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# SCARLATINA

IN

CHICAGO,

PARTICULARLY THE EPIDEMIC OF 1876-7.

BY

*Chas. W. Earle, M. D.*

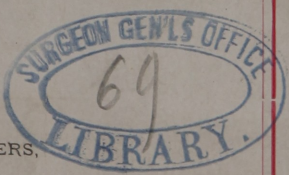
Prof. of Diseases of Children, Women's Medical College.

READ BEFORE THE ILLINOIS STATE MEDICAL SOCIETY.

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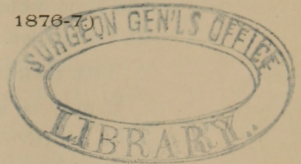
# SCARLATINA

IN CHICAGO.

(PARTICULARLY THE EPIDEMIC OF 1876-7)

BY

CHARLES W. EARLE, M. D.



Scarlatina is by no means a new disease in the city, but its unusual prevalence during the past seven months,—and the consignment of more than 800 persons, mainly children,—to early graves, has brought with peculiar impress the subject to our minds.

To place on record what may be of use to the profession in regard to this epidemic, and to make inquiry in regard to certain questions not yet fully decided, are my reasons for choosing this subject at this time.

It is a well known fact that Scarlatina, more perhaps than any other disease, is characterized by great diversity in regard to its intensity, complications and sequelæ. There are questions, too, as to the season of the year in which this disease prevails with greatest frequency; the age at which children are most susceptible; the influence of sewerage, poverty and wealth, on the mortality; and the worth or worthlessness of certain drugs as preventives of the disease.

In a circular sent to every physician in the city, about April 1st, 1877, I requested information in regard to many of these mooted questions, hoping by the collection of a large number of cases, to add some testimony which would prove useful in future epidemics. Eight hundred circulars were sent,—less than one hundred were returned with answers. My statistics, therefore,

will not be as full as I had hoped, yet enough, it seems to me, have been collected to form a fair basis for calculation. To the gentlemen who favored me with a reply, I return my profound thanks. It was no light task to go back over one's list and collect the data requested, and I am certainly under obligations to those who took the trouble to do it. I am not without hopes that the facts and figures deduced will be of some slight service to the profession; if so, I shall be more than compensated for the time which necessarily has been consumed in the preparation of the paper.

#### THE EARLY MORTALITY FROM SCARLET FEVER IN CHICAGO.

It may be said that Scarlatina has been endemic with us since 1851. Previous to that year no mortality tables were prepared; and we have no means of knowing to what extent the disease prevailed.

TABLE SHOWING THE NUMBER OF DEATHS FROM SCARLATINA FROM 1851 to 1876.

	January.....	February.....	March.....	April.....	May.....	June.....	July.....	August.....	September.....	October.....	November.....	December.....	Total.....	Popula- tion.	Taken by
1851....						4	4	2		1	3	3	17	35,000	Estimated
1852....	2		4	7	5	2	1	2	4	3	5	11	46	45,000	Estimated
1853....	6	9	11	2	1			3	2		1	1	36	59,000	City.
1854....	2	1	2		1	4	1	1	4		1	7	24	65,000	Estimated
1855....	1	3	1										5	80,000	State.
1856....		4		1	1			1		1	3	4	15	84,000	City.
1857....	2	19	9	11	7	7	5		2	5	3	5	75	90,000	Estimated
1858....	4	4	21	22	34	16	23	23	11	7	30	38	233	97,000	Estimated
1859....	29	40	45	24	10	15	14	6	16	31	8	15	253	104,000	Estimated
1860....	22	11	19	15	19	5	7	8	7	5	3	4	125	109,000	U. S.
1861....	1	3				1	3	2	3	2	6	24	45	120,000	Estimated
1862....	6	13	17	11	16	22	43	16	35	45	48	63	335	138,000	City.
1863....	107	60	54	50	25	15	28	10	26	12	0	9	405	150,000	Estimated
1864....	7	8	5	8	5	7	4	4	1	3	5	13	70	169,353	City.
1865....	8	8	10	6	8	3	6	11	12	7	2	8	89	178,492	State.
1866....	6	12	12	6	7	14	14	17	12	8	6	13	127	200,418	City.
1867....	21	14	10	9	7	8	1	8	3	3	3	14	101	225,000	Estimated
1868....	7	5	7	3	13	8	12	17	10	27	45	38	182	252,054	City.
1869....	47	43	28	47	28	51	71	56	30	48	66	60	573	275,000	Estimated
1870....	63	43	52	37	32	39	21	21	8	13	11	11	351	306,605	U. S.
1871....	14	9	9	7	11	7	9			16	17	25	124	325,000	Estimated
1872....	21	15	11	14	15	6	9		4	8	10	22	142	367,394	City.
1873....	14	7	14	13	11	11	15	8	10	4	4	4	115	375,000	Estimated
1874....	7	2	4	5	6	14	12	11	16	6	12	10	105	395,408	City.
1875....	14	7	12	17	21	15	11	11	20	17	17	44	206	400,000	Estimated



In all the health reports, Scarlatina is not spoken of in particular, until 1858, when it is observed that it prevailed throughout the entire year. Two hundred and thirty-three deaths were reported, which probably only partially represents the mortality, as Dr. N. S. Davis, in a report made to the Chicago Medical Society, says, "unfortunately the ordinance of the city intended to compel the procurement of a certificate setting forth the cause, or causes of death in all instances before burial, has been so imperfectly executed as to be of no real value."\* The population of the city at that time was about 97,000, consequently 1 death from Scarlet Fever to every 416 inhabitants was recorded,—however imperfect the registration may have been.

The following year, 1859, the epidemic continued with the same severity,—the recorded deaths amounting to 253,—1 to every 411 inhabitants, the population being 104,000. During the two years following, 1860 and 1861, the deaths from Scarlatina notably diminished, but in 1862 mounted up to 335, with a population of 138,000,—one death from Scarlatina to every 412 persons. In 1863 the mortality list was 405,—1 death to every 370 persons. From this time to 1869 the ravages resulting from this disease were light, although deaths were reported without exception, every month. During that year the mortality was heavy.

MORTALITY BY MONTHS FROM SCARLATINA DURING 1869.

January.....	February...	March.....	April.....	May.....	June.....	July.....	August.....	September..	October.....	November..	December..
47	43	28	47	28	51	71	56	30	48	66	60

Total deaths from Scarlatina, 573.

Population, 275,000.

One death from Scarlatina to every 497 inhabitants.

The mortality diminished the next year, and was really light during the following five years, but commenced to increase in December of 1875, when it reached 44.

\*Quoted from the "Sanitary History of Chicago," edited by John H. Rauch, M. D., President Illinois State Board of Health and Sanitary Superintendent of Chicago, from 1867 to 1873. I desire to acknowledge the great value this work has been to me in preparing my report, and to publicly thank the author for valuable advice and suggestions.

## MORTALITY BY MONTHS AND WARDS FROM SCARLATINA DURING 1876.

WARDS.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	Total.
January .....		3	1		1	3	7	3	3	2	2	5	1	3	4	2		1	2		43
February .....			2			7	5	1			2	4	3	2	5	6	4	1			42
March .....			3	2	2	4	5	4	1			4	2	2	6	4		2			24

## NUMBER OF WARDS CHANGED TO 18.

WARDS.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	Total.	
April .....	1	4			7	5	1	2		1	1		5	5	4	1	1		39	
May .....			1		4	1		1	5	2			4	3	1	2			24	
June .....			1	1	2	4	3	1	2		1	1	4	6	4	1	1		52	
July .....				2	2	6	2	2	1	2	2		1	12	10		1		44	
August .....				1	3	8	11	6	4	1	3	4	1	5	9	4	3	1	4	69
September .....					5	8	5	5	2		6	3		6	13	4	2	4	63	
October .....				1	4	8	11	10	11	3	1	1	18	25	2	8	18	2	124	
November .....				1	5	18	7	7	9	5	8	7	9	18	22	4	5	9	137	
December .....				1	3	12	5	7	3	3	4	5	8	6	33	13	5	13	5	129

Total deaths from Scarlatina, 770.

Population, 407,661.

One death from Scarlatina to every 529 inhabitants.

During the first nine months of 1876 the mortality, as may be seen by the above table, was not particularly heavy,—indeed, taking the death rate from Scarlatina for the entire year, it cannot be regarded as very severe.

TABLE SHOWING NUMBER OF DEATHS FROM SCARLATINA IN PROPORTION TO POPULATION.

YEAR.	Population.	Deaths from Scarlatina.	Proportion.
1858.....	97,900	233	1 to 416
1859.....	104,000	253	1 to 411
1862.....	138,000	335	1 to 412
1863.....	150,000	405	1 to 370
1869.....	275,000	573	1 to 497
1876.....	407,661	770	1 to 529

## THE EPIDEMIC OF 1876-'7.

It is only by taking the mortality during the last three months of 1876, with that of the first four months of 1877, that we can appreciate the magnitude of what we have been told is one of the most malignant epidemics on record.

We do not believe, at the outset, that the epidemic has been so terribly severe as some would make it appear, nor that the medical profession has been at all negligent of its sacred duty, as the guardian of public health, unless it was, in not making known in more emphatic terms, the extreme contagiousness of



the disease. With absolute indifference in regard to properly disinfecting dwellings where Scarlatina had occurred, and with no attempt to isolate those affected from those who were liable to infection, and furthermore with the public press filled with statements that certain medication would give partial, if not total, immunity from the dreaded disease, we only wonder that our scourge has not been more extended, and numbered its victims not by hundreds, but by thousands.

MORTALITY BY MONTHS AND WARDS FROM SCARLATINA FROM OCTOBER, 1876, TO MAY, 1877.

WARDS.																			
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	
October .....				1	4	8	11	10	11	3	1	1	18	25	2	8	18	2	123
November.....			3	1	4	18	7	7	9	5	8	7	9	18	22	4	5	9	137
December.....			3	1	5	12	5	7	3	3	4	5	8	6	33	13	5	13	129
January.....	3	4	2	3	19	9	8	11	6	3	3	18	5	22	10	11	9	5	153
February.....	1	5	1	5	13	16	11	6	3	9	5	3	9	12	6	2	5	1	113
March.....		6	4	5	9	9	16	11	2	1	2	4	4	6	2	3	5	4	92
April.....	1	1	2	2	3	16	6	4	3		1	4	3	9	8	7	3	2	74
Total by Wards.....	5	22	12	25	82	73	65	55	25	26	24	46	63	131	45	41	62	19	821

Total deaths from Scarlatina, 821.

Population, 407,611.

One death from Scarlatina to every 496 inhabitants.

If we now attempt to form an estimate of the severity of this epidemic, we should have the entire number of cases of Scarlatina which have occurred. The system of registration of deaths with us is so complete that the number of fatal cases is accurately known. The entire number of cases which have occurred, and the entire number of deaths which have taken place being given, the death rate is easily computed. If a report based on returns made by 71 physicians representing every different school, grade, nationality and sex, is a fair basis for an estimate, then the figures I am about to give as the total number of cases which have occurred during the last 16 months, are as nearly correct as possible. It may be urged that a person making a report of his practice in a certain direction would desire that it should be large; that he should make a good showing. I have absolute confidence in the reports received, and would state further that of the 71 physicians who sent me a report, 10 have had none at all. I grant that at least 75 physicians, those especially who are engaged in specialties, and those having a practice largely in our hotels, have not seen Scarlatina at all

during this epidemic. Seventy-one represents one-tenth of the practicing physicians of all classes in this city. Seventy-one physicians have had 1,417 cases of Scarlatina since Jan. 1, 1876, giving as a total 14,170 cases of this disease since that time. This does not include a certain number, I think, at least, 500 cases, which have been so mild that they have recovered without a physician being called. Nor does it include those treated by midwives, who are also known to have had a considerable number. We have then a total of 14,170 cases, with 1,191 deaths, or a mortality of  $8\frac{1}{2}$  per cent. A mortality below 10 per cent. is usually regarded as a benign epidemic,—and in this list the epidemic of Chicago, in 1876-'7, must be placed.

Such mild epidemics have been reported by Kostlin, of Stuttgart, in 1856, where the loss was 7.3 per cent. by van Holsbeek, of Brussels, in 1856, when the loss was 8 per cent. and by Cremen, who suffered a loss of 9.2.

Among epidemics described as malignant may be mentioned that in Stein, in 1856-'7, where 20 per cent. died,—in Stuttgart, in 1862, the mortality was 23.3, and among the highest mentioned by Thomas is the epidemic in Namur, where the loss was 30 per cent.; in Esslinger, between 1853-'7, the loss was 36 per cent., and in one other about 40 per cent.

I have been surprised that the officers of the health department have estimated so small a number of Scarlatina cases, with of course a high per centage of deaths. If we suppose that my estimate is too high by 2,000, for instance, we cannot make it a malignant epidemic; even then our per cent. of deaths would be only  $9\frac{3}{4}$  per cent. or, deduct 4,000, making the total cases at 10,000, our per cent of deaths then would be less than 12, which is not by any means an unheard of epidemic. The fact is, ladies and gentlemen, we had abundant material for a terrible epidemic, and with the causes in operation for the spread of the disease mentioned hitherto, and others to be presently demonstrated, it is marvelous almost, that ours has not been a malignant one. Below I present a table showing the number of children under 16 years of age in every ward in the city:

WARD.	1	2	3	4	5	6
Of all ages.....	14,180	16,324	15,123	21,568	37,543	31,258
Under 16 years.....	1,106	4,592	4,240	7,311	17,146	13,003



WARD.	7	8	9	10	11	12
Of all ages.....	31,393	31,216	14,264	12,696	17,717	19,839
Under 16 years .....	14,169	12,301	3,528	4,399	4,976	6,236

WARD.	13	14	15	16	17	19
Of all ages.....	16,350	47,812	24,076	20,520	19,109	16,643
Under 16 years.....	6,422	20,889	10,559	8,617	7,662	4,684

Total population, 407,661. Population under 16 years of age, 152,751.

From a recapitulation it will be seen that we have 152,751 persons answering to that description, as regard age; 43,000 of these are enrolled on the public school list, and 27,637 on the rolls of private schools. If we turn now to the table showing the mortality by wards from Scarlatina during 1876, we find that during the months of July, August and September, deaths occurred in every ward except the 1st and 2d. In the three months named 176 fatal cases were recorded, and it is safe to say that at least 150 residences had been infected. No well-directed efforts had been put forth to disinfect these houses; the occupants did not know that the contagion could be carried in clothes, books, lunch-papers, etc., etc., and in many instances the family physician did not communicate the fact to them, and in a few cases laughed at the idea that increased personal intercourse is one, if not the most important factor in the spread of this disease. Forth, then, from at least 150 infected points about Sept. 1st, marched these little people to take their seats in public or private schools, and to come in contact with more than 63,000 other persons who occupied the same school buildings, and in some instances contiguous seats. When we consider that it is extremely doubtful whether Scarlatina is ever spread without either direct or indirect personal intercourse, we are prepared, with the preceding facts before us, to expect an increase in the mortality in the months following the opening of the schools in our city. There was an increase, for from a mortality of 63 in September we had 124 in October, and 137 in November,—the epidemic reaching its height in January, when the number of deaths was 153.

Notwithstanding the lack of information that prevailed among the people in regard to the spread of Scarlatina epidemics, and the apathy with which physicians communicated the known facts in relation to it to the public, only one death from the disease to every 128 persons under 16 years of age has taken place in the last sixteen months in our city.

Coming, now, to consider the wards separately, we find the following facts:

THE WARDS CONSIDERED SEPARATELY.

BOUNDARIES.	Acres.	Sewerage in Miles.	Feet of Sewerage to Acre.	Population.	Population under 16 years.	Condition of Buildings, Occupants, etc.	Deaths from Scarlet Fever.	Proportion to Children.
First Ward, South Division, north of Harrison street.	476	16½	186	14,180	1,106	Business houses, hotels, few residences.	6	1 to 184
Second Ward, South Division, between Harrison and Sixteenth streets.	394	10.4	140	16,354	4,592	Smaller business houses; first-class residences near the lake; poor near river.	30	1 to 150
Third Ward, South Division, Sixteenth, Clark, 26th streets, and the Lake	438	11½	141.4	15,123	4,240	Mainly fine residences, except west of State street.	22	1 to 100
Fourth Ward, South Division, the Lake, Twenty-sixth and Clark St., everything south.	1,070	17½	87½	21,568	7,311	Among the finest residences in the city; wealthy occupants.	36	1 to 203
Fifth Ward, South Division, west of Clark and south of Sixteenth streets, river, everything south.	2,879	17	31	37,543	17,146	Houses small and occupants poor; contains 8 slaughtering houses, 3 packing houses, 4 gut-cleaning and 2 blood drying establishments, 1 fertilizing establishment, and 1 glue factory. In close proximity to Union Stock Yards, with 22 packing and rendering houses, 2 slaughtering houses, 9 fertilizing establishments, 2 gut-cleaning houses, Bridgeport.	116	1 to 147
Sixth Ward, West Division, everything south of Sixteenth street.	4,242	14½	133.	31,258	13,993	Many small wooden buildings; surface water; majority of people poor.	119	1 to 151



## THE WARDS CONSIDERED SEPARATELY.

BOUNDARIES.	Acres.	Sewerage in Miles.	Feet of Sewerage to Acre.	Population.	Population under 16 years.	Condition of Buildings, Occu- pants, etc.	Deaths from Scarlatina.	Proportion to Children.
Seventh Ward, West Division, everything between Sixteenth and Twelfth street.	1,523	19	67	31,393	14,169	Condition of houses and occupants about the same as in Sixth Ward; grade higher toward the west, and more paved streets.	99	1 to 143
Eighth Ward, West Division, Twelfth, Loomis, Van Buren, and River.	644	18	148	31,216	12,301	Large number of houses very poor; one side of ward bounded by river; streets narrow and densely populated; better condition toward western boundary.	75	1 to 64
Ninth Ward, West Division Van Buren, Curtis, Randolph streets, and River.	289	15	209	14,264	3,528	Larger business houses; streets raised to grade; occupants of dwellings of better class; population less crowded.	38	1 to 93
Tenth Ward, West Division, Randolph, Curtis, Ohio streets, River.	259	12-2-5	252	12,695	4,300	Houses and occupants about same as in Ninth Ward; the poorer part of this ward along its northern boundary corresponding very well with some of the crowded and narrow streets of the Ninth.	42	1 to 102½
Eleventh Ward, West Division, Twelfth street, Ashland avenue, Ohio, Curtis, Aberdeen, Van Buren, Loomis streets.	573	17	156	17,717	4,976	Main part of ward occupied by fine houses and wealthy people; a small portion in north part occupied with small houses, with the poorer class.	39	1 to 127

## THE WARDS CONSIDERED SEPARATELY.

BOUNDARIES.	Acres.	Sewerage in Miles.	Feet of Sewerage to Acre.	Population.	Population under 16 years.	Condition of Building and Oc- cupants, etc.	Deaths from Scarlatina.	Proportion of Children.
Twelfth Ward, West Di- vision, Twelfth St., Ash- land avenue, Lake street, west to limits.	2,401	16	36	19,839	6,236	In every respect one of the finest wards in the city, both as to character of buildings and oc- cupants,	61	1 to 102
Thirteenth Ward, West Di- vision, Lake street, Ash- land and Chicago ave's, west to limits.	1,439	11	40	16,350	6,442	Good in east half; very poor in remainder.	95	1 to 67%
Fourteenth Ward, West Di- vision, all that part of this division north of Ohio streets and Chicago Ave.	3,276	18 $\frac{1}{4}$	30	47,812	20,889	Small buildings; low ground; people poor and thickly settled; northeast boundary is the north branch of river.	183	1 to 114
Fifteenth Ward, North Di- vision, north of North avenue.	1,109	13	63	24,076	10,550	Good.	76	1 to 139
Sixteenth Ward, North Di- vision, between North avenue and Division St.	534	13	130	20,520	8,617	Good.	64	1 to 134
Seventeenth Ward, North Division, the space bound- ed by Franklin Division and Franklin streets, and the River.	383	11 $\frac{1}{4}$	164	19,109	7,662	Poor. In close proximity to river.	132	1 to 58
Eighteenth Ward, North Division, Franklin, River and Lake.	561	19 $\frac{1}{4}$	183	16,643	4,684	Elegant buildings, and recently occupied.	20	1 to 161



## SEWERAGE.

If we take the four wards in which the deaths have been less than 1 to every 100 children under 16 years of age, we find them to be the 8th, 9th, 13th, and 17th. In what condition do we find these wards as regards sewerage; what the condition of the people, and their facilities for opposing any infectious or contagious diseases? The Board of Public Works, in its report for 1876, says, "in ten wards our system of sewerage is almost complete. These wards are the 1st, 2d and 3d, in the South Division, 8th, 9th, 10th and 11th in the West Division; and the 16th, 17th and 18th, in the North Division." In three wards, then, where the sewerage is "almost complete," our mortality is the highest. If we take the 5th ward, and the adjacent Stock Yards, with its fifty-four houses devoted to slaughtering cattle and hogs; with its two hundred and forty-five rendering tanks, and with the entire drainage from all these establishments, emptying into the north fork of the south branch at the city limits, and with only 63 feet of sewerage to the acre, we find here only 1 death to 147 children, while in the 10th ward with the greatest number of feet of sewerage to the acre in any ward, we have 1 death to 102 children. In a word, it appears to me that sewerage has nothing to do with the spread of the disease, and but little with the mortality.

THE RELATION OF A LARGE POPULATION UNDER 16 YEARS OF AGE IN REGARD TO THE SPREAD OF THE DISEASE.

Our attention has frequently been called to the alarming mortality in certain wards. We are told that 183 deaths from Scarlatina have taken place in the 14th, and 116 in the 5th, and 99 in the 7th. Forthwith the garbage wagons and the men with shovels and brooms are ordered to pass in review before the Health Department, and move *en masse* to these wards. To clean the alleys and sweep the streets is a most commendable undertaking. It should be repeated frequently, but it doesn't stop the ravages of Scarlatina. We forget that in these wards the largest number of children live. The 14th has nearly 21,000; the 5th over 17,000; and the 7th more than 14,000. These three wards contain more children than we find in the 1st, 2d, 3d, 4th, 9th, 10th, 11th, 12th, 13th, 16th, 17th and 18th wards. Excluding sewerage, nationality, sex and social relations we

must come to the conclusion that where we have a large number of children living in small houses, densely crowded, with no means for isolation, the disease prevails to a great extent; where we have a great number of infected points, we have a large number of Scarlatina cases. When, from any cause, children who are susceptible, come in contact with infected points, we have an increase. To-day (May 16th.), we have an illustration of this fact, and the fulfilment of an opinion I expressed to certain of my colleagues three weeks ago. Thirty-four new cases are reported during Monday and Tuesday of this week,—a great increase,—simply because families have changed residences, and on the 1st of May many infected houses were occupied by children who had hitherto escaped Scarlatina.

We have been inclined, perhaps, to censure the Board of Health in what seemed extreme measures for the control of contagious diseases. This is wrong, they should have our support, and if we are ever to have this scourge swept from our midst, the infected houses must be absolutely under the control of some one who will isolate the people and disinfect the premises. It is perhaps problematical whether the Scarlet Fever placards are just the thing,—there are well-grounded objections to them in some cases,—but there is no doubt about the propriety of the Board of Health's having absolute jurisdiction over infected persons and dwellings.

Rather than occupy a house where Scarlatina had prevailed, with persons still susceptible to the disease, I would pitch a tent on the prairie, and there abide for two years, if necessary. The great question is, how shall we *isolate* our Scarlatina patients, and what shall be done with the infected houses?

#### THE SUBSIDENCE.

The epidemic is subsiding, but has not by any means entirely disappeared.

As contributing largely to the diminution in the number of new cases, and as a proper commencement of measures, which, if energetically carried out and persisted in, will render the disease almost *nil* in our midst; I regard the following circular from the newly elected health commissioner as very apropos:



HEALTH DEPARTMENT, CITY OF CHICAGO, }  
 January 31st, 1877. }

TO THE PHYSICIANS OF CHICAGO:

Your attention is called to the 9th Section of the Act of the Legislature of the State of Illinois, approved Feb. 16th, 1865; also to Section 31 of Act of 1863, found on page 545 of Revised Ordinances of City of Chicago, as follows:

“Every practicing physician in the city who shall have a patient laboring under any malignant or yellow fever, small-pox or other infectious or pestilential disease, shall forthwith make report thereof, in writing, to the Secretary of the Board of Health, describing the street, number and location of the place where the said patient may be located, so that it may be easily found; and for neglecting so to do shall be liable to a fine of fifty dollars.”

In attempting to confine and control the epidemic of Scarlet Fever, now raging, I ask the active co-operation of all physicians in the city. Every physician neglecting his duty in the all-important measure referred to in the above legislative Act, upon proof thereof, will be immediately prosecuted as the law directs.

Where persons have died with Scarlet Fever, Diphtheria, or other contagious disease, this department earnestly discourages public funerals.

OSCAR C. DEWOLF, *Commissioner of Health.*

As a part of the plan to prevent the spread of the disease, the health department quarantined many of the infected houses and prevented children who had had Scarletina from attending school, until a proper certificate was issued by the attending physician.

Another reason why the epidemic is subsiding, is that a large number of children who were susceptible to take the disease have had it, thus diminishing the number of those who at this time could be influenced by the contagious element. Above all the reasons, however, which I have enumerated as conspiring to cause a subsidence of this epidemic, this one stands pre-eminent, that the people who own and control the children are learning what the medical profession should have told them in October 1876, that if their children are kept from where the contagious element of Scarletina exists, and persons who come

from infected places are kept from their children, exemption is certain.

#### INFLUENCES EFFECTING THE MORTALITY.

##### THE SEASONS.

The greater prevalence of the disease in the fall of the year, has been recognized since Sydenham's time. (Ziemssen.) In England, the greatest mortality is between the middle of September, and the middle of November. Our epidemic spread rapidly during the fall months, but did not reach its greatest mortality until January. In this respect it differed somewhat from other epidemics, a departure from the general rule, which I believe was due to the total absence of any well directed efforts to control it.

##### AGE.

Scarlatina is a disease of infancy and childhood, although no age is absolutely exempt.

Age of 1243 fatal cases of scarlatina in 1876—7.

Under 1 year,	-	-	-	64
From 1 to 2,	-	-	-	178
“ 2 to 3,	-	-	-	234
“ 3 to 4,	-	-	-	213
“ 4 to 5,	-	-	-	148
“ 5 to 10,	-	-	-	301
“ 10 to 20,	-	-	-	73
“ 20 to 30,	-	-	-	18
“ 30 to 40,	-	-	-	7
“ 40 to 50,	-	-	-	1
“ 50 to 60,	-	-	-	2
“ 70 to 80,	-	-	-	3

##### WEALTH AND POVERTY.

I have data respecting the social position of 1079 cases of scarlatina. Of those who could command every attention, only  $5\frac{1}{2}$  per cent. died, while the mortality was 20 per cent. among the poor. These figures differ greatly from facts observed in my own practice. I attended five children sick in one small room, destitute of bed clothing and ordinary nutrition, with recovery in every case. On the other hand I have seen the child of wealthy parents, surrounded by every comfort and delicacy,



attended by a corps of our best consulting physicians, die without the amelioration of a single symptom. With the munificent arrangements for the care of the sick poor in this city, I believe the fatality among this class is not greater than among their wealthy neighbors. The mortality of cases treated by the out Staff of the Central Dispensary during this epidemic, is less than 10 per cent., a showing which can hardly be excelled by an equal number of physicians attendant upon the sick in our stone fronts. In the possession of facilities to *isolate* their children, the wealthy have a great advantage, which if properly used, should give almost immunity from the disease.

#### COMPLICATIONS.

I remarked at the commencement of my report, that scarlatina was characterized by great diversity in regard to complication, etc., etc. While some epidemics are peculiar in presenting but few complications, this one seems to be remarkable for the great number, and their varied character. In 1417 cases there were 587 complications, classified as follows:

Glandular affections,	-	-	314
Dropsies,	-	-	102
Ear affections,	-	-	105
Convulsions,	-	-	69

The comatose condition has supervened in quite a number of cases, death following as the rule. A very few cases, however, recover.

#### THE TEMPERATURE.

The fever heat as indicated by the thermometer is most valuable as an aid in our prognosis; the length of my report however, will preclude any extended remarks on this important subject. In the mild form of the disease the temperature usually rises slowly to about 102° and gradually subsides. In severe attacks, the child coming down suddenly, the temperature will sometimes rise rapidly to 104° or 105°. A convulsion or some other complication will probably take place if this temperature is maintained for any length of time. If, however, it commences to abate within a few hours, a favorable result may be expected. A persistent temperature at 104° to 105°, I always regard dangerous, although a few cases have recovered even when associated with

continued delirium. A temperature of  $105^{\circ}$  and above, unless at the outset of the disease and then unassociated with coma, should be regarded as very critical, death taking place almost without exception.

Great as may be our faith in isolation, *complete, rigid* and *continuous* for the prevention of this disease, no report of this epidemic would be complete without a consideration of

#### PROPHALAXIS.

Nearly seventy-five years ago it was announced that a natural specific for the cure and prevention of Scarlatina had been discovered. From the fact that at first it was vended as a secret remedy,—and, secondly, its claims pressed by one in whom the medical profession had no confidence whatever,—practitioners refrained from testing its truth.—*Stille*. While it must be confessed that the degree of contagiousness of Scarlatina is not well ascertained, since where the element is once introduced into a family,—sometimes but one among several, and at other times the entire family take the disease,—and also from the fact that the protective power of any drug is difficult to be inferred with accuracy; yet, notwithstanding this, a large number of authors and practitioners of medicine have evinced interest enough in the theory to try the protective power of belladonna. In some of the discussions on this subject during the past winter, certain practitioners of my own age have declared that there are no good authorities for the use of this drug as a prophalactic. I beg leave, sir, before noting what I shall record in regard to the protective power of belladonna in this epidemic, to cite certain opinions in favor of and against its use, based on experience in previous epidemics.

It will be seen that we have authorities, and good ones, who favor the use of belladonna as a prophalactic in Scarlatina, while equally good authorities, although fewer in number, discourage it. In a word, the authorities differ, and consequently until a larger number of cases have been carefully observed, recorded, and closely analysed, and some kind of a deduction made, physicians as a body cannot be expected to either absolutely adopt or reject the agent. Each physician will examine the evidence in favor of, and against the remedy, and practice accordingly.



## FAVORABLE TO BELLADONNA.

\* Bayle collected nearly all published evidence up to 1830, and states the following as the results: 2,027 children and adults made use of the drug; 1,948 escaped, and 79 contracted the disease. Stelle believes the experiments were made by competent persons, and does not question the accuracy of the results.

In 1840-'41, M. Stievenart tested the question in the villages around Valenciennes. Two hundred out of 250 persons in one, took belladonna, and escaped, while 14 of the remaining 50 took the disease, and 4 died. He also records other favorable testimony. Dr. J. C. Morris administered the medicine to one-half of the children at the Preston Retreat, Philadelphia, and found that 53 per cent. of these were attacked, while 73 per cent. of the remaining half had the disease.

Hufeland, in Germany, and Guersand, in France, most eminent physicians and authorities, advocate its use—the latter stating that he never failed to employ the method we are discussing, and that he had remarked the almost certain immunity of those who were subjected to it.

Burnett gave it to 120 children, of whom only four contracted the disease. Schenck administered it to 525 persons, and only three took the disease. M. Bielt states that those to whom it was given usually escaped. Dr. Irwin, of South Carolina, gave it to 250 children, and less than half a dozen took the affection. Those families which did not take the preparation were, with hardly an exception, affected.

Killiet and Barthez think it worthy a trial. Prof's. Meigs and Pepper think favorably of it. Dr. McKee, of South Carolina, thinks he used it with success. Dr. Porcher, after a review of 400 volumes, of literature on the subject, expresses himself in favor of it; and Prof. Stille, after reviewing the whole subject, say: "We feel bound to express the conviction that the virtues of belladonna, as a protection against Scarlatina, are so far proven that it becomes the duty of practitioners to invoke their aid whenever the disease breaks out in a locality where there are persons liable to the contagion,—particularly in boarding-schools, orphan asylums, and similar institutions, and among the families of the poor; whenever, in a word, it is difficult to place the healthy at a distance from the sick.

## AGAINST BELLADONNA.

Lehmann and Wagner have given it, and derive no benefit whatever. Prof. Condie says: "We never found it in any to exert the slightest influence in mitigating the character or preventing the occurrence of Scarlatina." Prof. J. Lewis Smith believes, from the weight of evidence, that it is entirely inert. Dr. Andrew Wood, at Heriot's Hospital, Edinburgh, and Dr. Alley, at the Orphan's Asylum, Boston, experimented with it, administering it to one-half the children in their institution, and, to use the words of the latter, "there was no manifest difference between the two classes as to susceptibility to the contagion; and Thomas, in his exhaustive article in Ziemssen's Cyclopædia, speaks of belladonna as the "much vaunted pseudo prophylactic.

In the epidemic through which we, it is hoped, are now emerging, belladonna has been administered by practitioners of all schools, but has not, as far as I am informed, added anything favorable to its former reputation. In my own practice I have not yet seen a fatal case where it had been administered, although many have taken the disease; but in all cases the termination was favorable. It seemed to mitigate the character, but did not destroy the susceptibility of children to take the disease. In 430 children where it was administered in the practice

of physicians who honored me with a report, 100 had Scarlatina, and I have no doubt but that the number of physicians in this city, who had confidence in belladonna as a prophylactic, is less than it was sixteen months ago.

#### THE SULPHO CARBOLATE OF SODIUM.

In 1867 Dr. Arthur E. Sansom announced to the Obstetrical Society of London that he had succeeded in producing a series of double salts of carbolic acid, which promised to be of use in certain diseases, particularly in the so-called zymotic diseases. Among the preparations mentioned were sulpho carbolic acid, sulpho carbolate of sodium, ammonium and calcium. Of the metals proper, he obtained the sulpho carbolate of zinc, copper and iron. All these were of crystalline form, of perfect stability and very soluble. It was believed by Dr. Sansom that the carbolic acid was the important agent in these salts, dependent upon its known power to arrest fermentive and putrefactive changes externally. Can these processes be annulled internally? The sulpho carbolate of sodium is exceedingly soluble, and to an adult patient a drachm, equivalent to 20 grains of carbolic acid may be administered every four hours. According to the deductions of the discoverer, this large quantity is rapidly absorbed from the stomach without decomposition; in the tissues sulphate of soda is eliminated and carbolic acid set free—the former being excreted by the kidneys, and the latter by the lungs. Dr. Sansom did not have the opportunity of employing these agents, especially the sodium salt, in a large number of cases, and says in conclusion that he should be greatly misunderstood, if it is thought that his communication was intended to establish the proposition, that the sulpho carbolates constitute the remedies, *par excellence*, for the diseases enumerated. What he had said, he hoped, would place them on trial.

Prof. J. Lewis Smith, looking toward the antiseptic method in medicine, in the second edition of his book, (1869) uses the following language:

“It has been proposed in this (diphtheria) and other zymotic diseases to give medicines to check the supposed fermentive processes going on in the economy, and by this means to ameliorate if not entirely control the morbid action. Prof. Polli, of Milan, has recommended for this purpose the sulphites, in the



belief that the sulphurous acid set free in the system by their decomposition prevents, or tends to prevent, catalysis. Experiments have shown that this agent does check fermentation without the system, and the theory possesses a degree of plausibility. But in such matters the only reliable guide is experience. If experience shows that the sulphites are beneficial in the treatment of the zymotic affections, then, and only then, are we justified in employing them. It is difficult to determine the value of any medicine in the treatment of the zymotic diseases, since so many cases terminate favorably without any medicine; but some of the physicians who have used the sulphites speak favorably of their effect. My own experience with them has been limited. I have seen improvement in severe cases of Scarlet Fever where these agents were employed, but remained in doubt whether the improvement would not have followed the use of other measures. It does not seem judicious, until they are more fully tested and are found to accomplish what is claimed for them on theoretical grounds, to discard, in cases that are at all critical, those remedies which appear to be indicated by the nature of the disease."

In the third edition of the book (1876) the above is omitted. We would infer that "experience" had not shown it to be reliable.

Thomas, in Ziemssen's *Cyclopedia*, says, those symptoms due to the toxic effect of the Scarlet Fever poison, should be met by the administration of antiparasitic and antizymotic remedies, mentioning among others, the internal and subcutaneous use of carbolic acid and sulpho carbolate of soda. It does not appear that the writer had made use of them, but recommended them as being advised and found useful by Dr. Sansom. These preparations had been used in a few cases by several physicians, but not to sufficient extent to justify the exclusion of older and better tried remedies. At the commencement of our late epidemic, such extraordinary prominence was given to them—especially the sodium salt—that a number of practitioners, partly with the hope of meeting with the magnificent success promised, and partly to demonstrate its worth, guardedly administered the drug. The results are not flattering, and any claim, either as a prophylactic or as a curative agent, the sulpho carbolate of sodium

may have had in Scarlatina has, I think, been very emphatically decided in the negative.

In 61 cases where it has been used for its curative properties, 10 have died, the disease advancing without the drug seeming to produce the least impression; and in 90 cases where it was administered for its supposed prophalactic virtues, 48 took the disease. Not only has it failed to mitigate a single symptom, after the development of the disease, or to diminish the susceptibility of those liable to contract it, but it has seemed to diminish the *vis medicatrix naturee*, to lessen absolutely the chances of recovery, by its impoverishment of the system.

One physician of my acquaintance treated 22 cases with it and lost 5. In my own practice, the most distressing case of diphtheria that I have had in the year developed in a scarlatinous patient, when the drug had been administered daily for two weeks. The system was completely saturated with the medicine, and yet the disease developed, and was rapidly advancing to an unfavorable termination, when older and better tried remedies were substituted, and happily the case recovered. In April, I was called to a German boy in the southeast part of the city, who had contracted Scarlatina at one of the private schools in that vicinity. He had come to his home, where three other children (two sisters and an infant brother) would now be exposed to his contagion. They were isolated as much as it is possible to isolate children in a house with but three or four rooms, and the sulpho carbolate of sodium faithfully administered. In seven days from the time the elder brother came home with the eruption on his body, the three other children took the disease, (sulpho carbolate of soda being used all the time, remember,) and in  $2\frac{1}{2}$  days the younger sister was a corpse, and in 5 the older sister was by her side at Walheim. The baby seemed to struggle between life and death for two weeks, but finally made a tedious and difficult convalescence, suffering with not only glandular complication, but deep-seated pharyngeal abscess and purulent arthritis. Previous to this sad experience my mortality had been 6 per cent., it was now a little over 11. In being sadly disappointed with what might be expected from this remedy, I am not alone, for several have communicated the fact to me that some of their worst cases were those to whom the



drug had been administered, and Dr. A. H. Foster, in concluding a very full and complete report, says: "I have no confidence in prophylaxis—have seen the sulpho carbolate impair the health, weaken the appetite, etc., etc." In concluding my remarks on sulpho carbolate of sodium, I can only say, that from all the information I can gather, the continuous administration of the drug not only lessens the power of a system to resist prostrating disease, but is absolutely worthless as a preventive of Scarlatina, and furnishes another pseudo phantasm for the people to delude themselves with, to the neglect of *complete, rigid and continuous* isolation.

In conclusion, I desire again to thank the gentlemen and ladies who answered my communication, and to tender especially my acknowledgements to the Boards of Health and Education, and the Sewerage Department of the Board of Public Works. I have had access to all these departments of the city government, and have obtained information without which my report could never have been written.

## ADDENDA.

AUGUST 1st, 1877.

The epidemic had continued to diminish in severity from February to May, when from causes I believe to be sufficient, and fully explained on page 12 of my report, it commenced to increase, and during the month of May the number of deaths from the disease numbered eight-two. This was not large, to be sure, but enough to increase the mortality, when there was every prospect of its diminishing. The death rate continued about the same during June, but in July we had a decided diminution, and at this date it seems that with the precaution which should still be exercised, no particular danger is to be apprehended.

MORTALITY BY MONTHS AND WARDS FROM TERMINATION OF REPORT TO DATE.

WARD.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	HOSPITAL.	TOTAL.
May.	1			4	7	14	9	3	3		2	6	8	6	9	3	2	3	2	82
June.	2			3	8	7	7	15		4	3	5	4	6	7	4	6		2	83
July.		2		2	12	8	4	7		5	3			6	5	3	2			57

The history of the epidemic during these three months has not been peculiar or different from the preceding eight months. The mortality has been greatest in those thickly settled wards,

where from the large number of children in families, isolation is impossible. In view of the great number of infected points, which there will be at the opening of schools next month, it is very desirable that some scheme should be inaugurated by the Board of Health, with which physicians of all schools shall be in sympathy, in order to prevent, if possible, a second epidemic. If the Common Council would allow the Health Commissioner to exercise some discretionary power in regard to placing the scarlet fever card, I believe a larger number of physicians would report their cases. The number of each infected house should be published daily in the papers, and thus give warning to any who might contemplate visiting with children, any particular infected quarter. In addition let the public be frequently advised of the danger which attends exposure to the contagion and the comparative safety of isolation. And finally, can not some influence persuade both medical and non medical men and women, to cease publishing their own *peculiar* and *absolute prophylactic*. Every article advocating the use of any such remedy produces erroneous impressions among the people, and diverts their attention from *isolation*, which it is needless for me to say at this time, I consider the *sine qua non* in the control of Scarlatina.





