleep; pulse of moderate rate (90 to 120), fair in volume and resistance; tongue moist; absence of abdominal pain and distension; temperature moderate, ranging, say, to 103° F., *with a distinct morning remission.*

(b) *Unfavourable Circumstances and Signs.*—Irritable, impatient temperament; refusal to take, or inability to retain, nourishment and stimulant; insomnia or delirium; failure or excessive rapidity of pulse; bare, glazed, fissured tongue; tympanitis; persistent high temperature, *with no*

appreciable morning remission; irregular temperature, sudden rises and falls; *severe* intestinal hæmorrhage; intestinal perforation, practically death-warrant; peritonitis; congestion of lungs or pneumonia; marked tremor (points to deep ulceration); hysterical symptoms (especially in men); profuse diarrhœa; severe epistaxis.

N.B.—A mild onset must not be taken as guarantee for favourable case.

Pathology. — Enteric fever presents well-marked pathological appearances; *post mortem* valuable and satisfactory in correcting or confirming diagnosis. Characteristic lesion is ulceration of Peyer's patches; for this reason examination of small intestine is most essential part of autopsy. In slight cases, or cases at early stage, patches are merely thickened, raised, congested; in severe cases necrosis takes place, glandular structure sloughs and comes away, leaving a raw ulcerated surface. This ulcer has undermined edges; when healing takes place these edges become adherent to floor of margin of ulcer; of course glandular structure once destroyed is never restored, but there is no contraction in cicatrization. Ulceration may go deep, till only peritoneal coat of bowel is left; if process continues, perforation occurs, may be pin-point perforation from bowel being eaten through; or may be that thin peritoneal film is torn through, and then we have a

rent or fissured appearance; perforation permits escape of faecal matter into peritoneal cavity. If patient lives for some time after perforation, we have peritonitis, more or less extensive, sometimes with gluing together of intestines by lymph adhesions. Note there may be peritonitis without actual perforation; when the bowel is thinned by ulceration we may have inflammatory action communicated to the peritoneal surface of the bowel, and this may spread and give rise to peritonitis. The morbid affection in Peyer's patches begins in the glands next the caecum and travels *upwards*.

Besides Peyer's patches, the "solitary glands" in the small and large intestine are also affected; the mesenteric glands corresponding with the affected patches become enlarged, infiltrated, and inflamed. The spleen is enlarged and softened; these changes in spleen are usual in enteric fever. Lungs frequently congested; may be merely hypostatic congestion or actual pneumonia. Heart in severe cases pale and flabby; peculiar waxy degeneration of muscular fibre has been pointed out by Rindfleisch as characteristic of prolonged cases.

Treatment.—(a) *Prophylactic*.—Attention to drainage, trapping of W.C.'s, etc. Particular attention to source of water supply and milk supply. Boiling suspected milk.

(b) *Curative*.—First essential a good nurse, one

possessing the rare combination of tender kindness and unswerving firmness, and, if possible, one who has been trained in the treatment of the disease. Careful observation and *intelligent* execution of doctor's orders wanted, not mere automatic obedience, which may give rise to grievous blundering.

Confinement of patient to bed in early stage of great importance. Great misfortune when he is allowed to totter about till utterly exhausted, and forced through sheer weakness to assume the recumbent posture. Patient to be at once placed on milk diet, even if there is *mere suspicion* of enteric fever, *and kept as quiet as possible*. Use of purgatives should be avoided; their employment does mischief by prostrating patient, and probably setting up severe and exhausting diarrhoea. In some instances sudden prostration of patient after a purge is very striking. If bowels are constipated relieve by simple enemata, which do all that you desire, viz., empty the lower bowel. Purgatives disturb stomach and diseased upper intestinal tract, increasing risk of hæmorrhage and perforation. When patient is thoroughly convalescent a moderate dose of castor oil may be given. Constipation of bowels to be carefully attended to; if neglected, increases or gives rise to head symptoms.* Getting rid of hardened

* For treatment of head symptoms, see "Typhus."

faeces gives patient miserable suffering, especially if he is afflicted with hæmorrhoids. Diarrhoea, if moderate, does not require particular treatment; if severe or troublesome, if motions are copious, and more than two or three a day, boil milk—add lime water; if these means fail, try lead and opium pill, or starch and opium enema. The thirst may be relieved by water, with or without ice, as the patient may prefer. Iced water in severe cases very grateful to patient. Dilute sulphuric acid and a vegetable bitter may be added. Lemonade or soda-water to be given sparingly and reluctantly; apt to give rise to flatulent distension (same objection applies to tea), and if patient is indulged in those drinks he may refuse milk.

Intestinal hæmorrhage, if slight, may be treated with lead and opium pill; if more severe, with ten-minim doses of ol. terebinth. in milk, or drachm doses of liq. ergotæ in water, every hour. At same time ice should be swallowed in chips, introduced in pieces into the rectum, and applied externally to abdomen as “ice poultice,” or in ice-bag. Leiter’s apparatus may be convenient in those cases; thin layer of cloth may be placed between skin and coil. Iced water should be used, lumps of ice kept floating in the upper basin. Advantages of Leiter’s apparatus are: Patient does not get wet (as in application of cold wet

cloths), and he does not require to be disturbed in any way after apparatus has been applied and set in action. Ice, lead and opium, and turpentine seem to be the most reliable remedies. Difficult to estimate the results of treatment. If *intestinal perforation* occurs we have only two things to do: keep sufferer at rest, and administer opium freely. The one chance of recovery consists in the formation of adhesions between the perforated portion of bowel and a neighbouring coil. Our treatment is directed to keeping patient and intestine as quiet as possible. Grain opium pills may be given every one, two, three, or four hours, as required. Opium not only keeps intestine still, but relieves the severe pain as well. For latter, light linseed and laudanum poultice may be applied to abdomen; for vomiting, iced soda-water in sips, or chips of ice may be given to swallow. If stimulant is wanted, give teaspoonful doses of brandy in iced soda-water, or small quantities of champagne at short intervals. For nourishment, small quantities of milk and water, or beef-tea (with all trace of fat carefully removed). Epistaxis may be treated by elevation of arms over the head, by application of ice to back of neck or to forehead; by stuffing lint and tannic acid into the nostrils; or lastly, by plugging the posterior nares. Of late years especially great stress laid on dangers of hyperpyrexia. The employment

of antipyretics constitutes, in the minds of some, the essential part of treatment of this disease. Cold baths, cold packs, application of ice, use of Leiter's apparatus, and the use of such drugs as quinine, salicine, salicylate of soda, kairin, antipyrin, etc. etc., are strongly advocated by those who hold that reduction of temperature is practically the cure of the disease. While admitting that hyperpyrexia (say 106° or 107° F.), if persistent, is of itself a great source of danger, liable to give rise to paralysis of the nerve centres, and death, the author is of opinion that such cases are comparatively rare. Further, he does not think that heroic antipyretic measures are called for in cases of moderately high temperature (say 103° or even 104° F.), for he has seen many such cases run a favourable course without occurrence of any cause for anxiety, and end in excellent recovery. Antipyretic treatment cannot be discussed here; only leading points referred to. First as regards cold bath treatment, with its modifications. Advocated by Currie long ago for treatment of febrile condition; good results obtained by him striking. More recently Continental physicians, particularly the Germans, have strongly advocated cold baths in treatment of enteric fever. Brand, Liebermeister, Jurgensen, Goldtdammer, and others have had such gratifying results that British physicians have

keenly discussed, and, in a limited sense, practised, the German mode. Whole subject too much involved in dust of recent controversy to permit perfectly clear view of the matter. The startling, nay, astounding, results of the Germans are such as to fairly stagger British physicians. Possible explanations—(1) the cold bath is *the* treatment for enteric fever, and its adoption is imperative on all conscientious practitioners; or (2) that the disease is of a more benign type among the Germans than among the British; or (3) that diagnosis rests on a different basis in the two countries. The honour and high standing of the German advocates of the method command respect and careful consideration for it. Among the objections to be urged against the method are—(1) the danger and discomfort to a weak enteric patient with ulcerated bowels, and, it may be, on the brink of hæmorrhage or perforation, in being lifted into and out of a bath, however gently, every two or three hours; (2) the strong suspicion that the practice encourages hæmorrhage and induces peculiar collapse of the lung; (3) the fact that it does not, after all, cut short, or materially alter the course of, the disease; and (4) lastly, that it is employed, and good results are claimed for it, in such cases as we see every day doing perfectly well without it. This treatment is entitled to thorough, fair, and impartial

study; but it is still *sub judice*.* As to use of antipyretic† drugs few words must suffice here. No doubt cases occur in which employment of large doses of (*e.g.*) quinine or salicine is right and proper; such cases are few,—very few in author's opinion. In a case with temperature of 106° or 107° F., it is rational and advisable (in addition to cold sponging of patient) to give say 20-grain dose of quinine, and, if necessary, repeat it; but in case of evening temperature not exceeding 103° F., the employment of antipyretic drugs is not only needless, but mischievous. Supposed advantages of *routine* antipyretic drugging are more than counterbalanced by their well-known drawbacks. The *temporary* reduction in temperature is dearly purchased by sickness, vomiting, headache, and (it may be) delirium, and alarming nervous depression.

The claims of rational administration of antipyretic drugs, in circumstances specially calling for it, are frankly recognized.

Pulmonary affections, occurring as complications or sequelæ, may be dealt with in the usual way.

* See new edition of Murchison by Dr. Cayley.

† The Author's paper, "On a Case of Enteric Fever in which Quinine was employed as an Antipyretic," was read before the Glasgow Medico-Chirurgical Society, and subsequently published in the "Glasgow Medical Journal" for May, 1881.

Must be borne in mind that, owing to patient's debility and the prospect of a long illness, great care should be taken to avoid blistering, while even poulticing requires to be conducted with caution, lest the skin should be broken, and bed-sore (the most troublesome of complications) should be induced.

Phlegmasia Dolens, or the "swollen leg" of fever, may be treated by the application, over the tender tract in the thigh, of ext. belladonnæ, or laudanum. Limb should be wrapped in cotton wadding, bandaged and elevated.

Erysipelas of the face seems to do well under carbolic oil, or vaseline, and a thin layer of cotton wool (applications recommended for erysipelas simply endless—see "Erysipelas").

Bed-sore is best *prevented* by strict cleanliness, frequent change of posture, so that no part of skin may be long subjected to pressure, frequent sponging of red or tender spots with brandy or camphorated spirit, and *the early use of water-bed*. If in spite of these precautions it should form, sore may be dressed with camphorated oil, or with iodoform and vaseline. A relapse of enteric fever requires treatment similar to that employed for primary attack. If it is necessary to employ the catheter for relief of *retention of urine* in enteric fever, it is well not to press too strongly over the hypogastrium when assisting the evacuation of the

bladder: the state of the intestines must be borne in mind.

Most important part of treatment of enteric fever left to last. The *diet* during the acute stage—that is, while the evening temperature is above normal—should consist exclusively of milk.* If patient is very thirsty must not be permitted to drink *pure* milk in the attempt to quench the thirst. It is to be borne in mind that milk is a *rich food*, and that if it is taken in large draughts, at short intervals, the stomach will be upset, and vomiting and diarrhoea will result. Patient should therefore have a daily allowance of, say, three or four pints of milk, and *this should be diluted with water in proportion to the patient's thirst*. Ice may be put in the diluted milk, and iced water, in moderation, may be given as well. A little beef-tea may be allowed in addition to the milk; it is a little variety for the patient, and if there is a tendency to constipation it may help to regulate the bowels; but it cannot be permitted to take the place of milk as a food; if there is diarrhoea its use should be avoided. In severe protracted cases with great emaciation, egg-flip (brandy, eggs, and milk beat up together) is good.

During early convalescence great care must be exercised in dieting. Every precaution must be

* See Author's letter to Professor Gairdner, "Lancet," January, 1882.

taken to prevent patient indulging his ravenous appetite. Nothing but milk diet should be given till the temperature has been normal for at least four or five nights, preferably for a week; then a little chicken soup and thin arrow-root may be granted; then a little chicken, fresh fish, or panada may be allowed (it is well to avoid *dry* bread for some time, it seems to be very apt to put the temperature up); then soft boiled egg, tea and toast. Butcher's meat, vegetables, and fruit should be forbidden till evening temperature has been normal for a fortnight at least. Tea should be avoided, from its tendency to cause flatulent distension.

Danger of imprudence in diet during convalescence from enteric fever cannot be exaggerated, and if (worn out by the importunity of patient or his friends) the medical attendant permits any indulgence which his knowledge and better judgment should forbid, the disastrous results which are likely to follow will prove a severe punishment to all concerned: violent and persistent diarrhoea, tympanitis, and intestinal perforation are among the consequences to be feared.

SCARLET FEVER.—(*Syn.*, SCARLATINA.)

Latin: Scarlatina sive febris rubra. *French*: Scarlatine. *German*: Scharlachfieber. *Italian*: Febbre scarlattina.

THE DISEASE.

Etiology.—The cause of scarlet fever is the transmission of the contagium of that disease from the sick to the healthy; the *materies morbi* is of subtle character, and capable of maintaining its vitality for a considerable period when deposited in fomites; this fact is well known and corroborated by every-day experience: clothing and bedding, etc., of scarlet fever cases are capable of retaining the infection for a long time unless thoroughly disinfected and washed; needlework or knitted work done by convalescents during desquamation are, as might be expected, fertile sources of danger; same remark applies to books read and fingered by persons recovering from scarlet fever; outbreak in school may be caused by return of a child in stage of desquamation; in such case rash may have been slight, or overlooked, and no medical advice sought; true nature of first case may not be recognized till an explosion in school or workshop occurs; slight cases

of scarlatina great source of danger to community from the readiness with which they may be overlooked. A child complaining of sore-throat, feeling sick, perhaps vomiting once or twice, perhaps not at all, having slight blush on skin, is a worthy object of suspicion; but if it seems all right in a day or so, parents conclude that there has been nothing serious in the attack: in such cases desquamation may be slight, or overlooked, child permitted to attend school, play with other children, perchance distribute milk or newspapers from door to door, till struck down by scarlatinal nephritis, sudden onset of dropsy filling parents with surprise and alarm. Children are admitted to hospital suffering from scarlatinal dropsy, who were running about streets till time of admission. It has been clearly demonstrated that *milk supply* may be the source of an attack of scarlet fever; therefore a matter of prime importance to make sure that milk shall not be issued from farms, dairies, or shops where it has been exposed to the infection of that disease. Good reason to believe that some convalescents communicate the disease even after desquamation is complete; in these cases exhalations from throat constitute source of danger; very imprudent to put scarlatinal convalescent to sleep with susceptible person, so long as suspicion attaches to the throat; broadly speaking, scarlet

fever cases should be strictly *isolated* for eight weeks (rule at Belvidere Hospital).

Cause of localized outbreaks of scarlet fever explained in this way: children are peculiarly susceptible to the disease; if it is introduced into a village the malady spreads, and lingers till all the susceptible exposed subjects have been affected, when, like a fire, it burns out for want of fuel; this community remains free till once more, a fresh crop of susceptibles having grown up, the infection is introduced, and again we have a flare-up of disease till the fuel is expended.

Symptomatology.—A susceptible person exposed to the infection of scarlet fever may not contract the disease for a few days; may be longer: period of incubation varies somewhat, doubtless, but cases have come under author's observation in which it seemed to be exactly forty-eight hours.

Disease usually ushered in with vomiting and sore-throat; in some cases no vomiting; in certain instances convulsions occur; there is elevation of temperature, sometimes hyperpyrexia; tongue covered with white fur, through which red papillæ project—the so-called “strawberry” tongue: the sore-throat is usually the symptom which attracts attention; patient complains of pain on swallowing; there is tumefaction and reddening of tonsils, fauces, and soft palate. On second day

of illness, scarlatina rash appears—comes out on trunk and limbs, generally deeper and stronger on latter than former; the *characteristic* rash of scarlatina, if once seen, is readily identified again; unfortunately it assumes such varied and abnormal forms as to puzzle even the most careful observer; sometimes assumes such a close resemblance to the measles rash as to be readily mistaken for it; this measly form of the eruption, when patchy and dark in colour, is associated with bad, indeed malignant, cases of the disease; it will generally be found that such cases have delirium or extreme restlessness and distress, running at the nose, and, even at this early stage of the malady, enlarged glands on the neck; in rare instances the rash becomes petechial in character, the small dark-red petechiæ being “peppered,” as it were, into the skin; again, the rash may be rough in character, and it sometimes happens that when the red efflorescence of the scarlatina rash has faded, a harsh papular rash persists on the arms and legs (this will be referred to again, under Diagnosis). In very malignant cases of scarlet fever the patient may die before there is time for the development of a rash; in such instances there are lividity of skin, severe vomiting and purging, and the sufferer dies in a few hours, leaving a suspicion on the mind of the attendants that the case may have been one of cholera or irritant poisoning; the

subsequent development of normal scarlatina in the household generally reveals the true nature of the first attack.

In a few days the rash begins to fade; if slight it may quickly disappear (albuminuria may be associated with the primary febrile attack); desquamation then sets in, but it is to be remarked, in passing, that this process may begin even before the rash has quite disappeared; in some instances it is delayed for weeks; in some, again, it may be so slight as to escape observation altogether; the amount of desquamation varies extremely, from a chaffy or branny condition of the skin to the wholesale "peeling" of the cuticle in sheets, like silk-paper or parchment; occasionally the skin of the hands and feet is cast like gloves and slippers. The characteristic of scarlatinal desquamation is the moist, tough nature of the integument, which permits it to be removed in large strips or sheets, leaving the tender silky "new skin" below. Desquamation follows other diseases besides scarlet fever, but it is not of the character just described. After measles it is chaffy; after typhus and enteric, brittle, short, and chippy on the hands and feet; perhaps the desquamation of erysipelas (especially infantile erysipelas affecting the body and limbs) *might* be mistaken for that of scarlatina.

In meantime, if case has been a mild one, sore-throat will have abated, or even ceased to give any pain or trouble; if, on the contrary, it has been a severe attack, the patient will have suffered acutely from it, the enlargement and tenderness of the tonsils being a constant source of misery; even swallowing the saliva is painful, and attempts at swallowing food may give rise to agony; if the tonsils are very much enlarged, fluids return through the nose; during sleep the patient is nearly suffocated from the same cause,—there is for a short time stertorous breathing, which deepens till suffocation threatens, and then the victim starts out of sleep in terror, only to doze off to sleep again, with a like result; the tonsils and soft palate will be found swollen and red, and it frequently happens that white lymph patches occur on them: these exudations give rise to the idea of diphtheria; many cases of so-called diphtheria are simply cases of scarlatinal sore-throat in which the rash has been overlooked, or cases in which the bad sore-throat has developed at a later period of the disease; of course it is not denied that *genuine* diphtheria may supervene on scarlatina.

The swelling of the glands under the jaw, the so-called “scarlatinal bubo,” will also vary in degree with the nature of the attack—especially with regard to the severity of the sore-throat: in mild

cases the enlargement is usually slight, and soon disappears without any particular treatment; but in severe and malignant cases the state of matters is very different: glands may swell to size of pigeon's eggs, becoming at same time hard and tender, and final result may be suppuration; still worse, the connective tissue around the glands may become infiltrated, thus giving rise to the horrible hard brawny swelling occupying the front of the throat from ear to ear, and sometimes called "the collar neck." This condition occurs in bad cases, and constitutes one of the most unfavourable circumstances in an attack of scarlet fever, a bad sign in itself, and a most unsatisfactory complication to treat; when the skin breaks, or is incised, in this collar neck, dead cellular tissue is revealed, and the undermined skin dies rapidly; when the slough of dead connective tissue is removed, a ghastly cavity is formed in the side of the neck; in point of fact, a clean dissection is frequently made, laying bare the muscles and deep structures; in such cases sudden and severe hæmorrhage is to be dreaded. About the end of the third week, albuminuria, more or less marked, is likely to supervene. Sometimes the amount of albumen is very small—it may be a mere trace, requiring careful testing for its detection; on the other hand, it may be so abundant as almost to make urine

solid on boiling : this albuminuria, due to acute nephritis, is evidently part and parcel of the natural history of scarlet fever, and not, as it were, an accidental thing ; it occurs in patients who have been kept warm in bed, and who have not been allowed to get up ; but while no amount of care seems capable of averting this albuminuria, there can be no doubt that neglect, such as exposure to cold, may aggravate a very slight into a severe attack of nephritis. Thus a patient in whom the manifestation of mischief may not have gone beyond a slight haziness in the urine after testing, may, by imprudent exposure, develop a severe attack of albuminuria, followed by dropsy. The onset of congestion of the kidney is usually announced by vomiting, headache, and pain in the back ; if congestion of kidneys is very severe, hæmaturia may supervene : hæmaturia in minute degree, requiring delicate testing for its detection, is a common thing in scarlet fever, but hæmaturia of the gross form, which announces itself to the naked eye, is only an occasional occurrence.

With regard to the question of testing for albumen, it is not attempted here to do more than barely indicate the ordinary clinical methods at all times readily available : the subject has deservedly received much care and attention of late, and many new methods and agents have been introduced ; for details on these points the student is

referred to special books and papers dealing with the subject ; * suffice it here to say that there seems good ground for believing that nitric acid "in the cold" is worthy of confidence as a *delicate* test, while nitric acid and heat may still be regarded as a sure and satisfactory means of demonstrating the presence of albumen in the urine.

When the urine of a scarlet fever patient is decidedly albuminous, the next thing to be watched for is anasarca: this scarlatinal dropsy is first detected in the form of "puffiness" below the eyes and on the backs of the hands and feet (it should be here remarked that dropsy may occur without detectable albuminuria, and albuminuria without dropsy): this anasarca necessarily causes us anxiety, for we are aware that effusion may take place into any of the serous cavities; therefore we must be on the outlook for head symptoms, and closely watch the pericardium, the pleuræ, etc. In a patient with albuminuria and dropsy we should be constantly on the alert for convulsions: these uræmic convulsions are serious, and should receive prompt attention; they are epileptiform in character, with violent twitchings, foaming at the mouth, and insensibility; before they occur the patient is usually dull and "queer"; at the onset

* Particularly to an important and interesting paper read by Dr. R. S. Thomson before Med.-Chir. Society, London, 1885.

slight twitchings of one hand and one side of face may be noticed; the convulsions may be unilateral or general, very slight or very severe; but in every case they should receive immediate attention.

So, in like manner, effusion into the pericardium, pleuræ, or peritoneum should be looked for; in this connection another very serious and distressing complication may arise, namely, *œdema of the lung*: patient's urgent and miserable dyspnœa is frequently the first warning of this sad misfortune, and physical examination will soon confirm it; there are lividity, restlessness, and a peculiar short "hicking" respiration; the effusion into a pleural cavity may become purulent, and thus *empyema* is one of the complications (or sequelæ) of scarlatina concerning which we must be on our guard; dyspnœa, rise of temperature, and the physical signs sufficiently indicate what has occurred.

Embolism (due to fibrinous deposit in heart being detached and driven into pulmonary artery) may occasion sudden death.

Scarlatinal rheumatism not uncommon; it is sometimes very slight, merely a little tenderness about one or two joints, or it may be pretty sharp, affecting several joints in rotation, and accompanied by severe pain and some effusion; in young children the only intimation of rheumatic affection may be the fact that the child cries when moved in bed, or even at the approach of any one;

on examining patient it will be found that one or more of the joints are tender and swollen, and that the child screams when movements of the part are made; the little sufferer may be credited with unreasonable bad temper till this discovery is made. A much more formidable joint-affection—fortunately a rare one—is *acute suppurative arthritis*.

Among the most serious sequelæ of scarlatina may be mentioned *otorrhœa*; it is of frequent occurrence, and demands careful attention; “running of the ear,” contracted in connection with scarlet fever, may be a source of trouble and danger to the patient in after-life; occasionally an abscess forms behind the ear, over the mastoid, and if it is not relieved by incision the matter will ultimately be found welling out of the meatus; when pressure is made over the external swelling, pus pours from the ear, and the swelling subsides.

Urticaria occasionally occurs during convalescence from scarlet fever; when the rash is discovered it may give rise to some uneasiness, the first thought being, perhaps, that the patient has contracted measles; but the intense itching (giving rise to vigorous scratching on the part of the patient), together with a closer inspection of the eruption, will soon dispel the fear.

Incontinence of urine and fæces constitutes a troublesome feature during convalescence in some children, well worthy of being noted, because

inexperienced nurses are apt to set it down to carelessness or positive filthiness on the part of the child; this idea apt to be confirmed by the fact that it occurs when convalescence is advanced, and when child is quite intelligent and taking its food well; but this relaxation of, or want of control over, the sphincters is nevertheless clearly involuntary, and care must be taken that the sufferer is protected from misjudgment, and consequent unmerited severity.

It may be as well to refer in this place to two forms of scarlet fever which are of peculiar interest and importance, and have some points in common, viz., "puerperal" and "surgical" scarlet fever. Puerperal scarlatina justly dreaded; evident that every possible precaution should be taken to preserve a parturient woman from all chance of infection; if scarlet fever arises in her family she should be promptly removed, or isolated (accoucheur should make it a matter of conscience to avoid attending women in labour while he is coming in contact with scarlatina cases); this form of the disease is peculiarly virulent in its character, the puerperal state giving it apparently a malignant nature; the victims usually die.

Surgical scarlatina occurs in patients who have lately undergone operations; it presents the ordinary features of the disease. Dr. Hector Cameron, of Glasgow, points out that puerperal

and surgical scarlatina have this peculiarity in common, viz., both have a short period of incubation; and he explains this by the fact that in both we have *raw surfaces* from which "direct" absorption of the contagium may take place.

Although one attack, as a rule, confers immunity, this rule has exceptions.

Diagnosis.—Diagnosis of scarlet fever sometimes very easy, and often extremely difficult. When we meet with a well-marked case bearing a characteristic rash, it is scarcely possible to mistake the disease; but, unfortunately, we are often called in to decide the question of diagnosis after the rash is gone, and when even a careful search fails to discover any distinct side-evidence, such as sore-throat, enlargement of glands, or desquamation: these remarks apply particularly to slight cases in which the patient has complained merely of a little sore-throat and has had a doubtful blush on skin.

In such cases we can only isolate patient, and watch for desquamation, enlargement of the glands, and albuminuria. In all "doubtful" cases the patient should be isolated, and every precaution taken in the way of keeping him warm; if at the end of third week no confirmation is forthcoming, we may be justified in dismissing our fears. In another class of cases—and these are of a bad type—the rash closely resembles that

of measles—so closely, indeed, as utterly to mislead the observer unless he falls back on evidence: such cases may be distinguished from measles by following points:—there is running from the nose, and the acrid discharge causes tenderness and excoriation about the nostrils; there is swollen neck; there is severe sore-throat, with difficulty in swallowing; there is great constitutional disturbance, with much restlessness, generally high temperature, and frequently delirium; side-evidence, such as the illness of other members of the family or neighbours, should not be neglected.

Typhus is sometimes mistaken for scarlet fever, in children, and in the early stage of the disease.

Even small-pox has been mistaken for scarlet fever at the beginning of illness, by careful professional men.

But in the case of typhus the maculæ may be detected through the reddening of the skin; and as the reddening fades these typhus spots come out more distinctly; while in small-pox the appearance of the characteristic eruption soon settles the true nature of the disease.

Perhaps the most important and interesting blunder is that of mistaking enteric fever for scarlet fever—a mistake into which one may readily fall if not on his guard. In certain cases of enteric fever there is a distinct red blush or erythema of the skin during the early stage of the malady;

this looks very like a slight scarlatinal rash, and may lead to error (*vide* Enteric Fever).

Prognosis.—(a) *Favourable Circumstances and Signs.*—Possession of sound organs (especially kidneys) : in the febrile attack, normal rash, mild degree of pyrexia, mild sore-throat, and slight enlargement of glands (this, however, no guarantee against subsequent evils, *e.g.*, dropsy) ; abundant secretion of urine, free from albumen, or only slightly albuminous.

(b) *Unfavourable Circumstances and Signs.*—Impaired constitution ; blotchy measly rash, coming out late ; hyperpyrexia, delirium, severe sore-throat, “running nose,” great and early enlargement of glands, “collar neck” ; scanty urine, highly laden with albumen ; hæmaturia ; dropsy ; convulsions ; œdema of lungs ; pleural effusion ; empyema ; pericardial effusion ; embolism. Œdema of lungs practically hopeless ; convulsions serious ; embolism means sudden death.

Pathology.—Pathological interest naturally centres on the renal affection which gives rise to albuminuria and its attendant train of complications. Pathology of disease cannot be entered into here. The following brief statement is taken from Dr. Coats’ “Pathology” (p. 688, *et seq.*) :—

“The term glomerulo-nephritis has been applied by Klebs to a condition in which the Malpighian tufts show the chief signs of inflam-

mation. This he describes as being present in the kidneys of persons who have had scarlatina, and have died in consequence of the post-scarlatinal nephritis.

“It seems strange that the actual pathological condition in the nephritis of scarlatina has been so little determined till of late years. It has been customary to state that the condition is a parenchymatous nephritis. Recent observations, however, have shown that in the earliest stage of scarlatinal nephritis there is an accumulation of round cells in the glomeruli and connective tissue around. This observation, originally brought into prominence by Klebs, has been confirmed by the author, Klein, Charcot, and others, and may now be generally accepted. Looking on scarlatinal nephritis as a typical acute inflammation of the kidney, we are not surprised to find that the occurrence of leucocytes in the Malpighian tufts is the most prominent appearance at the outset; and it is this condition, apparently, which is specially designated glomerulo-nephritis. The exudation is not usually confined to the glomeruli, but exists around them, and may extend to the general connective tissue. . . . Besides these changes, there is very commonly, in the acute stage of scarlatinal nephritis, blood in the uriniferous tubules. The blood is in the convoluted tubules, and it is sometimes seen also inside the glomerulus.

. . . . In scarlatina the changes in the epithelium also centre in the glomeruli. The epithelium lining the glomerulus is distinctly enlarged (Fig. 269), and whereas normally the epithelium is hardly visible, it may become remarkably prominent, as in the figure. It sometimes increases very greatly, as in Fig. 270, accumulating inside the glomerulus in such a way as to crush the tuft.

. . . . Similar changes occur in the epithelium of the tubules. . . . In cases where there is little more than a glomerulo-nephritis, such as we have described above, there are sometimes severe uræmic symptoms, leading, rapidly it may be, to death.

. . . . The kidneys in these cases may be very little changed to the naked eye; they are sometimes enlarged with considerable injection of the vessels. . . . Sometimes, on the other hand, the exudation of leucocytes may be sufficient to produce great enlargement, and the kidney (as in the author's case, from which Fig. 267 is taken) has all the appearance of the large white kidney. . . ."

(p. 709). "In cases of SCARLET FEVER, colonies of bacteria are sometimes to be seen in the capillaries and uriniferous tubules of the kidney (Fig. 280). They are not evidently accompanied by local inflammation, and it is not improbable that we have here to do with the specific organisms of the fever which have been sparsely present in the kidney at the time of death, perhaps in process

of excretion, and have multiplied into colonies after death."

Treatment.—A case of mild and uncomplicated scarlet fever requires little treatment beyond warmth, light diet, and regulation of the bowels. The free administration of a mixture containing chlorate of potash and tincture of the muriate of iron—say five grains of the former to ten minims of the latter in each dose—is to be commended in all cases.

In bad cases with high temperature and delirium (and when patient has strong pulse and breathes freely), the "cold pack" often acts like a charm; but it requires to be carefully watched. Patient is stripped naked, enveloped in a sheet which has been wrung out of cold water, over this a dry blanket is wrapped, and then the bed-clothes are put on as usual; the delirium subsides, there is evident relief, and frequently the patient sleeps. At end of an hour patient is taken out, dried, clothed in warm flannels, and tucked into bed. The pack may be repeated at intervals, if deemed advisable by the medical attendant. Patient should be watched closely while in the pack, and if lividity, failure of the pulse, shivering, or other unfavourable signs manifest themselves, he should at once be removed and wrapped in hot blankets, while hot drink or stimulant is administered.

If throat symptoms are severe, various methods

of relief are worthy of trial: a certain mode of treatment may fail in one case and succeed admirably in another. In adults, *gargles* may be employed with benefit, but it is useless to try them with young children. Gargles containing chlorate of potash and a dilute acid with a little glycerine, do well.

The steam spray from Dr. Adam's apparatus gives very decided relief in most instances; the spray may consist of simple water and steam, or it may be medicated in various ways, *e.g.*, by the addition of carbolic acid solution, tincture of the muriate of iron, chlorate of potash, Condly's fluid, oil of eucalyptus, etc. etc. Again, the porcelain "inhaler" is frequently found to be very grateful to patients: here again the simple water vapour may be respired, or various substances may be added to the hot water in the vessel, such as ol. eucalypt., etc. *Swabbing* of throat by means of a piece of sponge or lint fixed at the end of a rod, or held by forceps, or painting with a camel-hair brush, also very useful in many cases. Glycerine and perchloride of iron, or carbolic acid in glycerine, may be employed for the purpose. *Ice* is often found to be grateful when allowed to melt in the mouth. *Poulticing* may be resorted to with decided benefit; poultices should be made of linseed meal with olive oil added, and they should be applied hot and changed frequently.

In the case of children with tender skins, a layer of flannel may be interposed between the poultice and the skin; unless this precaution is taken, nasty blistering, with subsequent sores, may be the result. This is a mother's hint, and a good one. The efficiency of the poultice is not destroyed; heat and moisture come through the flannel *gradually*, and in this way the shock to the skin and the nervous system of the child is avoided.

During period of desquamation it is well to sponge the skin with camphorated oil, carbolic oil, eucalyptus oil, or, better still, diluted aromatic acetic acid, this last being recommended by Dr. John Dougall, of Glasgow, as the best disinfectant in such cases, and free from objections which may be taken to greasy preparations. At this time great care should be taken to keep the patient warm; should be clothed in flannel and, as a matter of course, confined to bed; temperature of sick room should be kept steady, say about 60° F. Enlarged glands on neck, if not very big and painful, are perhaps best treated by gentle friction with camphorated oil and covering with flannel; if swelling goes on and the gland becomes very sore, the surface of skin may be smeared with a mixture of belladonna and glycerine. If this fails, recourse may be had to blistering with liniment of iodine or liquor epispasticus: doubtful if the iodine has any specific effect; essential part

seems to be the production of vesication. In some instances blistering seems to have a striking effect in causing softening and absorption: sometimes fails to effect this; collection of pus results, which requires to be evacuated. If it seems likely that an inflamed gland is going steadily on to abscess, it is perhaps as well to employ poulticing with the object of relieving pain and promoting suppuration; for this purpose linseed and laudanum poultices may be used. When fluctuation is distinct, the abscess may be opened by a moderately free incision; if opening is too small, contents do not escape freely,—opening blocked by shreds of slough, etc.; opening apt to close and heal too soon; result—reaccumulation of pus. To guard against this, it is well to insert a little strip of lint dipped in carbolic oil, which can be removed and renewed at each dressing; or, better still, to introduce a small drainage tube, which provides for the constant escape of pus, and in the end saves much pain and trouble. Abscess being on neck, we are naturally anxious to avoid leaving much mark, and the “aspirator,” with its small puncture, seems particularly applicable; in practice, result is disappointing. After the pus is drawn off—and if thick or shreddy this may be a matter of difficulty—the small puncture closes, and reaccumulation of purulent fluid takes place; it is therefore recommended to use the bistoury and

drainage tube ; dressing of lint soaked in carbolic oil, covered with gutta-percha tissue, and secured by a few turns of bandage, are all that is further required. The "bad neck," or "collar neck," which occurs in malignant cases of scarlet fever, is a much more difficult thing to deal with. Here we have a boggy swelling and infiltration of the connective tissue in front of the throat, extending, it may be, from ear to ear : difficult to say what is the best course to pursue ; poulticing may give some relief, but softens the skin ; whether opened by incision of knife or spontaneous ulceration of skin, the result seems, broadly speaking, to be ultimately much the same. In both cases dead connective tissue is exposed ; the skin becomes undermined and ulcerates away, and when the sloughs of dead areolar tissue separate, we have a deep hole left, or it may be an extensive cavity in which the structures of the neck are laid bare as in a clean dissection : in this stage a dressing of vaseline and iodoform does very well. It is surprising to find what ghastly chasms may be filled up and healed over by kindly nature.

When *albuminuria* manifests itself, even in a slight degree, great care must be taken to keep the patient's skin warm and his bowels free ; if the albumen is considerable in quantity, and there be at the same time sickness and pain in the back, poultices should be applied over the kidneys, and

purgatives should be administered. When *dropsy* makes its appearance, still more energetic treatment must be adopted: in addition to the poultices and purgatives, it is desirable to put the patient into a hot pack,* and administer tincture of digitalis in small doses (℥v. to ℥x.), repeated at short intervals. When the stomach is irritable, digitalis compresses may be employed instead, or the poultices applied over the kidneys may be moistened with infusion of digitalis; pilocarpine may be administered (by mouth or by hypodermic injection) to induce perspiration. If *convulsions* set in, the use of poultices, hot packs, and purgatives should be continued, and in addition chloroform should be administered by inhalation during the fit. In *œdema of the lung*, jacket poultices round the chest, stimulation with brandy and ether, or better, gin, and the free administration of digitalis, seem to be the remedies most deserving of confidence; but the patient's position is a desperate one when this condition is fairly established. *Pleural effusion*, or empyema, may be treated by the external application of liniment of iodine or by blistering; if these means fail, or if the case is urgent, recourse may be had to aspiration or tapping with a trocar or canula: if need be, the opening may be enlarged by the knife, and a

* Hot *dry* pack generally preferable. Patient is wrapped in warm, dry blankets, and surrounded by hot bottles.

drainage tube be introduced, so as to ensure free evacuation of the fluid.

Scarlatinal rheumatism, if severe, may be treated by iodine liniment locally, and salicine internally; but when the attack is mild, very good results seem to follow the administration of small doses of Dover's powder at short intervals, and sponging of the affected parts with warm laudanum, or wrapping them in cotton wadding soaked in laudanum; in the latter case, oiled silk and a bandage will be necessary to complete the dressing. Acute suppurative arthritis, fortunately rare, is a dreadful complication, practically baffling attempts at treatment. Perhaps the application of splints and the opening of the joint under antiseptic precautions would give the best chance, the patient at the same time getting quinine, wine, and good nourishment. *Otorrhœa*: When a scarlatinal patient complains of pain in the ear, prompt application of a blister behind the ear seems in some cases to cut the mischief short (recommended by Professor Gemmell, of Glasgow). If, on examination by speculum, it is found that the tympanum is bulging, puncture of the membrane should at once be performed, so as to afford vent for the pus; this may avert destruction of tympanum. Discharge from the meatus may be treated with injection of warm water and Condyl's fluid, or by insufflation or stuffing with boracic acid. The itching of *urticaria*

may be much deadened and relieved by sponging with carbolic acid lotion. In the troublesome *incontinence of urine*, tincture of belladonna may be tried in five- or ten-drop doses three or four times a day, the results being watched.

With regard to diet in scarlet fever, the chief point is to avoid heavy or nitrogenous food, on account of the kidneys. In the acute stage milk diet—porridge and milk, and panada—may be allowed; in convalescence, chicken soup and chicken, or fish, tea and toast, etc. *No butcher meat should be permitted till the fourth week at earliest.*

MEASLES.

Latin : Morbilli. *French* : Rougeole. *German* : Masern. *Italian* : Rosolia Fersa.

THE DISEASE.

Etiology.—The cause of measles is the communication of the contagium from the sick to the healthy: now believed that the disease is most infectious in the “catarrhal” stage, and in this way the evil is done before the danger is recognized.

Symptomatology.—In the premonitory or catarrhal stage, patient suffers from feverishness, sneezing, coughing, and watering of the eyes: feels

and looks very miserable: the cough is of a peculiar harsh hoarse character, almost pathognomonic of measles. There is elevation of temperature. "During the stage of eruption, and usually about thirty-six hours after its commencement, the maximal temperature is reached; this in normal cases corresponds with the maximum of the exanthem, or at least with the first stage of it" (Thomas, in "Ziemssen's Cyclopædia," vol. ii., pp. 78, 79). On the fourth day rash begins to appear; usually comes out strongly on the face, where it naturally attracts attention; will be found extending among the roots of the hair; comes out also on limbs and trunk: at first isolated red spots; these become numerous, run together into irregular masses, constituting the characteristic rash; when the rash fades, it frequently leaves a brownish staining of the skin (this is important from a diagnostic point of view). Most marked features in the acute stage are the troublesome hoarse cough, rawness in the chest, tenderness and watering of the eyes, photophobia, with tumefaction of the upper eyelids, and a state of discomfort and feverishness. The pulmonary complications of measles constitute the most serious element of the disease; the troublesome bronchial irritation, or catarrh, which is so conspicuous in the early and eruptive stage of the malady, is no doubt due to efflorescence on the pulmonary mucous membranes corresponding to the cutaneous rash;

this subsides as the febrile stage passes off; but there is danger of severe *bronchitis*, or even *pneumonia* supervening, especially in young children. Double pneumonia may occur; practically certain to prove fatal. *Laryngitis* a not unfrequent complication or sequela of measles; it may assume an alarming character, so as to demand the consideration of operative interference. With regard to the eyes, photophobia is common; in strumous children pustular ophthalmia, with subsequent ulceration of the cornea, is apt to occur. *Otorrhœa* frequently follows measles. One of the most dreaded sequelæ of measles is the localized death of tissue, known as *cancrum oris* when it attacks the face, and *noma* when it affects the genitals. *Cancrum oris* begins with a tense shining swelling of the cheek; the eye on that side becomes closed by œdematous swelling; the ulceration begins on the inner or buccal side of the cheek, and penetrates to the outside, where the necrosis announces itself by the appearance of a black spot; this black spot increases in size, and finally the slough which it represents drops out and leaves a hole in the cheek; the death of tissue now goes on steadily, eating away the cheek till a horrid gap is left showing the bare teeth, etc. Nothing can be more painful than to watch the pretty cheek of a little child rotting away under the foul canker; the stench is something frightful; curiously enough the child does

not seem to suffer acutely, at least not so acutely as one would apprehend from the dreadful appearance; even when the disease is far advanced, the poor little victim will try to eat a piece of bread—a most repulsive sight, as may easily be imagined. Sometimes necrosis of the jaw is associated with cancrum oris, and the teeth drop out. Troublesome diarrhoea of a dysenteric type, and due to a catarrh of the large intestine, occurs in measles.

Diagnosis.—Measles is apt to be confounded with the following diseases:—Small-pox, scarlet fever, typhus fever, and the copaiba rash, chloral rash, and urticaria.

Measles and small-pox are occasionally mistaken for each other at first; accounted for by fact that a “measly” rash frequently precedes or accompanies the appearance of the small-pox eruption, but the severe pain of the back and vomiting so characteristic of variola are absent.

The distinction between measles and scarlet fever is frequently a matter of great practical difficulty, especially in dealing with the first case of a group. In the first place the measles rash sometimes assumes, at the beginning, a diffused form, which closely resembles the scarlatina rash, but subsequently breaking up into its own characteristic form. In the second place the rash which occurs in malignant scarlatina bears a very striking re-

semblance to that of measles in form and distribution, and may be accurately described as a "measly" rash; hence the dangerous mistake of confounding malignant scarlet fever with measles may readily be made where the appearance of the rash is alone relied on as the guide to diagnosis. The most salient points of contrast in the two diseases, exclusive of rash, may be indicated as follows:—Measles, hoarse-cough, photophobia, watering of eyes, tumefaction of eyelids; malignant scarlet, indications of profound nervous disturbance, discharge from nostrils, swollen neck. If primary symptoms are equivocal, must wait for further evidence; desquamation, enlargement of glands, and albuminuria in scarlet fever, and bronchopneumonia, laryngitis, and affections of the eye in measles.* (N.B.—Measles and scarlet fever may occur together in the same subject, and form a rather puzzling combination.)

* RÖTHELN ("German measles," "epidemic rose rash," Rubeola, or Rubella) is often confounded with scarlet fever on the one hand and measles on the other. It is a mild disease characterized by catarrh, coughing, sneezing, congestion of conjunctivæ, burning pains in eyes, photophobia, swelling of glands of neck. No albuminuria. (Thomas in "Ziemssen's Cyclopædia").

Although resembling measles and scarlet fever, there can be no doubt about its being a distinct and specific disease; an attack of it does not give protection from measles or scarlatina, nor do measles and scarlatina give protection against it.

Cases sent to Belvidere Hospital as Rôtheln generally

Copaiba rash may readily mislead one into the notion that he has to do with measles, but the absence of constitutional disturbances, and the "exaggerated" character of the rash, together with the true history, when it can be obtained, clears up the mystery.

Typhus rash (especially in children) may be mistaken for measles, particularly when it is very distinct on the face; course of illness will correct the mistake.

Prognosis.—Uncomplicated measles need give rise to little anxiety as a rule. The real dangers to be feared in measles are the complications or sequelæ—laryngitis, pneumonia, cancrum oris, etc. With regard to first, it may be said that even severe cases may make a good recovery without operative interference; while, therefore, always a source of grave anxiety, the prognosis is not necessarily bad. Pneumonia is a very serious complication; if it is double, prognosis necessarily very bad—practically the case is hopeless. Cancrum oris, fortunately only of occasional occurrence, demands a bad prognosis.

Death in measles cases usually due to pulmonary or laryngeal mischief.

prove to be either measles or scarlet fever; the disease does not seem to be common in Glasgow.

The student is referred to the interesting contributions on Rötheln in the "Lancet," by Dr. Dyce Duckworth, who is an authority on the subject.

Pathology.—According to Niemeyer the chief morbid changes are—croupous laryngitis, capillary bronchitis, vesicular emphysema, collapse of lung, catarrhal pneumonia. When hæmorrhage takes place in the skin, brown stains are left for some time; the blood is dark, fluid, and poor in fibrine.

Treatment.—An ordinary attack of measles requires no special treatment. Protection from cold, regulation of the bowels, mild diet, and a subdued light, are really all the precautions necessary. If the rash does not come out freely, a hot mustard bath may be given; if the cough is troublesome in the catarrhal stage, a sedative mixture containing a little chloral or chloroform may be given; if the skin is hot and itchy, sponging with warm water and vinegar may be tried: the laryngitis may be treated with hot linseed poultices to the throat, the use of the steam spray, or, better still, especially in adults, the breathing of steam from a porcelain inhaler; severe attacks may be successfully treated in this way, but if the case is very urgent, Macewen's "tubage of the larynx," or tracheotomy, may be resorted to for relief.

Pneumonia may be treated with poulticing and the administration of stimulant; the results of this somewhat simple line of treatment seem quite as satisfactory as those of more elaborate and heroic methods. In *cancrum oris* we may, after removal

of slough, apply tinct. ferri perchlor. to the raw surface; fuming nitric acid and strong hydrochloric acid have also been employed for this purpose. Charcoal poultices may be used to keep down the stench; tonics, stimulants, and nourishment should be freely given; eggs, brandy, and milk beaten up together constitute a good mixture in such cases.

SMALL-POX.

Latin: Variola. *French*: Variole; *Syn.*, Petite Vérole. *German*: Blattern; *Syn.*, Menschenpocken. *Italian*: Vajuolo.

THE DISEASE.

Etiology.—The etiology of small-pox is in many respects clear and intelligible; well-known fact that virus taken from small-pox pustules, and scratched into the skin of a susceptible person, will develop an attack of variola; same result follows from Chinese method, viz., stuffing small-pox crusts into the nostrils: therefore clear to demonstration that the seeds of the disease are contained in the eruption. Further, interesting to find that when the virus is introduced directly into the system, as in inoculation, the period of

incubation is shorter than when the disease is contracted in the ordinary way. Good evidence to show that it is the solid or particulate portion of the variolous matter which is capable of giving rise to the disease, not the fluid portion. It is well established that small-pox is a subtle and clinging contagium; houses, ships, and clothes contaminated with it are powerful for its dissemination: interesting instance of its conveyance in a letter: clothing, bedding, and books which have been used by a small-pox case very capable of spreading the disease. When inoculation was in vogue, the person on whom it was performed had the benefit of a mild attack, but was liable to give severe attacks to unprotected persons, and therefore was a source of danger to the community; inoculation is now illegal. Mild cases of small-pox may be readily mistaken for chicken-pox, or be overlooked altogether: *those slight cases are the most dangerous of all to the community.*

Symptomatology.—Period of incubation in small-pox has been given as from 10 to 13 days, say 12 days. The first symptoms to call the patient's attention are shivering, headache, sickness, and pain in the back, and these symptoms are usually so marked, nay severe, as to give the medical attendant the first hint of what he is dealing with. The sickness is described as of a heavy and horrible character, while the backache

is sometimes agonizing. Of course, these prodromata vary in intensity, and in some cases one or the other may be slight or even absent; but as a rule they are characteristic of the disease under consideration. On the third day of illness the eruption begins to show itself; but, indeed, it may with truth be said that it may be *felt* before it is seen, the finger detecting the "shot-like" nodules in the skin: but at beginning there is frequently a measly or scarlatina-like rash, which is very apt to mislead; in this way small-pox is sometimes at first mistaken for measles and scarlet fever. In small-pox the temperature falls after the eruption comes out: the patient is greatly relieved.* The papules become converted into vesicles, and those vesicles assume a flattened pearly appearance, which suggests comparison with nacre studs or drops of spermaceti which have cooled on the skin: umbilication takes place; dimple or depression in centre of vesicle. When the eruption suppurates (about 9th day) the patient becomes

* "Almost exactly simultaneously with the appearance of the eruption, the fever, with all its concomitants, in many instances quite disappears. The patient appears to be quite well—to be convalescent. He can scarcely be persuaded that he is ill. In a severe case this is only the beginning of troubles. In a mild case it is almost all. Persons just at this period appear to have the greatest virulence as regards their neighbours." (*From my MS. Notes of Professor Gairdner's Lectures.—J. W. A.*)

worse, and the temperature goes up again. This pyrexia is called the "secondary fever" (also "suppurative fever"), and it is sometimes very severe and dangerous. A patient who has passed safely through the first part of the attack may succumb to the secondary fever, which is attended with violent constitutional disturbance. The eruption first appears on the face, then on upper extremities and trunk, and lastly, on the lower extremities: eruption seen in different stages: pustules commonly found on the palms of the hands and soles of the feet; also found in mouth, on soft palate; about 11th or 12th day "desiccation" begins. The eruption varies in appearance; besides the distinct typical form, there is an abortive form, in which the papular stage is never passed, the vesicular or pustular stage is never reached; also a very bad form of the disease (the hæmorrhagic) in which the eruption does not assume the characteristic appearance; it does not come out properly, but takes the shape of dark or purplish spots on the skin. In severe cases (particularly in unvaccinated persons) the eruption may assume the "confluent" form—that is, the vesicles coalesce or run into each other, so that the identity of the individual pustule is lost. In such cases the semblance of humanity is for the time quite obliterated, and the destruction of sight and hearing, besides subsequent disfigurement, are

much to be dreaded, if, indeed, the patient should survive the fearful ordeal: in mild or favourable cases the pustules are separate and distinct, and in such the eruption is said to be "discrete." The terms "adherent," or "semi-confluent," have been applied to those cases where the pustules press on each other without actually coalescing.

"Varioloid," or "modified small-pox," a comparatively mild form of the disease, is the phase of the malady seen in persons who have been effectually vaccinated. The confluent and malignant types are common in unvaccinated persons, but rare among those who are protected. In severe cases of small-pox there is marked "swelling" of the head and face, and this is a matter for satisfaction to the medical attendant, who regards it as a good sign (Gemmell). The heavy, loathsome smell of small-pox is the subject of common remark. Among the complications of small-pox may be mentioned pneumonia, laryngitis, and inflammation of the eyes and ears; in hæmorrhagic cases we may have bleeding from all the mucous membranes, giving rise to hæmaturia, melæna, epistaxis, hæmatemesis, hæmoptysis, etc. Boils constitute the most troublesome sequela of small-pox.

Death may come by asthenia, complications, etc.

Although one attack of small-pox, as a rule,

gives future immunity, still, subsequent, and even repeated, attacks are not unknown.

Diagnosis.—At a time when, and in a place where, small-pox is prevailing, any one complaining of pain in the back, accompanied by sickness and vomiting, may well be suspected of the disease.

As already mentioned, a measly rash appears at first in some cases, and this, together with “coryza and watery eyes,” may cause the medical attendant to make a mistake in diagnosis; but the prodromata previously alluded to should give warning, and failing these, diagnosis should be suspended till further evidence is forthcoming. Again, there may be scarlatiniform* rash at beginning, which may give rise to the notion that the case is one of scarlet fever; but a little longer observation will correct the mistake. Severe cases of chicken-pox may readily be mistaken for small-pox, especially at advanced stage. Among the points of distinction the following may be mentioned: in small-pox the pustules are frequently seen on the soft palate and on the palms of the hands and soles of the feet; this is not so common in chicken-pox (Gemmell); but it does occur occasionally, and thus the point is not of absolute, only comparative, value. Again,

* Niemeyer states that this scarlatinous erythema is commoner in varioloid than in variola.

although the eruption of variola develops progressively over the body, when it is out it matures in the order of its appearance, but does not appear in successive crops after the manner of varicella. Still, after all has been said, it must be confessed that great skill and experience are required to distinguish between variola and varicella in some instances. Slight cases of small-pox (cases in which there is little or no constitutional disturbance, with, perhaps, only one or two insignificant spots, like acne, about the face, and where the patient feels quite well and pursues his avocation as usual) are very readily overlooked, and accordingly are fertile sources of danger to the community in which they occur; the *association* with undoubted cases of small-pox in the home or the workshop, may open one's eyes in such instances.*

Prognosis.—(a) *Favourable Circumstances and Signs.*—The prognosis, as might have been expected, is much more favourable in vaccinated than in non-vaccinated persons: a frank but sparse, or at any rate “discrete,” development of rash of a normal type, with swelling of the skin, may be taken as an indication of a mild and favourable case: swelling of the head and face also favourable (Gemmell).

* See reports to Health Committee by Dr. J. B. Russell, Medical Officer of Health for Glasgow.

(b) *Unfavourable Circumstances and Signs.*—Hæmorrhagic undeveloped eruption is of the worst possible significance; cases belonging to this type, practically, sure to die; confluent case very likely to prove fatal.*

Pathology.—According to Dr. Coats, the epidermal layer undergoes necrosis, and the spaces left by the death of the epidermal cells is occupied by leucocytes which, undergoing change, give rise to the purulent contents of the matured variolous eruption. The small-pox pustule is not a common cavity, but is composed of separate loculi or pockets. In severe cases the Malpighian layer is broken through, and the true skin becomes involved in the necrosis. In those instances the loss of tissue

* As illustrating the benefit of vaccination, the following extract from Niemeyer, summing up the destructive features of the original and the modified disease, is appropriate:—

“If we group the peculiarities that distinguish varioloid from variola, we should mention especially—1. The short duration of the different stages, and of the entire disease; 2. The mildness or total absence of the secondary fever; 3. The escape of the cutaneous tissue and the recovery without cicatrices; 4. The slighter mortality. In the times when, during small-pox epidemics, variola prevailed, or occurred exclusively, a third, or in some epidemics even a half, of the patients died. Of late, as the disease almost exclusively affects persons who have been vaccinated, and consequently varioloid is in excess, the mortality is very low; scarcely four or five per cent. of the patients die.”—Niemeyer, vol. ii., p. 605.

is so serious as to give rise to the permanent depressions popularly known as "pock pits." The phenomenon of umbilication is due to the presence of a sweat duct (See Coats' "Pathology").

Treatment.—The most important (a) *prophylactic treatment* exists in the form of effectual vaccination; when the variolous virus has gained access to the system, it runs its course like other zymotic poisons, but even then its course may be considerably modified by vaccination if promptly performed after exposure to the small-pox infection; the vaccine outruns the variolous agency, and, to a certain extent, forestalls it. With regard to the protective power of vaccination, some misapprehension exists in the public mind, a misapprehension which the medical profession should clear away. The popular idea is that the advocates of vaccination claim that it gives absolute protection, viz., that those who are vaccinated never take small-pox; every-day experience shows that this is not the case; result, a feeling of incredulity and disappointment, public apt to sneer at vaccination and hint that it is a practice fostered by the medical profession for its own ends; this feeling of antagonism greatly intensified by propagation of statements regarding the dangers of vaccination, *e.g.*, introduction of syphilis into systems of otherwise healthy children. Public should be taught: (1) That vaccination does not

give a guarantee for absolute immunity from small-pox, but, *if efficiently and successfully performed*, it very materially lessens the chance of the person contracting small-pox, and if he should take the disease, almost certainly ensures him a mild attack; the difference in the severity and mortality in vaccinated and non-vaccinated communities is so very remarkable as to strike the most careless or prejudiced observer; the mortality in the two cases cannot be compared, but they may be contrasted: when we come to deal with *masses* of people the great value of vaccination is so evident that no rational man can call it in question. (2) The public should be taught that if vaccine lymph is taken from healthy subjects and without admixture of blood, the danger of contamination is very slight,—so slight as not to be for a moment weighed against the substantial benefits of vaccination.

The evidence in favour of vaccination is abundant and overwhelming. Among the numerous high authorities on the subject, Dr. Seaton may be referred to by the student: * he lays great stress on *vaccination in early infancy* (children liable to small-pox at very earliest age). *Re-vaccination is strongly urged*: “the re-vaccination of persons as

* “Public Health Reports.” “Report by Dr. Seaton on the Recent Epidemic of Small-pox in the United Kingdom in its relation to Vaccination and the Vaccination Laws.” Constituting Appendix No. 5 of the New Series, No. IV., Year 1874.

they reach about 15 years of age should be as systematically done as in the vaccination of young infants" (p. 98) : it is pointed out that *while small-pox remains the same deadly disfiguring disease as of old, the facilities for communicating it are greatly increased*. Dr. Seaton's paper contains a strong clear proof of the precious protection afforded by vaccination against small-pox.

(b) *Curative*.—When we have actually to deal with a case of small-pox, the rules which apply to other zymotic diseases are the best: we must assume the attitude of "armed expectancy."

"The treatment of small-pox," says Niemeyer (vol. ii., p. 606) "can only be symptomatic, as we know of no remedy for cutting short the disease, and averting dangerous accidents." He recommends in the prodromal stage, patient to be kept moderately cool—temp. of room about 60°; give cold water or lemonade; if temperature goes high give large doses of quinine. "In the stage of desiccation we should let the patient have an easily digestible but nutritious diet and a little wine." In œdema glottidis, if scarification does not relieve, he advises laryngotomy.

Professor Gairdner (in my MS. notes of his lectures) recommends sinapisms for the relief of the teasing vomiting, he advises opium "during the great suffering of the fever, when there is

great sleeplessness": it is a question as to management of the bowels, but he "leans to the employment of laxatives;" he "does not believe in masks."

Professor Gemmell speaks highly of continual warm, or tepid, baths in certain cases.

CHICKEN-POX.

Latin: Varicella. *French*: Varicelle. *German*: Windpocken; *Syn.*, Wasserpocken, Varicellen. *Italian*: Varicella.

THE DISEASE.

Etiology.—Chicken-pox is a very infectious disease: one case introduced into a household, school, or other institution where there are susceptible persons, is sure to give rise to many more. Such outbreaks sometimes appear rather mysterious, because the initial case has not been recognized,—probably a child complaining of nothing, and with a few insignificant spots or crusts which may easily be overlooked altogether.

Symptomatology.—An attack of chicken-pox is generally ushered in by a feeling of malaise and sickness; sometimes the prodromata are more pro-

nounced, severe sickness, backache, headache, and shivering: the eruption appears in the form of small watery vesicles with a reddish blush round their bases; they have been compared in appearance to the effect which would be produced by a shower of boiling water drops falling on the skin, each drop leaving a small blister behind it. In most cases the spots are few in number,—it may be half a dozen about the face, and as many on the body and limbs; but in some cases the eruption is profuse, and the constitutional disturbance very marked, even severe; in such cases the spots may be found on the soft palate and the palms of the hands, and the case might readily be mistaken for one of small-pox; the vesicles umbilicate, dry up, and form crusts; when they drop off, slight cicatrices may be left.

The illness is, as a rule, a trifling one.

Diagnosis.—The diagnosis between small-pox and chicken-pox is a matter of prime importance, but it is frequently a matter of no small difficulty. The following points may be mentioned:—In small-pox the constitutional disturbance is severe; in chicken-pox it is slight: in small-pox the eruption comes out in one succession as it were; in chicken-pox there are different crops: in small-pox the eruption is frequently found on the soft palate and the palms and soles; in chicken-pox the eruption is rare in those situations.

Prognosis.—The prognosis is good: it is doubtful if death was ever caused by chicken-pox alone, although a severe attack in a delicate infant might give rise to anxiety.

Treatment.—The treatment is very simple: the patient should be warmly clad and kept in an apartment with an equable and moderate temperature; the bowels should be regulated, and the diet should be light and plain. A little vaseline or spermaceti ointment may be applied to the crusts.

WHOOPING-COUGH.

Latin: Pertussis. *French:* Coqueluche. *German:* Keuchhusten. *Italian:* Tosse Convulsiva; *Sin.,* T. Canina.

THE DISEASE.

Etiology.—The disease is due to infectious matter thrown off by the sick, doubtless with the sputum: it can easily be understood that the expectoration of a whooping-cough case may become dried and converted into dust which will float in the atmosphere of the sick-room, and will be readily inhaled: the dress and bed-clothes of patients, especially in the case of children, are

sure to become smeared over with the tough glairy mucous discharge and vomited matter. The exact nature of the *cause* of whooping-cough has been a matter of dispute and widely divergent opinion: into this field we cannot enter; suffice it to say that some authorities regard the disease as *essentially a catarrh*, due to hyperæmia of the respiratory mucous membrane, and characterized by peculiar hyperæsthesia of that surface (Niemeyer), while others hold that it is essentially a *nervous* disease, and that the seat of the mischief is to be looked for in the *par vagum* or the *medulla oblongata*. Niemeyer points out with regard to latter view that post-mortem examination of those nerve structures occasionally reveals conditions which might be regarded as explanatory of the disease, but more frequently fails altogether to show anything to account for the phenomena.

Symptomatology.—Before the onset of the characteristic spasmodic cough, there is a premonitory period of feverishness and ordinary cough; the disease is now said to be “forming”; gradually the spasmodic nature of the cough becomes more marked, and finally the “crow,” or “whoop,” with inspiration, becomes fully developed. The patient’s suffering is now sufficiently severe; in the case of little children, and especially babies, the spectacle is a very painful one. The violent cough goes on in a series of rapid

expulsive efforts till the victim's lips and tongue become livid, his eyes seem starting from their sockets, his veins are turgid, and he seems on the point of death from asphyxia, when relief comes in the form of a long-drawn inspiration, which gives rise to a prolonged musical note, and the patient gets enough of air into his lungs to repeat the process: and it is repeated again and again till the paroxysm exhausts itself, the *finale* being very often violent emesis; indeed, it often seems as if the patient did not get permanent relief till he had vomited: occasionally there is blood mixed with the mucus and vomited matter. The consequences of whooping-cough are very serious in young and delicate children; it gives rise to emaciation, phthisis, convulsions, etc.; it is one of the most fatal infantile diseases in this country. Laceration of the frænum of the tongue is set down as one of the accidents liable to occur in the malady, but it can scarcely be regarded as characteristic, since, in many well-marked cases, it is not to be found. The convalescent is liable to a paroxysmal cough for months after the attack if he should happen to catch cold—due probably to a persistence of the nervous habit; it cannot be regarded as a persistence of the specific disease.

Diagnosis.—In the early stage, *pertussis* may be mistaken for a feverish cold, but when the “whoop,” or “crow,” is fairly developed, there

can be no doubt as to the nature of the disease ; a person who has once heard a distinct paroxysm of whooping-cough is not likely to be puzzled when he hears it again. There is, however, sometimes in measles a severe spasmodic cough (without croup) which may simulate whooping-cough, and the difficulty of deciding the question is increased by the fact that whooping-cough is so very frequently associated with measles. Nothing is commoner than to find a measles convalescent contracting whooping-cough, and *vice versâ*.

Prognosis.—In young children (particularly babies during dentition) the prognosis of whooping-cough is very unfavourable ; convulsions are apt to occur and prove fatal in a short time. In older children less apprehension is felt as to the result, except in the case of delicate subjects ; but when there is a tubercular tendency, the disease is apt to rouse the latent mischief and give rise to phthisis pulmonalis, tubercular meningitis, or tabes mesenterica. In some instances the unhappy little victims fall into a state of marasmus, and pine away till death relieves the emaciated frame from suffering. As already mentioned, whooping-cough takes its place in the very front in children's diseases as regards fatality. But the disease is not confined to childhood ; old persons take it in a severe form : in such cases, fortunately not common, a cautious prognosis should be given,

especially if the patient has cardiac or pulmonary disorder.

Pathology.—As already mentioned under the heading “Etiology,” the seat of the source of this disease has been assigned to the *medulla oblongata* and the *par vagum*; but post-mortem examination fails in so many instances to detect any signs of mischief in those parts, that this theory must, in the meantime, remain in abeyance. It is possible, however, that finer methods of examination may reveal changes in those nerve structures which have hitherto escaped detection. That there is hyperæmia and hyperæsthesia of the respiratory tract, every one acknowledges, and those who advocate the catarrhal theory pure and simple, find in those conditions a full and ample explanation of the disease. The mucous membrane secretes a glairy tenacious matter which the patient experiences great trouble in getting rid of, and it has been supposed that the accumulation of this mucus gives rise to the paroxysms of coughing. With regard to the phthisis which follows pertussis in many cases, Niemeyer points out that it is in all probability due to the cheesy pneumonia which has developed during the disease; he also points out the liability to emphysema and, in young children, collapse of the lung-substance. The convulsions which occur in the course of the disease, particularly in babies, are not only

alarming but very dangerous. Niemeyer mentions two explanations, viz.—(1) engorgement of the cerebral veins, œdema of the brain, and subsequent arterial anæmia of the brain; (2) eclampsia due to reflex action.

Treatment.—Perhaps no disease has received more “treatment” than whooping-cough: a complete list of the remedies and modes of treatment would prove a formidable one. Among the drugs which have been recommended may be mentioned chloral hydrate, croton chloral, belladonna, bromide of potassium, hydrocyanic acid, alum, nitric acid, etc. etc.; and among the modes of dealing with the malady may be noted subjecting the patients to the atmosphere of gas works, taking them to a lime kiln, or down into a coal mine. Even violent castigation has been in favour as a means of conquering the obstinate disease!

The author tried various remedies, and brought the results before the Glasgow Medico-Chirurgical Society in a paper which was subsequently published in the “Glasgow Medical Journal.”* Briefly, he came to the conclusion that none of the drugs which he had employed were *specifics*; that chloral hydrate was of use in lessening the violence and frequency of the paroxysm; that rubbing of the spine with belladonna was worthy of trial in young children or babies, and that good

* February, 1880.

nourishment, cod-liver oil, flannels, and fresh air, were the greatest helps during convalescence.

DIPHTHERIA.

Latin: Diphtheria. *French*: Diphthérie. *German*:
Diphtherische Entzündung der Rachen-
schleimhaut; *Syn.*, Diphtheritis. *Italian*:
Difterite.

THE DISEASE.

Etiology.—The origin of diphtheria seems in some cases to be involved in great obscurity; in many instances the spread of the infection, say among the members of a family, is evident enough; but this is not always the case. It is a common thing for the patient's friends, and the medical adviser also, to attribute the attack to sewer-gas, and an examination of the drains usually reveals some defect which is supposed to be sufficient explanation of the illness in the household. It is a notorious fact that bad drains and sore throats go together; but it does not follow that such cases are necessarily the specific disease called diphtheria. Defects in drainage are common even in the "best" houses; sore throats with malaise are common where sewer-gas is pre-

sent, and it comes about that such sore throats are regarded as diphtheria, and cases of diphtheria are attributed to bad drains. But *while frankly admitting that the seeds of the specific disease may be developed in, and exhaled from, dejecta of infected persons*, it remains to be said that the common source of contamination is the transmission of the diseased products from the throat of the sufferer to that of the victim; this may occur to the nurse when the patient coughs in her face, or to the surgeon during the performance of tracheotomy. No doubt in this, as in other infectious diseases, the degree of susceptibility varies very much in different individuals; some persons, though much exposed, successfully resist the malady, while others succumb readily.

Symptomatology.—The onset of diphtheria is gradual and insidious; the sore throat is usually slight at first; there are languor, debility, and loss of appetite; on examination the throat is found to be congested, the mucous membrane is dark red, and there may be dirty greyish yellow patches on the tonsils or fauces; these patches are firmly attached, and if they are scraped off a bleeding surface is left. Each subsequent examination reveals a spread of these diphtheritic patches; the membrane may spread down into the larynx, trachea, or oesophagus, or up into the posterior nares; it may even be transplanted to the con-

junctiva or the mucous membranes. When the larynx becomes involved the patient's respiration is necessarily embarrassed; there are evidences of laryngeal irritation and obstruction; there are respiration more or less noisy, a husky voice, and a hoarse or croupy cough. As the disease advances the patient becomes weaker and weaker; the pulse is very poor; the face is usually pallid, the expression that of languor and depression.

Death may result from asphyxia or asthenia; sometimes, nay, frequently, the patient dies very quietly. If recovery takes place albuminuria and some form of paralysis are apt to supervene.

Diagnosis.—The diagnosis of diphtheria is sometimes a matter of great difficulty; if a patient suffers from sore throat, presenting the appearances of diphtheria, and he recovers, the diagnosis is very often laughed at; yet why may we not have slight cases of diphtheria as well as of other infectious diseases? Again, in a case where the appearances have been somewhat ambiguous, if the patient dies diphtheria may be credited with the death; in other words, a fatal issue is the most satisfactory confirmation of a diagnosis of diphtheria. There can be no doubt that croup or laryngitis in children is often pronounced to be diphtheria, and notwithstanding the distinction made in the books, it must be confessed that at the bedside such mistakes are very apt to be made.

Great difficulty attends the thorough examination of the throat in young, timid, or bad-tempered children; and even when the throat can be carefully inspected, the appearances may prove to be puzzling.

In "common sore throat" there are frequently white patches on the tonsils due to the accumulation of mucous or epithelial *débris* in the folliculi of the gland; again, the white patches in "aphthous sore throat" may be mistaken for those of diphtheria, although the blunder is scarcely pardonable. The dirty greyish yellow colour of the diphtheritic patch, its firm adhesion to the mucous membrane, and the raw surface which is left by its forcible removal are good points of distinction; besides, diphtheria is likely to be followed by some form of paralysis, and by albuminuria; perhaps the most difficult case to distinguish from that of diphtheria is sore throat in a case of overlooked or suppressed scarlet fever; and the unfortunate thing is that albuminuria is a sequela common to both diseases; of course, the appearance of characteristic desquamation would at once solve the difficulty in such a case.

Prognosis.—To most ears the very name diphtheria carries a bad prognosis; and there can be no doubt that a grave view must be taken of a case when we have satisfied ourselves that we really have to do with that terrible disease.

Pathology.—Although the throat affection bulks so largely in diphtheria, we must not forget that it is a constitutional disease as well, affecting the economy.

Probably the disease is, in the first instance, local—confined to the throat, but as the malady advances the system becomes contaminated and poisoned; this is well shown by the fact that it sometimes happens that the patient is not killed by asphyxia, due to the local lesion, but by asthenia caused by the constitutional contamination. The exact nature of the diphtheritic membrane has been the subject of much and careful study; this, and other points connected with the pathology of the disease, are of such interest and importance that the following extracts from Dr. Coats' work cannot fail to be valuable:—

“In DIPHTHERIA we have a disease which is undoubtedly infectious, its communicability from person to person being associated with the fact that it depends on the existence of micrococci in the mucous membranes. These organisms have been found not only in the mucous membrane, but, having penetrated into the blood, they have been observed in the blood-vessels and tubules of the kidneys. . . . Now this organism, either in itself or by its products, is an irritant to mucous membranes, and produces violent inflammation. The inflammations differ somewhat in the

fauces and nares on the one hand, and the larynx and trachea on the other. In both cases a catarrh is the first sign of inflammation. The mucous membrane is hyperæmic, and there is increased mucous secretion. In the case of the FAUCES AND NARES this is succeeded by the formation of a false membrane, which does not lie free on the surface, but involves the superficial layers of the mucous membrane as well. The false membrane is therefore composed of fibrin and necrosed and coagulated mucous membrane. When the slough separates or is removed there is apt to be a new formation of false membrane. While this is the process in the fauces and nares, that in the LARYNX AND TRACHEA is a somewhat different one. The disease usually begins in the former structures, its most frequent primary seat being the fauces, whence it occasionally extends into the nares, and more frequently into the pharynx and larynx. In the larynx, after the catarrhal stage, there is also the production of a false membrane; but this does not adhere to the mucous membrane, nor is there usually any necrosis. There are undoubted inflammatory changes in the mucous membrane in the form of infiltration with round cells, but the only actual loss of substance is the shedding of the epithelium of the surface. The epithelium always undergoes necrosis before the formation of the false membrane. Differences

of opinion exist as to the nature of this false membrane in the larynx and trachea. The false membrane is therefore to be regarded as an inflammatory exudation, and in its histological character it agrees with this. It consists of a fibrinous network, often very coarse in its texture, and with inflammatory cells in various abundance in it" (from Coats' "Pathology," pp. 494, 495, 496).

Treatment.—Many forms of treatment, both local and general, have been tried in diphtheria; the throat has been subjected to all kinds of inhalations, caustic applications, and antiseptic applications. Swabbing out the throat with tincture of muriate of iron and glycerine may be tried. In the way of constitutional treatment iron, chlorate of potash, and many other remedies have been strongly recommended. Everything should be done to support the patient's strength; give wine, milk, eggs, etc. When asphyxia threatens life, tracheotomy has been commonly resorted to: Macewen's "tubage of the larynx" might be tried in the first instance—it is a valuable method.

CHOLERA.

(Syn., ASIATIC CHOLERA, EPIDEMIC C.)

Latin : Cholera pestifera. *French* : Choléra.

German : Cholera. *Italian* : Coléra asiatico.

THE DISEASE.

Etiology.—There can be no reasonable doubt that the cause of cholera is a *something* communicated from the sick to the healthy (but the opinion seems to grow that the transmission takes place *indirectly*) : what the exact nature of that something is—whether it is given off by the alvine evacuation ; whether it is even directly transmitted from the sick to the healthy by mere vicinity, as in the case of typhus ; whether it is always conveyed into the system by tainted water supply or other aliment—are a few of the points which may be discussed, and are discussed keenly at the present day.

Among the most recent contributions on the subject of the cholera germ may be mentioned those of the German savant and epidemiologist, Dr. Robert Koch. This well-known observer asserts that a micro-organism which he has discovered in his researches, and which he has named the *comma bacillus*, is the actual cause of the disease. Dr. Koch's opinion is based on his extensive observa-

tions made in France during the recent epidemic of cholera (1884), and on his subsequent Indian researches. As might have been expected, those discoveries of Koch have not passed unchallenged, and it is perhaps correct to say that British authorities are, to say the least of it, sceptical on the subject. Many skilled observers insist that the *comma bacillus* is by no means peculiar to cases of cholera, that it is found in the alvine discharges in other diseases, and may even be detected in ordinary mucus or saliva from the mouth. It will thus be clear to any one that Koch's discovery wants confirmation, and it is perhaps well in the meantime to leave the whole matter *sub judice*.

But while there may be doubt regarding the "cholera germ," it is pretty generally conceded that the morbid agent is discharged with the intestinal evacuations, and particularly with the characteristic "rice-water" stools. Outbreaks of cholera have been very clearly traced to water which was known to be contaminated with such dejections, and where other explanations were inadmissible. Such instances have been numerous in India—instances where the propagation of the disease was evidently due to polluted tank water, as in this country there have been instances furnished by tainted well water. But although water is undoubtedly a frequent channel for the

conveyance of cholera poison into the system, there is good reason to believe that it is not the only one. No doubt aërial infection also occurs; in many instances the contraction of the disease cannot be otherwise explained. There is strong evidence in favour of the highly dangerous character of linen or clothing soiled with cholera discharges. Washerwomen often fall victims. Fomites have been the means of transporting the disease from one place to another. It is a very curious fact with regard to the conveyance of cholera, that the bearer may himself be free from the disease, and it may be difficult to establish more than the fact that he came from an infected locality. Pettenkofer's views on the etiology of cholera may be stated briefly thus:—The condition favourable for the development of cholera (and enteric fever) is when the "ground-water" is falling rapidly, especially after an unusual rise. It is supposed that the disease germs find a suitable *nidus* in the pores and air spaces of the damp subsoil. It is to be noted that a *porous* rock may afford a suitable soil for the development of disease germs. During the prevalence of cholera or enteric fever in certain localities, a chart prepared with the object of showing, by means of curved lines, the rise and fall of these diseases, and the rise and fall of the "ground-water," reveals a correspondence which is very striking,

and cannot possibly be regarded as accidental. But it must be confessed that while these views are very interesting and explain much, they do not explain all. They constitute a valuable contribution to our knowledge of this very difficult and puzzling subject, but it cannot be said that they solve the mystery.

Among the theories to be merely mentioned and dismissed is the *electric theory*, which accounts for outbreaks of cholera by the sudden abstraction of electric fluid from the body during certain meteorological conditions. The curious fact that severe thunderstorms are frequently followed by explosions of cholera is cited in support of this fanciful explanation. It may be remarked that thunderstorms are usually accompanied by deluges of rain, which carry foul surface washings into wells, play havoc with drainage, etc.

Dr. Brydon's theory of *aërial transmission* of cholera from one district or (?) one country to another, is utterly untenable. One fact alone is sufficient to condemn it. Cholera frequently travels *against* the monsoon! Among the well-ascertained points connected with the spread of cholera is the fact that *it never moves from one place to another faster than the rate of human travel.*

Symptomatology.—It is a popular notion that cholera comes on suddenly; that the victim is well to-day and dead to-morrow; but the abrupt

seizure is more apparent than real. In most instances it will be found that a *premonitory diarrhœa* has existed for some time before the explosion of the disease, and this is a fact of the very first importance, which shall be more fully referred to when we come to speak of treatment. The premonitory diarrhœa is sometimes slight and usually painless, so that it is readily overlooked or ignored. Yet there can be no doubt that this relaxation of the bowels constitutes the initial stage of the dread disease, and it is part and parcel of it. If the premonitory diarrhœa is allowed to go unchecked for a few days, or it may be hours, the malady explodes suddenly in its characteristic or better recognized form. The victim has vomiting and severe purging, with great prostration of strength. The stools assume the rice-water appearance with no trace of bile. The sufferer has severe muscular cramps. The vomiting continues ; nothing will lie on the stomach, and the thirst is intense. The urine is suppressed ; the skin becomes cold, clammy, and wrinkled, like the skin of a washerwoman's hands ; the eyes are sunk in the dark orbits ; the breath is cold ; the voice is reduced to a whisper. From the great loss of fluid the blood becomes thick and treacly, and will not flow, consequently the pulse ceases, or is not capable of detection. With all this the patient's mind remains clear ; he complains of

a feeling of heat; he is tormented by a consuming thirst, and tortured by the dreadful cramps. The temperature is subnormal; it sometimes falls very low. Collapse and death end the painful scene. The corpses of cholera patients are liable to movements which have given rise to many curious stories, among others, to tales of persons buried alive.

In cases where recovery takes place, the reappearance of bile in the fæcal discharge is usually the first indication of improvement in the patient's condition. But even when he survives the cholera proper, he is liable to fall into a low feverish condition, which has been mistaken for enteric (typhoid) fever; there is reason to believe that otherwise mysterious outbreaks of cholera have been traced to such cases.

One attack of cholera does not protect from future attacks.

Diagnosis.—There can, as a rule, be little difficulty in diagnosing a fully-developed case of Asiatic cholera. There is, however, the danger that mild cases may be mistaken for British cholera, and the premonitory relaxation of the bowels may be set down as summer diarrhœa, and attributed to some dietetic error, such as an over-indulgence in fruit. Malignant scarlet fever (with vomiting and purging) may be mistaken for cholera; so may acute irritant poisoning; further, there is a risk of the post-choleraic fever

being mistaken for enteric (or typhoid) fever; sporadic cases may be mistaken for acute poisoning—and have frequently been so regarded. As to the distinction between British cholera (or severe summer diarrhoea) and Asiatic cholera, considerable difficulty may exist; and the only safe plan (during a cholera epidemic) is to regard every case of diarrhoea as a (possible) case of cholera.

Prognosis.—The prognosis in Asiatic cholera is necessarily gloomy when the disease has assumed its full development; the mortality is, roughly speaking, 50 per cent. In the early stage, if the patient will implicitly comply with the physician's orders, good hopes may be entertained. Drunken or debauched persons, as might be expected, have not such a good chance of recovery as those who lead temperate lives.

Pathology. — The essential feature of the pathology of cholera is rapid draining of the serum through the bowels, and consequent thickening of the blood, which, in its turn, explains the loss of function in the liver, kidneys, etc., for the treacly blood cannot circulate properly in those organs, and its condition renders it unfit for the maintenance of their functions. The correctness of this view is confirmed by the fact that the injection of warm water into the veins is followed by a magical (temporary) restoration of the

patient. The flakes in the rice-water evacuations are *not* desquamated epithelium, but "little masses of mucus containing leucocytes" (Coats, p. 622). "The most marked post-mortem appearance in the intestine is a remarkable rosy injection of the vessels of all its coats" (*ibid.*). "The blood itself is thick, dark, and imperfectly coagulated" (*ibid.*).

Treatment.—The mere enumeration of the remedies which have been proposed for cholera would occupy a volume; it is, perhaps, pretty safe to say that every drug and method of treatment which has been suggested to man by the teaching of science, or the wildest vagaries of the imagination, have been tried for the relief, or cure, of this terrible disease. Injections into the veins of warm water, with a slight addition of salt, have been tried, and found to give good temporary results; the patient revives wonderfully for the time; but the effect is very temporary; besides, the method is not one which can be promptly applied in any ordinary case.

Opium has been naturally looked to in a malady having for its marked features severe purging and painful cramps; experience has shown, however, that this drug is not of much use in the advanced stage of the disease—indeed, if pushed then, the patient may be poisoned by it. But in the early stage, the stage of premonitory diarrhoea, it may be employed with the greatest

possible advantage, as shall be explained further on when we come to discuss the method of treatment advocated by Dr. Fergus, of Glasgow.

Chloral has been pretty extensively used, but with only partial benefit. No doubt there may be a certain amount of relief afforded, but there is no clear evidence of curative effect.

Dilute sulphuric acid has been recommended by American authorities in the treatment of cholera; its value as a prophylactic has been especially insisted on, and certainly facts are advanced which give good colour to the notion that the free use of sulphuric acid lemonade may have a protective influence. (The investigations of Dr. Dougall, of Glasgow, have shown pretty clearly that mineral acids are very destructive to vaccine virus, and, reasoning by analogy, to other contagia.) The method is certainly well worthy of a thorough and careful trial. It is unnecessary and unprofitable to deal at length with each of the remedies which have been suggested. A few may be merely mentioned, viz., calomel, chloroform, ice bags to spine, etc. etc.

It now only remains to refer briefly to a method which is rational in theory, and has proved to be successful in practice; it is the method advocated by Dr. Fergus, of Glasgow, who had extensive experience of cholera.

Briefly stated, Dr. Fergus's view is this:—

Cholera can be cured *only* in the early stage of *premonitory diarrhœa*; the disease is then amenable to treatment; the free and frequent administration of opiates, etc., will check the disease. But the difficulty in practice is that the premonitory diarrhœa is so often overlooked or ignored, and the golden opportunity is lost. When the vomiting, cramp, and purging of rice-water stools have set in, opium is regarded by Dr. Fergus as not only useless but very injurious; in the first stage the drug is curative, in the second it is poisonous. Dr. Fergus, therefore, urges that when a cholera epidemic is prevailing diarrhœa should be promptly checked by opiates, and the patient should remain quietly in bed, and take light and suitable diet. The results of this line of treatment, as given by Dr. Fergus in his interesting *brochure*, are so satisfactory as to demand the careful consideration of all who may be called upon to treat cholera.

APPENDIX

The first part of the appendix contains a list of the names of the persons who have been elected to the office of Mayor of the City of New York since the year 1784. The names are arranged in chronological order, and each name is followed by the year in which he was elected. The list is as follows:

Name	Year
John Jay	1784
James Duane	1785
John Jay	1786
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James Duane	1895
John Jay	1896
James Duane	1897
John Jay	1898
James Duane	1899
John Jay	1900

INDEX.

[NOTE.—For convenience, diseases are indicated by letters as follows:—T. = Typhus fever. R. = Relapsing fever. E. = Enteric fever. S. = Scarlet fever. M. = Measles. SP. = Small-pox. CP. = Chicken-pox. WC. = Whooping-cough. D. = Diphtheria. C. = Cholera.]

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