XXVI.—*On the Epidemics of* 1852-3. *By* E. S. P. BEDFORD, *Esq.*, F.R.C.S. *London.* [*Read 4th December*, 1853.]

THE poison of Scarlet Fever was brought to this colony from Sydney in 1842, and since that period this disease has more or less prevailed. The two epidemics which caused so many deaths took place in 1852-3. It should be borne in mind, that scarlet fever does not arise from poverty of living, like typhus fever; nor from ill-drained dwellings and filth, as common fever does—it requires its peculiar germ, or poison, whatever that may be: but while this is the case it must not be forgotten that the disease is made to spread, and its severity influenced by all those circumstances which impair general health, and that no causes operate more strongly upon it than the epidemic character of the season and the condition of the individual in relation to the poison.

The present epidemic followed a period of unusual sickness; many had been suffering from influenza, and the epidemic condition of the atmosphere not only affected men, but the lower animals also. At the time that many aged and sickly persons died from influenza, and the dogs were dying by dozens in the streets of distemper, the epidemic influence thus affecting both man and animals was not confined to this island, but New South Wales and Victoria also felt its effects.

We this year experienced the severest visitation of scarlet fever before the other colonies. On looking at the Return, it will be seen how much greater the number of deaths from epidemic causes was in 1852 and 3 than in 1842 and 3.

The scarlet fever of 1842 was ushered in by a better state of general health; the disease, though very common—and more so than the Returns show—yet never was either so common or fatal as it has been this year.

It is not necessary that I should enter into an explanation of the general symptoms of Scarlatina; they are so well understood by the profession, and of so little interest to those out of it, that the shorter time I occupy in referring to them the better.

The present epidemic fully bears out the remark of Dr. Graves, that in both acute and chronic diseases a constitutional affection may display its existence by only one or two of the numerous symptoms which usually characterize it. Had this correct view been more generally entertained, there would have been less confusion in separating the different kinds of attacks of one and the same disease, and calling by distinct names the affection, according to the severity of the attack or the prominence of particular symptoms.

At all periods of this epidemic mild and severe cases have been seen at one and the same time, often in the same house. The throat symptoms at the early part of the epidemic exhibited more of an inflammatory type and the tonsils chiefly were enlarged, whereas afterwards the throat affection was less prominent and there was more a diffused redness, extending over a large surface and passing down into the œsophagus, or, more unfortunately, in some cases into the larynx. This state of throat was less easily brought under the effect of treatment than the other; and while there was often little pain, there was frequently great difficulty of swallowing—sometimes from the epiglottis being affected, at others apparently from the swelling of the parts, by infiltration into the submucous cellular tissues.

Among the fatal cases were some which were early car-

ried off,—killed as it were by the immediate effect of the poison,—two or three days after the attack; now and then without the appearance of any rash. In a few of these cases the persons were of a darker colour about the hands and face, of almost a leaden hue, showing a congested condition of the superficial vessels. In the cases which died within the first three weeks, death arose from affection of the head, effects of poisoning, or sinking under the primary fever, without exhibiting disease of any particular organ—the pulse being very rapid and never hardly yielding in frequency, the mind clear, and the vital powers sinking. Two young women sank this way within ten days, or from irritation being set up in the mucus surfaces of the stomach and bowels, and low fever carrying them off. Of these I have seen fewer examples; the two former being far the most common causes of death early in the disease, in the cases I have witnessed. While the early stage of the disease carried off many victims, it was very fatal also after the twenty-first day, when death almost always supervened from diseased action in the kidney, producing consecutive morbid effects.

No writer with whom I am acquainted has so fully entered into this subject as Dr. Copeland, who very properly points out that it is not only in the more marked cases where anasarca arises from affection of the kidneys, that the kidney is much more early affected than is generally supposed, and that this complication must be looked for, if the disease is to be properly treated. In the year 1843 I was desirous of examining the state of the urine in anasarca after scarlet fever, to verify Dr. Christison's views, that the kidney resumes a healthy secretion after albumen has been passed, mixed with the urine; the results are contained in the following tables, compiled from observations made at the Orphan Schools, and it is seen that albumen existed in all cases of anasarca,

and in many of the cases of scarlet fever; but that after scarlet fever and anasarca, it was no longer found there.

So far, therefore, as regards the determination of the question, whether kidneys that had passed albumen with urine could return to a healthy state, these observations clearly show that they do so after scarlet fever; how far they may be liable to after disease I cannot say,—but while seeking for this information I was furnished by these tables with an unlooked-for result. In connection with the passage of albumen, there is at the same time an absence of urea, and its absence is clearly indicated and measured by the lowering of the specific gravity of the urine in proportion to the lessened quantity of urea. Not only is this the case in dropsy after scarlet fever, but during the fever there is a tendency to a lessening of the quantity of urea excreted, for on examining the tables carefully it will be seen that the urine rises after scarlet fever and after dropsy, although no albumen had been passed.

This rise in the specific gravity of urine before it can be trusted as a guide in prognosis must be looked at by comparison with the daily passage of each patient's urine, and marking its actual decrease or increase; it will be useless to take any number as a healthy standard, and individuals must be examined several times.

If the urine increases in specific gravity, the patient is not likely to be the subject of dropsy; if the urine sinks lower, although no signs of dropsy exist, they may be calculated upon.

This is a useful and desirable mode of enquiry when the practitioner has time to adopt it, as I know of no other means, before four weeks are passed, of being pretty sure that the patient will not have dropsy.

These tables also bear out the views of Dr. Copeland, and

show the early implication of the kidney, for in almost all the scarlet fever cases, that is—patients ill in the first week, albumen is shown to exist; in the cases after scarlet fever and anasarca, it is seen that the urine rises in specific gravity, in other words, gets rid of the pent-up urea, which acts, when not freely excreted, as a poison, producing anasarca and many other evils.

It cannot, therefore, be too strongly borne in mind by practitioners, that early and constant attention is necessary to the functions of the kidneys during all the stages of scarlatina.

The effect of the puerperal condition has been held to be so severe in its operation in scarlet fever that some authorities say it is always fatal: I was so unfortunate as to have two patients die under these circumstances. But in a family where the house was small, and all the children, seven in number, crowded into two rooms were ill, and one child died, the mother was confined, and had not a bad symptom, though she had never been the subject of scarlet fever. Last year a family was attacked; one child died from affection of the head in scarlet fever, and at that time the mother was confined and afterwards attacked with scarlet fever. I never saw a milder case than her's was, requiring scarcely any treatment.

If attention is paid to the state of wounds under the influence of scarlet fever, we may have some clue to the subject, bearing in mind Dr. Ferguson's views on puerperal fever. I have known a fracture to remain disunited after an attack of scarlet fever; I have seen wounds nearly healed protracted in their cure and unhealthy in their appearance with the absorption of recent adhesions.

Not only are mothers carried off by this affection in child-bed, but the infant often dies likewise. In the two

instances I attended this year, one infant which died in three weeks—the rash distinct; the other died with head symptoms. I saw two other infants die a few weeks after their mothers, and both died having discharge from the ears and convulsions: the affection of the ears was the only symptom in common with other cases of scarlatina. It will be seen by reference to the Tables that the total amount of deaths from scarlatina

In 1842 has been	23
In the year 1843	41
In the year 1852, and	89
In the year 1853	230

It is very difficut to arrive at one fact, that is, the number of deaths according to the cases treated; by referring to my memorandum I find 96 cases attended this year, exclusive of puerperal cases: out of these six died, or one case in every sixteen treated; but if the three puerperal cases are added, it will make the mortality one in $10\frac{2}{3}$.

I will now make an extract from an article of Dr. Tweedie, in the Cyclopædia of Practical Medicine, which will show that the deaths, numerous as they have been, have not proportionally exceeded those in England. It is very desirable that the public should know that this disease is not more fatal here than in other countries.

"In an epidemic scarlatina, which prevailed in Paris in 1743, we are told that every individual who was attacked perished; many, indeed, within nine hours from its first invasion. That which raged at Bromley, near Bow, in Middlesex, in the year 1746, it is stated by Dr. Fothergill, seemed to yield to no remedies or applications; several of the inhabitants were greatly alarmed by it, some losing the greater part of their children after a few days' indisposition. These are by no means solitary examples of the great fatality of scarlatina, as similar epidemic visitations have

been recorded by Huxham, Cotton, De Hœn, Johnstone, Rush, Lettsom, Sims, Willan, Bateman, Blane, M'Gregor, Tweedie, Carbutt, Sandwich, and others.

"We find by the register of cases kept at the London Fever Hospital, that the mortality of scarlatina shows great variation. In the years 1822-3, the disease appears to have been extremely mild, as none of the patients died during these years. In 1824 the mortality was one in twenty-one, in 1835 one in thirteen, in 1826 one in twenty-nine, in 1827 one in forty-one, in 1828 one in ten, in 1829 one in six, in 1830 one in six, in 1831 the disease was not prevalent, and none of the cases proved fatal. In 1832 the mortality was one in forty, and during the last year the average has been about one in twenty-two."

I will also read an extract from Dr. Copeland's work on this point:—

"The following will show the comparative prevalence in the metropolis of scarlet fever, measles, and small-pox from 1838 to 1848, both years included, during the last eleven years. It must be manifest that the numbers assigned can be an approximation only to the true amount, as the causes of death are in many instances arbitrarily assigned in the Returns, but they are sufficiently accurate to convey useful information:—

Years.	Scarlet Fever.	Measles.	Small-Pox.
1838. . . .	1,534	588	3,817
1839. . . .	2,499	2,036	634
1840. . . .	1,954	1,132	1,235
1841. . . .	663	973	1,053
1842. . . .	1,224	1,293	360
1843. . . .	1,867	1,442	438
1844. . . .	3,029	1,182	1,804
1845. . . .	1,085	2,318	909
1846. . . .	928	747	257
1847. . . .	1,433	1,778	955
1848. . . .	4,752	1,143	1,617
During 11 Years	20,962	14,632	13,079

"The greatest number of deaths from scarlet fever occur among the poor, owing to the circumstances which both predispose to infection and render the disease more malignant; and even those causes which develop the sequelæ of the disease and render them fatal are also most prevalent in the lower classes. If the above amount does not comprise the deaths from dropsy, or other diseases consequent upon scarlatina, the mortality from this malady must have been greater than here stated. The above results will show that there are few diseases, perhaps none, from which the general amount of mortality and of danger is greater than in scarlet fever; and yet there is not one of which the pathology and treatment has received less attention and elucidation in modern times than it."

There are probably two causes which concur to produce here so many deaths from these visitations. In England the disease is always present, a number each year being the subjects of its attack while in a mild form, and therefore not victims to the severer epidemic visitations. In new countries the poison, not so large in quantity, does not act so constantly; this, with the less dense population, causes fewer to be affected with fever in the intervals between the epidemic visitations. The other cause I believe to be, that a larger number of children attain in this country to fourteen years of age than in Europe; but many of them are not robust, or fitted to bear a severe disease.

Still it is desirable to watch the progress of epidemics with care and attention, so that all local circumstances operating or likely to operate on them should be investigated.

When I compare my own experience of the epidemic of 1842 and 3 with that of the present year, I am struck

with the proportion of cases that were then lost from dropsy. In Hobart Town, in 1842 and 3, I lost one case of scarlet fever, and was called in when one had effusion into all the cavities from dropsy; but at the Orphan School, where I lost a large number of children, the deaths were principally from dropsy. I was then made aware of one important fact, that the chance of dropsy depended greatly on the state of previous health of the patient.

The early deaths from scarlet fever seem to depend either on the severity of the epidemic, or individual aptitude to be affected by the poison; the deaths after three weeks depend a good deal on the previous health of the person affected. With regard to the treatment of this disease, I must offer some observations on the use of Belladonna, given as a preventive and as a curative.

I was induced to use this remedy from reading an article by Dr. Tweedie, and hearing that it had been used freely and with success in Sydney—feeling that, at the same time, in the doses there ordered, it could neither do harm nor interfere with other treatment.

In 1842 and 3 I used it in two schools; neither were broken up, and none of the boarders had the fever. I used t in a family in Collins-street, where one child was affected with the fever; the sister who nursed the child had sore throat, but none of the rest had fever.

I used it in my own family and in several others, and with good effect. I attributed the fewness of cases of scarlet fever that year in my own practice to its use. I got a medical friend to use it, and all his family took scarlet fever; and I used it for some time at the Orphan School—but the disease broke out there and it was discontinued, as it could hardly be given regularly to so many children.

I have used it this year in a school where twenty-six lived. Three had the disease when I was called in; two others afterwards took it, but suffered very slightly, mixing with the children.

A case occurred in a house with a large family of children; great exclusion was observed: no other child had fever.

I have given it in cases where the patients afterwards took fever; and one died who had regularly taken it fourteen days before seizure and during the treatment.

The evidence is still imperfect, and more facts are required on this subject. My present view is—

That it protects many from scarlet fever; that in no case does it do harm; that many who have taken it had the slightest attacks.

That it does not protect all.

That its use as a curative, if it has not been given before the attack commences, is not indicated any more than vaccination to a person with small-pox.

With reference to the question of treatment in general, they only who are little used to treat disease would tell you that all cases of scarlet fever should be treated alike.

In the early part of the attacks, if the Belladonna has not mitigated it, and the symptoms are very severe and threaten speedy death, it is a juncture when bleeding from the arm may perhaps save the patient. If done at all, it must be done early, and with great judgment in the selection of the cases; its object being either to relieve the state of congestion or remove a quantity of the poisoned blood: the former is the most likely use for the lancet. These are the only circumstances calling for free depletion for the general disease; but local symptoms which may set in must be met and treated with promptness.

The dropsy after scarlet fever should always be treated

as an acute disease; requiring almost always local bleeding, with purgatives, diuretics, and the maintenance of the action of the skin.

In a case where a wounded artery had caused the loss of a good deal of blood, in another where the patient had been freely bled for enteritis, both made very good recoveries; this, with the relief from epistaxis, points out the use and safety of blood-letting in many cases: but the type of the previous illnesses did not lead practitioners generally to look to it with much favour,—necessity only made them use the lancet.

Cases that of all others most imperatively call for the loss of blood are apoplectic or comatose affections, the result of the retention of urea in the system from diseased action in the kidneys; here free and copious bleeding is often well borne, and rapidly cuts off the symptoms calling for it, and relieves the system generally. One man who was apoplectic and anasarcous lost forty ounces of blood, and was well of both symptoms in three days There is not only an increase of urea in the blood, but of water also; and the symptoms may be in part due to over-distention of vessels.

Among the local symptoms, the enlarged glands will almost always be relieved by early leeching, and the kidneys called into action by turpentine epithems.

The throat should be early and regularly treated with nitrate of silver, as much of the success depends upon early subduing the throat symptoms, to enable the patient to take nourishment.

The diffuse inflammation of the cellular tissues bears depletion badly, and is often not relieved by incisions, while turpentine epithems and hot applications are of use.

In the desquamative stage, warm bathing with alkalies and frequent purgatives are wanted: by careful attention

to this—not letting the patient up too early, and always being on the watch,—the cases of dropsy may either be avoided or most of them relieved, unless the patient's health has been much impaired.

With reference to the causes of death of those cases which fell exclusively under my care, five died from fever with throat affections, a rapid pulse and sinking of the vital powers, in nine days. One died in seven days' fever, rendered intense by inflammation of the periosteum of the thigh.

One died from sloughing ulceration of the throat on the twelfth day; this sloughing condition, as that of the two following cases, seeming to be the effect of the poison of the fever. One sank from extensive slough in the thigh, and died on the twenty-fourth day, having been relieved of severe head affections by active cuppings.

Another, a female child—who had suppurated glands in the neck, with slough on the thigh which was healing up—an abscess in the chest carried off.

Two who died were women in childbed; and two were infants three weeks old.

In 1842 and 3, out of twenty-seven deaths, eight were during the fever, nineteen of anasarca.

Observations on Urine during Scarlet Fever,

From the 21st March to 9th May, 1843.

Specific Gravity.	Effect of Heat.	Effect of Nit. Acid.
1008	None.	One-tenth.
1012	Do.	None.
1012	Do.	Darkened.
1013	Do.	One-fourth.
1013	Do.	None.
1014	Do.	Darkened.
1016	Do.	Do.
1016	Cloudiness.	One-fifth.
1017	None.	One-tenth.
1018	Do.	One-tenth.
1018	Do.	One-fourth.
1018	Cloudiness.	One-tenth.
1018	Quarter.	One-third.
1018	None.	One-fifth.
1020	Do.	Cloudiness.
1020	One-tenth.	None.
1026	None.	Darkened.
1026	Do.	Thickness.
1028	Do.	One-half.
1031	Clearness.	Four-fifths.

Observations on Urine after Scarlet Fever,

From 7th of October to 24th November, 1853.

Specific Gravity.	Effect of Heat.	Effect of Nit. Acid.
1006	None.	None.
1008	Do.	Do.
1010	Do.	Darkened.
1012	Do.	Do.
1012	Do.	None.
1014	Do.	Darkened.
1016	Do.	Do.
1016	Do.	Do.
1016	Do.	None.
1018	Do.	Darkened.
1018	Do.	Do.
1020	Do.	Do.
1020	Do.	Do.
1020	Do.	Do.
1024	Do.	Do.
1024	Do.	Cloudiness.
1026	Clearness.	Darkened.
1027	Do.	Thickness.
1028	Do.	Clearness.
1030	None.	Darkened

Observations on Urine during Anasarca, subsequent to Scarlet Fever,

From 21st March to 9th May, 1853.

Specific Gravity.	Effect of Heat.	Effect of Nit. Acid.
1006	One-quarter.	One-sixth.
1006	None.	None.
1010	Do.	One-tenth.
1012	Quarter Red.	One-third.
1012	One-fifth.	One-half.
1013	One-third.	One-half.
1014	Three-fourths.	One-half.
1016	One-third.	One-half.
1016	One-third.	One-third.
1018	One-third Red.	One-half.
1018	One-quarter.	One-third.
1020	None.	One-tenth.
1020	Do.	One-tenth.
1022	One-half.	One-half.
1024	One-third Red.	One-half.
1026	One-half.	Three-fourths.
1028	Clearness.	One-quarter.

Observations on Urine after Anasarca, subsequent to Scarlet Fever.

From 18th September to 18th November, 1843.

Specific Gravity.	Effect of Heat.	Effect of Nit. Acid.
1010	None.	None.
1013	Do.	Darkened.
1014	Do.	Do.
1014	Do.	Do.
1016	Do.	Do.
1018	One-half.	One-fourth.
1018	None.	Darkened.
1020	Do.	Do.
1022	Do.	None.
1022	Do.	Darkened.
1024	Cloudiness.	Do.
1025	None.	Do.
1025	Do.	Do.
1025	Do.	Do.
1026	Do.	Do.
1028	Do.	Do.
1028	Clearness.	Clearness.
1028	None.	Darkened.
1028	Do.	Do.
1030	Do.	Do.
1030	Do.	Do.
1030	Do.	Do.
1030	Do.	Do.
1030	Do.	None.
1030	None.	Do.
1031	Do.	Clearness.
1032	Clearness.	Thickness.
1034	None.	Darkened.

Observations on Urine during and after Scarlatina and Anasarca.

NAME.	Disease.	Specific Gravity.	Effect of Heat.	Effect of Nitric Acid.
Margaret Melanphe...	Scarlet Fever...	1026	None	Darkened.
	After Do.	1028	None	Do.
Bridget Kelsh	Scarlet Fever...	1031	Clearness	Four-fifths.
	After Do.	1023	One-tenth	One tenth.
Allen Duggan	Scarlet Fever...	1016	Cloudiness	One-fifth.
	After Do.	1028	None.	Darkened.
Margaret Murray.....	Scarlet Fever...	1012	None	None.
	After Do.	1028	None	Thickened.
Amelia Jones	Scarlet Fever...	1018	None	One-fifth.
	After Do.	1024	None	Cloudiness.
Charles Neels	Scarlet Fever...	1018	None	One-fifth.
	After Do.	1024	None	Cloudiness.
D. Budds	Anasarca	1010	None	One-fifth.
	After Do.	1030	None	None.
G. Gordon.....	Anasarca	1016	One-third	One-half.
	After Do.		None	Cloudiness.
James Forrett	Anasarca	1024	$\frac{1}{3}$ Red	One-half.
	After Do.	1028	None	Darkened.
C. Condway	Anasarca	1012	$\frac{1}{4}$ Red	One-third.
	After Do.	1025	None	Darkened.
D. Angus	Anasarca	1006	None	One-fourth.
	After Do.	1010	None	None.

Observations on Healthy Urine,

From 31st October to the 11th November, 1843.

Specific Gravity.	Effect of Heat.	Effect of Nit. Acid.
1010	None.	None.
1010	Do.	Darkened.
1010	Do.	Do.
1010	Do.	None.
1012	Do.	Do.
1012	Do.	Do.
1014	Do.	Do.
1016	Do.	Darkened.
1017	Do.	Do.
1018	Do.	None.
1018	Do.	Do.
1020	Do.	Darkened.
1020	Do.	Do.
1022	Do.	Do.
1023	Do.	None.
1024	Do.	Do.
1024	Cloudiness.	Darkened.
1026	None.	Do.
1026	Do.	Do.
1027	Do.	Do.

EXTRACTED FROM THE REGISTER OF DEATHS FOR THE DISTRICT OF HOBART TOWN, BY PERMISSION OF JOHN ABBOTT, ESQ., REGISTRAR-GENERAL.

		1842.													1843.												
		January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Total.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Total.
Epidemic, Endemic, and Contagious Diseases.	Influenza									1	2	1		2													
	Measles										2			2													
	Scarlatina									2	8	6	7	23	6	3	9	5	12	4	1	1	1	2		3	43
	Hooping Cough						1							1							1						4
	Croup	1				1				1				3		3						1	4	6			14
	Thrush																2	2									4
	Diarrhœa		2	1	2	1	1						4	11	4	1	8		5	4	4	4	5	10	6	9	60
	Dysentery	5	1	1	5		1			1	1	1	7	23		13	13	14	7	2	3	4		2			58
	Cholera		1											1		1											1
	Typhus														1				1								2
	Synochus		2	5	4	1	4	2		1		4		23	6	3	1	1	4	3	2	1		1	2		24
	Plague																								1		1
	Erysipelas																										
	Syphilis	1			1						1		3	3					6	2	2						
	Dropsy	1			1		1	1			2			9		1							2		4	2	19
	All other Diseases	26	23	28	26	27	19	20	29	27	26	26	22	299	41	46	36	18	47	26	18	34	35	36	26	23	384
		34	29	35	39	30	27	23	29	33	40	38	43	400	58	71	69	40	82	39	30	45	47	55	41	37	614

		1852.													1853.												
		January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Total.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Total.
Epidemic, Endemic, and Contagious Diseases.	Influenza					1						19	20	40	3	4	9	10	11	6	4	2	1				50
	Measles																										
	Scarlatina		2	2	2	3	3	7	3	4	1	1	1	29		1	1	4	27	37	44	49	32	22	13		230
	Hooping Cough				2	3								5													
	Croup		2	4	1			3	5	2			2	19	1		1		1	2	3	8	8	1			24
	Thrush																										
	Diarrhœa	3	6	17	17	15	2	8	4	3	10	7	5	97	2	9	13		5	1	6	8	5	5	5	2	61
	Dysentery	10	9	5			3	1	4	1		5	3	41	4	6	3		3	1	3	2	1		12		35
	Cholera	1		2				1						4													
	Typhus	1												1													
	Synochus	2		1	3	1	3	1	3		1	3	3	21		3		1	3	2	4	3	1				17
	Plague																										
	Erysipelas		1	2										3													
	Syphilis																										
	Dropsy	1	2	2	2	2	1	2	3	2	2	5	2	26	6	2	2	4		1	2	2	2	3	3	2	29
	All other Diseases	40	42	43	32	29	45	41	59	39	35	74	67	546	30	64	61	41	59	39	53	57	47	46	35	16	548
		58	64	78	59	54	57	64	81	51	49	114	103	832	45	89	90	60	109	89	119	131	97	77	68	20	994