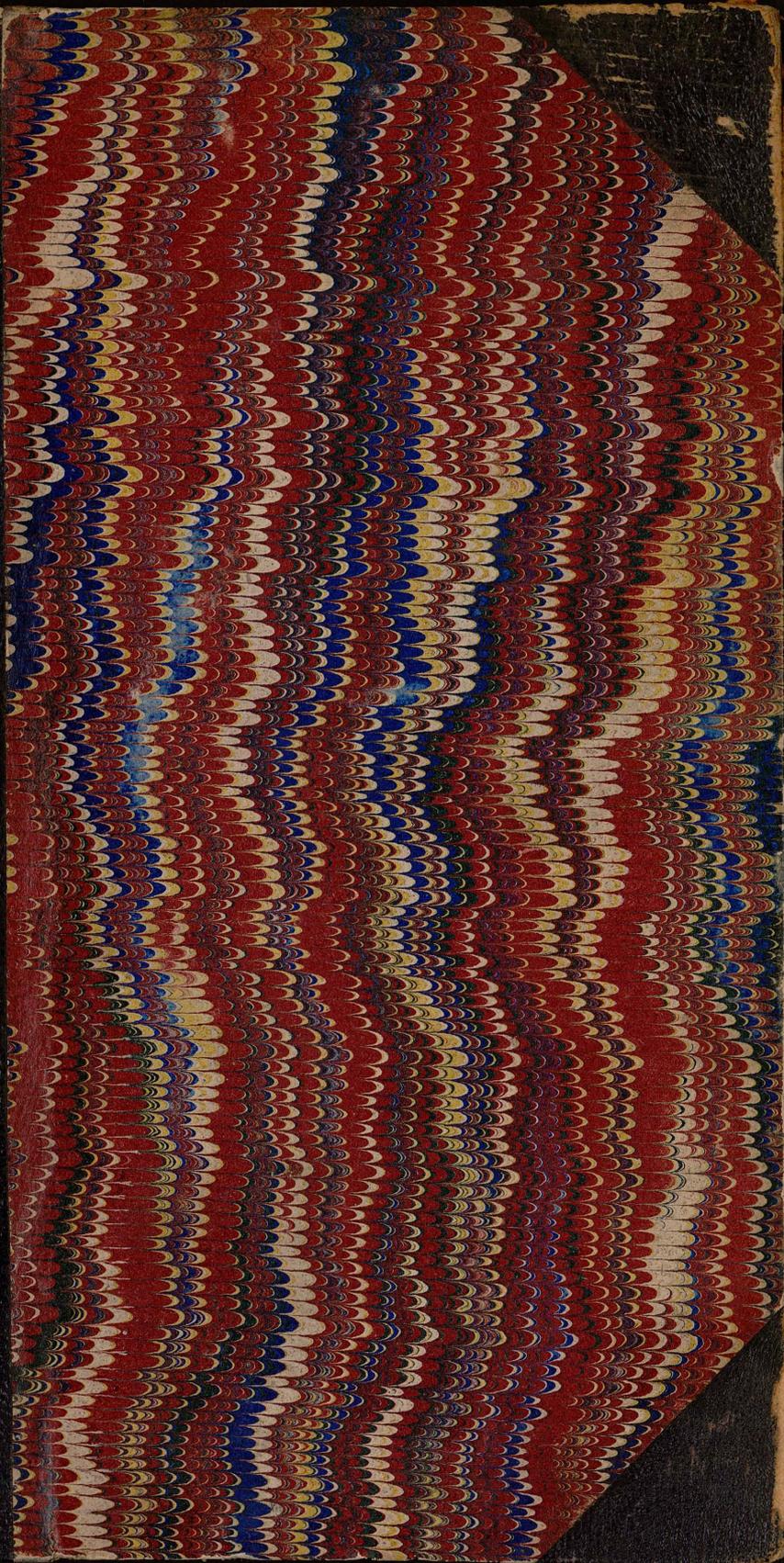


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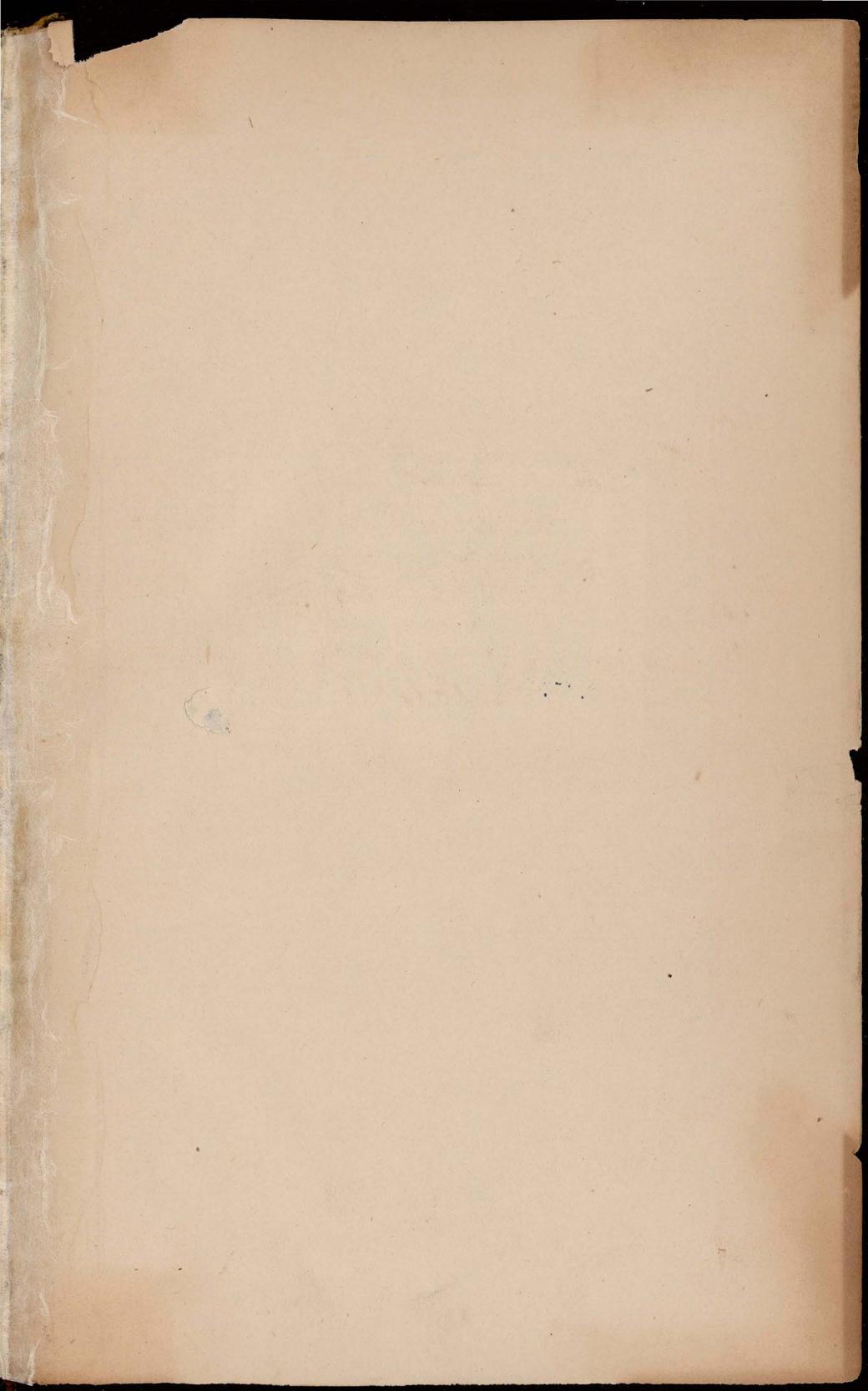
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ANNEX

No. *18451*



HISTORY AND OBSERVATIONS

ON

ASIATIC CHOLERA IN BROOKLYN, N. Y.,

IN 1854.

BY JOSEPH C. HUTCHISON, M. D.,

Late Physician to the Brooklyn Cholera Hospital, Member of the New York Pathological Society, etc.

[From the New York Journal of Medicine.]

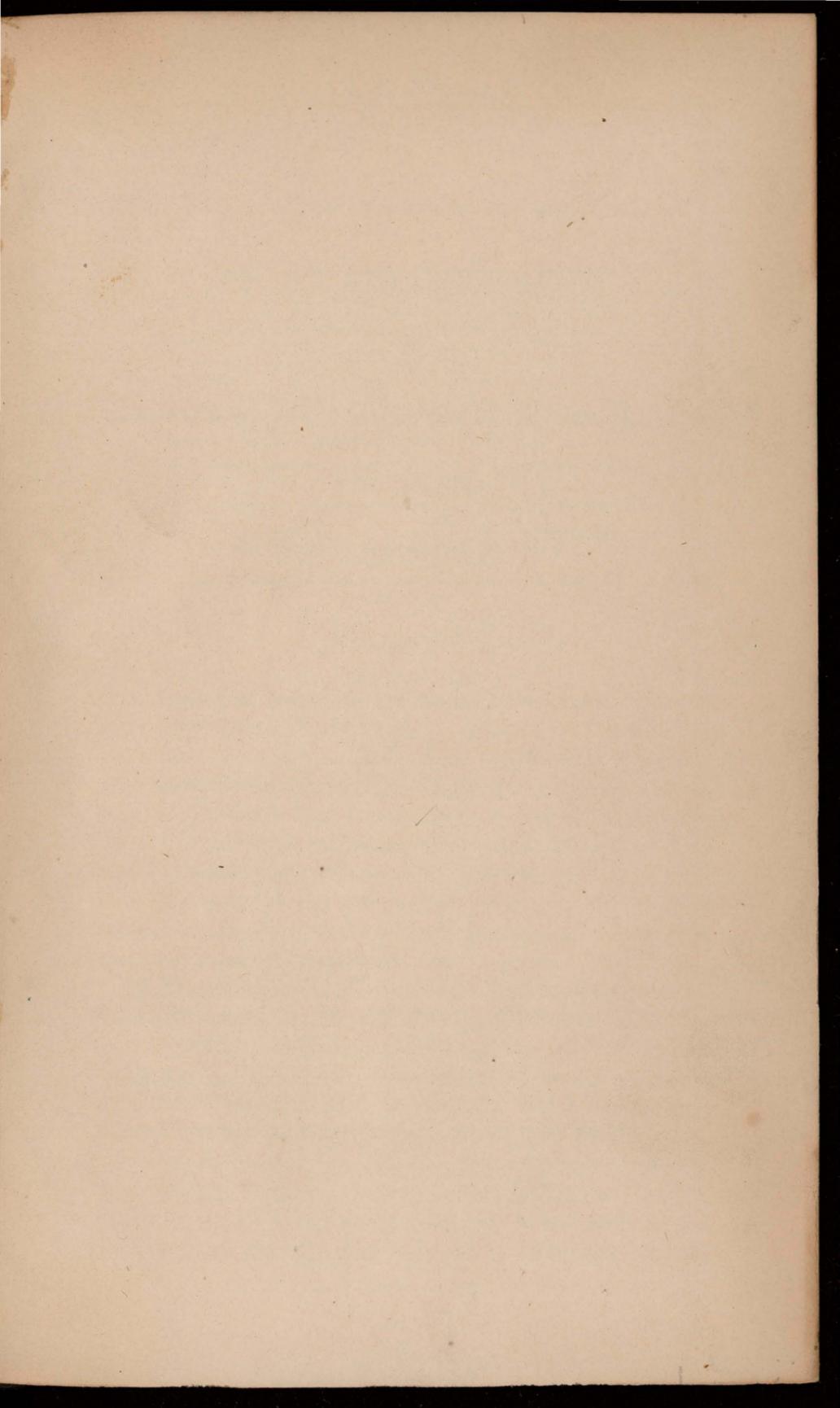
Joseph C. Hutchison

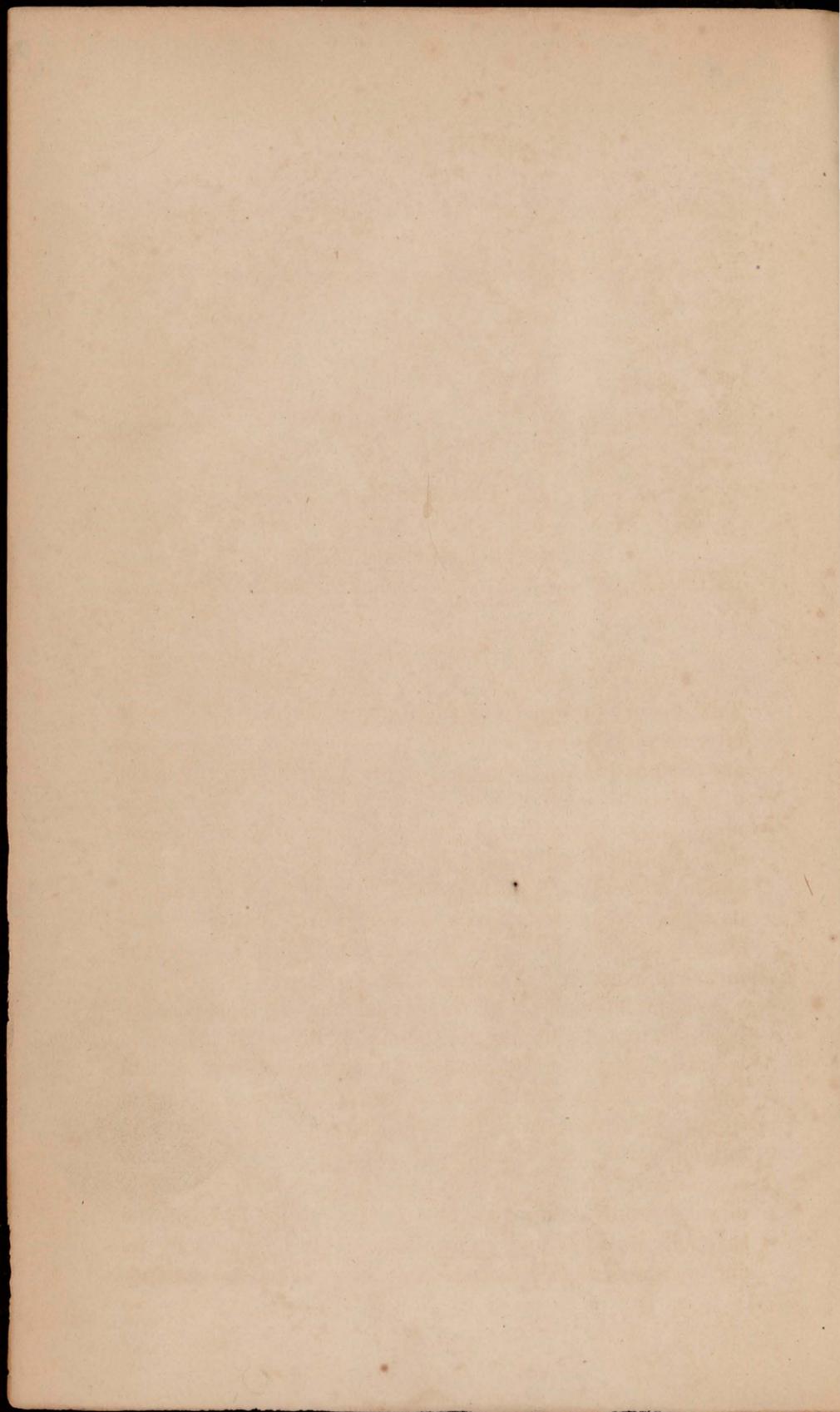
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HISTORY AND OBSERVATIONS

ON

Asiatic Cholera in Brooklyn, N. Y.,

IN 1854.

BY JOSEPH C. HUTCHISON, M. D.,

Late Physician to the Brooklyn Cholera Hospital, Member of the New York Pathological Society, etc.

THE history of every epidemic should be chronicled soon after its termination, whilst all the attendant circumstances are fresh and readily recalled. This is especially important of Cholera, which must still be regarded as a *terra incognita* in medicine, in order that it may be compared with like epidemics, which have existed or may exist at different periods and in different parts of the world, with the view of enabling us to comprehend the laws which control it, the circumstances which favor its development, and, consequently, the means of averting its ravages.

For the information of those who may be unacquainted with the topography, etc., of the city of Brooklyn, it may be well to remark, that it is situated upon the western end of Long Island, opposite the city of New York, and is separated from it by a strait called the East River, which is about one mile in width. Its length, from northeast to southwest, is six miles, its greatest breadth four. The general surface is elevated from seventy to eighty feet above the level of the sea, and its hilly and stony character is indicated by its ancient name, *Breuckland*, or *broken land*. It contains a popu-

lation estimated at 150,000; but since the addition of Williamsburgh and Bushwick, which has taken place since the close of the epidemic of which we write, the population amounts to 200,000, and its area has been greatly increased.

The present epidemic dates its commencement in New York during the last week in May, and it appeared in this city about the same time, May 29th.

The subject of the first case, which occurred here, was a respectable Irish female, aged 43 years, in comfortable circumstances, and of prudent habits, but residing in a filthy neighborhood, at 255 John street (5th ward). She had not been absent from home, nor had she been exposed, by direct contact, to the disease. The second case was reported June 3d, at 340 Atlantic street, (10th ward,) a comfortable and airy part of the city, and distant from the first about one and a half miles. The victim was a respectable gentleman, an agent for the Long Island Railroad Company, who was subject to disorders of the bowels, but had not, in any way, been exposed to Cholera. The third and fourth cases occurred on the 9th; one at 26 Water street (2d ward), and the other in Columbia street, near Kelsey's alley (6th ward). On the 11th four cases were reported; one in Willow street, near the 3d, and the others in the neighborhood of the corner of Water and Jay streets (5th ward). A number of other cases soon after occurred in this part of the city. The above cases all terminated fatally; they had no connection with each other, and, with the exception of the second, they occurred amongst the lower classes of foreign population inhabiting filthy localities along the borders of the East River.

As the history of the former epidemics of Cholera in Brooklyn has never been written, it has been thought that the following tables, exhibiting the weekly mortality, the number from each ward, with the ages and nativity, during the epidemics of 1832 and 1849, as well as of the present year, might prove interesting for the purposes of reference and comparison. The statistics have been obtained through the

It is thus seen that the atmospheric temperature, during the recent epidemic, was above the average for the last eight years. The excessive dryness of the season is also worthy of note. The spring months were very wet, 11.12 inches of rain having fallen in April, and 5.43 in May, according to Dr. Minor.

In the records of the Health Office, for 1849, the only fact which can be obtained, in relation to the ages of persons who died of Cholera, is, that 150 were children and 500 adults. From this we may infer that the chief mortality occurred, as usual, in the meridian of life.

1832.						1854.					
Ages of persons who died of Cholera.	Males and Females.		Per cent.	Ages of persons who died of Cholera.	Males and Females.		Per cent.	Ages of persons who died of Cholera.	Males and Females.		Per cent.
	Males	Females			Males	Females			Males	Females	
Under 10 yrs	44	16	06	From 50 to 60	21	7	56	Under 5 yrs	40	5	90
From 10 to 20	18	6	37	“ 60 to 70	16	5	84	From 5 to 10	28	3	83
“ 20 to 30	40	14	6	Over 70	11	4	01	“ 10 to 20	55	8	11
“ 30 to 40	78	28	46	Unknown	6	2	19	“ 20 to 30	144	21	38
“ 40 to 50	40	14	6					“ 30 to 40	172	25	37
Total					274			Total			678

The above tables coincide with what is usually observed of Cholera—that it selects for its victims more especially those who have attained to vigorous manhood.

The 11 wards in the following table represent the city of Brooklyn as it was before the consolidation of Williamsburgh and Bushwick with it, since which time the 6th ward has been divided and others added. It should also be remarked, that the table exhibiting the mortality in the different wards, in 1849, is not compiled from returns actually made to the Health Office, but is based on the number of cases furnished by the different wards to the Cholera Hospital, which, judging from the relation which exists between the number of cases sent from each ward to the hospital, and the total number of deaths in each ward for the present year, may be regarded as very nearly correct.

1832.		1849.				1854.			
No. of deaths in each Ward.		No. of deaths in each Ward.	Per cent.	No. of deaths in each Ward.	Per cent.	No. of deaths in each Ward.	Per cent.	No. of deaths in each Ward.	Per cent.
The village was not at this time divided into Wards. Most of the population resided in what is now known as the 1st, 2d, and 5th Wards, and the disease chiefly prevailed there.		1st W'd 140	21.53	8th W'd 12	1.84	1st W'd 11	1.62	8th W'd 36	5.30
		2d " 70	10.76	9th " 10	1.53	2d " 59	8.74	9th " 27	3.98
		3d " 10	1.53	10th " 90	13.77	3d " 8	1.17	10th " 42	6.19
		4th " 10	1.53	11th " 96	14.76	4th " 20	2.94	11th " 57	8.55
		5th " 30	4.59			5th " 103	1.19	Vessels in	
		6th " 175	26.92			6th " 234	34.49	Port .. 2	
		7th " 7	1.07			7th " 47	6.93	Unkn'n 32	
Total..... 274		Total..... 650				Total..... 678			

The value of the above table would have been very much increased, if we could have given, in addition, the area and the population of each ward, but this could not be obtained in time for the present purpose. It is well known, however, that the disease chiefly prevailed in the unhealthy localities along the water-front of the city, amongst a degraded class of population, who are closely packed in the ill-ventilated apartments of tenant-houses, or in shanties in the suburbs, with goats and pigs, inhaling noisome miasms instead of the pure air of heaven, and subsisting on food insufficient in quantity and of inferior quality.

The mortality in the 1st ward, in 1849, occurred principally in Furman street, which runs along the water-edge, at the base of the "Heights," and is inhabited by the lower classes.

1832.		1849.		1854.				
Nativity.	Per cent.	Nativity (of persons admitt. into the hospital).		Nativity.	Per cent.	Nativity.	Per cent.	
Unit. States	166	60.69	Unit. States	15	11.54	United States	135	20.00
Ireland	63	23.00	Ireland	100	76.92	Ireland	408	60.18
England	26	9.49	England	3	2.3	England	38	5.60
Scotland	4	1.46	France	1	0.77	Germany	31	4.57
France	2	0.72	Germany	10	7.69	Scotland	14	2.06
Germany	2	0.72	Unknown	1	0.77	Holland	4	0.59
West Indies	1	0.36			Prussia	4	0.59	
Brit. Possess.	1	0.36			Sweden	3	0.44	
Unknown	9	3.25			Brit. Possess.	3	0.44	
Total..... 274			Total..... 130			Total..... 678		

Notwithstanding the Board of Health adopted stringent measures to compel the prompt report of all cases of Cholera that occurred in the city, it is very well known that

many physicians, as during the former epidemics, reported only those cases that died or that they supposed would die. It is impossible, therefore, to ascertain accurately the whole number of cases that occurred.

The comparative extent of the disease, in '32, '49, and '54, is shown in the following table.

1832.			1849.			1854.		
Popu- lation.	Deaths.	Ratio of deaths to popula- tion.	Popu- lation.	Deaths.	Ratio of deaths to popula- tion.	Popu- lation.	Deaths.	Ratio of deaths to popula- tion.
17,000	274	1 in 62	90,000	650	1 in 138½	150,000	678	1 in 221½

After the above preliminary statistical details of interest in the general history of Cholera, I will recur to the particular facts relating to the recent epidemic.

The approach of Cholera this year was not heralded by the general appearance of mild affections of the bowels, which preceded for a short time the appearance of the former epidemics. Indeed, this fact was so obvious as to induce the impression generally amongst physicians, in the early part of the season, that the disease would not assume an epidemic character, and the necessity of opening a Cholera hospital was questioned by some. The allied diseases of the bowels increased nearly *pari passu* with Cholera, until it reached its climax, and gradually declined with it. In the latter respect it differed widely from the last epidemic. It was observed here, in 1849, as well as in New York, Boston, and Philadelphia, that the cognate diseases did not decline (as they had increased) in the same ratio with Cholera, and dysentery followed it in an epidemic form. (*See N. Y. Jour. of Med., Vol. III., p. 414, New Series.*)

It is often asserted that, when Cholera prevails as an epidemic, all kindred diseases are swallowed up by it; but this was not true in Brooklyn, as above stated; nor was it true in the other principal cities of this country, as will be seen by examining the valuable tables contained in the Journal just referred to. On the contrary, the other diseases of

the bowels were positively increased, under the influence, perhaps, of the same specific cause which produces Cholera. This is further shown by the following table, compiled from the valuable "Semi-Centennial Table of Mortality in New York," which has been lately issued from the Office of the City Inspector:

Disease.	First Period.			Second Period.			Third Period.	
	1831.	1832.	1833.	1848.	1849.	1850.	1853.	1854.
							First 11 months.	
Cholera -----	---	5513	---	2	5071	57	21	
Diarrhoea -----	142	104	55	432	783	437	652	
Dysentery -----	156	136	87	739	1256	792	742	
Cholera Morbus..	---	93	10	43	241	44	71	
Cholera Infantum	172	334	129	505	926	713	916	

CHOLERA IN THE HOSPITAL IN 1854.

On the 26th of June a Cholera hospital was opened in Lafayette avenue, and its medical department placed under the supervision of the writer. It was closed September 30th. During this period 170 persons were admitted: in June, 7; in July, 83; in August, 56; in September, 24.

The following table exhibits the condition of the patients on admission, the number died and discharged, and the percentage:

Condition when admitted.	Admitted.		Died.		Discharged.		Total.			Per centage.	
	Male.	Female.	Male.	Female.	Males.	Female.	Admit.	Died.	Disch.	Died.	Disch.
	First Stage -----	8	10	--	--	8	10	18	--	18	-----
Partial Collapse ..	10	7	1	--	9	7	17	1	16	5-88	94-12
Complete Collapse	45	55	37	45	8	10	100	82	18	82-00	18-00
Consecutive Stage.	6	3	2	3	4	--	9	5	4	55-55	44-44
Other diseases ----	16	10	5	4	11	6	26	9	17	34-61	65-39
	85	85	45	52	40	33	170	97	73	57-06	42-94

Of the 82 deaths occurring amongst those admitted in complete collapse, 23, or 28 per cent. reacted and died of consecutive diseases, which are analyzed in the following table:

Persons admitted in complete collapse.	Per cent.	Persons admitted in complete collapse.	Per cent.
Died in collapse.....	59	Died with dysentery	5
“ “ with congestion of brain..	10	“ “ other diseases.....	4
“ “ consecutive fever.....	4		
		Total.....	82

A majority of the cases put down as having died from congestion of the brain, also had prolonged suppression of urine, and it is not improbable that the affection of the brain was owing, to some extent at least, to the poisonous influence of urea. The dysenteric affection was of a peculiar character. The evacuations consisted, in many cases, of almost pure blood, which had a bright, fresh appearance, and was discharged without the tormina and tenesmus which usually attend the disease. This affection was most prevalent toward the close, whilst consecutive congestion of the brain was chiefly confined to the early part of the epidemic.

It is proper to remark that cases admitted with diarrhœa, which might have terminated in Cholera if they had not been treated, are included under the head of other diseases; and those admitted in *articulo mortis*, amounting to a considerable number, are put under the head of complete collapse. The small per centage of deaths amongst those admitted before extreme collapse was reached, amounting to 1 in 35 cases of well-marked Cholera, or 5.88 per cent., strikingly illustrates the importance of early treatment.

The great number admitted in complete collapse is owing, in some degree, to the distance that many were brought; a large proportion coming from a remote section of the 6th ward, having left home, perhaps, in a condition that was curable, if they could have had suitable medical attention and proper hygienic influences surrounding them. The jolting over rough pavements whilst laboring under a formidable disease, in which the utmost quietude should be observed, contributed materially to increase its intensity. Most of those admitted with consecutive and other diseases were in a condition by no means favorable for their recovery.

SYMPTOMS AND PHENOMENA.

Without entering into a detail of the symptoms presented by the Cholera of 1854, in this city, which, in its general character, coincides with the usual descriptions of the disease, it may be well to call attention to such observations as are deemed of particular interest.

Evacuations.—In about one-fourth of the cases in which vomiting was noted, there was discharged a greenish fluid, resembling a solution of sulphate of iron. It was sometimes acid, and at other times neutral, and in no case examined was the presence of bile indicated by the usual tests. It was observed in 21 cases, of which 15 were females, and 3 died, 6 were males, of which 2 died. In all cases that vomited the character of fluid in question, the emesis was obstinate and prolonged, continuing in some cases almost incessantly for two or three days. The discharges from the bowels were usually of the rice-water character; but in 36 cases out of 93, in which it was particularly noted, the dejections were of a thin yellow or mahogany color, and such cases were much the most likely to terminate fatally. Not the slightest trace of albumen was indicated, by heat, nitric acid, or ferrocyanide of potassium, in any discharge examined; fibrine was also absent, and instead of being invariably alkaline, as is often asserted, they gave, in many instances, a decidedly acid reaction. An abundant precipitate of chloride of sodium was thrown down by nitrate of silver, which was redissolved by the addition of ammonia.

Contraction of the Pupils was observed in a large number of cases, and was regarded as a sufficient reason for an unfavorable prognosis, although the other symptoms may not have been very alarming. It was observed often, independently of any other evidence of cerebro-spinal disorder.

Cramps were present, more or less, in a great majority of cases, but they were less violent and persistent than in 1849. Indeed, in no instance were they so excruciating and prolonged, as was frequently seen from the very commencement of the evacuations, in an epidemic at that time witnessed by the writer in the Mississippi valley—an epidemic, I may remark *en passant*, which has been rarely equaled and never exceeded in malignity by any that has prevailed on this Continent; 9.2 per cent. of the population within its range having fallen victims to its ravages.*

* See Report on Cholera by the writer—*St. Louis Med. and Surg. Journal*, Nov., 1853.

The Mammary Secretion formed an exception to the general suppression of the secretions; this was also observed by Dr. Buel, in the epidemic of 1849. Two females with nursing infants were brought to the Hospital, one of which supplied her child with nourishment, until she was so prostrated with the disease that she could no longer attend to it; in the other case, the infant was removed from the mother soon after admission, and particular attention was necessary in order to prevent the development of a mammary abscess.

Copious Diaphoresis occurred in only 8 cases. Singultus was noted in 4 cases, all of which recovered; and the catamenia appeared in 3 cases as soon as convalescence began—in one for the first time.

Hour of Attack and Death.—The hour of attack was ascertained in 79 cases, and the exact hour of death noted in 73 cases, as seen in the following table. The hour of attack given is the period assigned by each individual at the commencement of his illness, and may not, therefore, be strictly correct; for certain individuals, unwilling to believe they were suffering from Cholera, might date the period of attack some time subsequent to the actual invasion. And for the same reason, the duration of the disease may not have been accurately ascertained.

Hour of attack...	A. M.												Total.	P. M.												Total.
	1	2	3	4	5	6	7	8	9	10	11	12		1	2	3	4	5	6	7	8	9	10	11	12	
No of pers's.	2	4	2	2	9	5	1	7	5	4	3	11	55	1	5	3	2	2	1	0	3	4	2	1	24	
Hour of death....	1	2	3	4	5	6	7	8	9	10	11	12	Total.	1	2	3	4	5	6	7	8	9	10	11	12	Total.
No of pers's.	1	2	4	2	2	1	0	3	2	3	3	4	27	2	2	8	2	5	5	5	5	3	5	2	2	46

The duration of the disease was ascertained in 94 cases. In 41 cases, not fatal, the average duration was 54.83 hours; the shortest 16 hours and the longest 14 days. In 53 fatal cases, the average duration was 48 hours; the shortest 4 hours, the longest 17 days. The duration of the disease was influenced by the peculiar nature of the secondary affections, as well as the age and constitutional peculiarities of individuals.

Is Cholera contagious?

It does not comport with the purpose of this article to enter into a discussion of the question of contagion; in the present state of science it must remain undecided. It is sufficient to state here, that no striking evidence of personal communicability was observed in the recent epidemic. That Cholera cannot be communicated by *inoculation* would seem to be very well settled by the courageous experiments of certain French and Polish physicians, which consisted in tasting the effused liquids, and inoculating themselves with the blood of patients who subsequently died with the disease. Schmidt states that, within his own knowledge, a drunken man by mistake swallowed half a beer glass of the vomited matters, slept away his drunken fit, and remained well.* It is also well known that ineffectual attempts have been made to communicate the disease to the inferior animals, by injecting fresh Cholera blood and the rice-water fluid into their veins. The *portability* of Cholera is also very well established, by a large amount of evidence already familiar to the profession.

Is Cholera invariably preceded by Premonitory Diarrhœa?

In a pamphlet on this subject, recently issued from the London press by David Macloughlin, M. D., it is stated, as the result of an investigation into the previous state of health of 3,902 cases of Cholera in 1849, also a number of cases in 1848 and 1832, as well as in the epidemic of 1853-4, in London, "that in every case of Cholera, a diarrhœa for a *few hours*, or for a *few days*, or for a *few weeks* precedes and gives the patient warning that an attack of spasms, vomiting, etc.—that an attack of Cholera, in fact—is coming on." A similar opinion had been long entertained by many persons, and it is now becoming more general. Its correctness, however, with proper deference to the opinions of others, I must call in question. In the hospital the inquiry was always made, and in the case book it is recorded, in a number of instances,

* *Report on Cholera to the Royal College of Physicians*, p. 122. London: 1854.

that premonitory diarrhoea had not existed. This record was made on the statements of the patients or their friends, without having my attention very specially directed to the question; but after having seen the unconditional and unequivocal opinion expressed by Dr. Macloughlin, it occurred to me, that a more searching inquiry into those cases might have resulted in the confirmation of his views, and it was determined whenever, in any subsequent case, it was stated that there had been no premonitory diarrhoea, that every available source of information would be used to ascertain the facts. The result of the investigation shows that, in six unequivocal cases, premonitory diarrhoea did not exist. These cases are given below, with a synopsis of the leading symptoms, indicating that they all had Cholera.

CASE 1.—*Admitted September 1st, 1854.* Sarah Y., aged 33, attacked with vomiting and purging a “thin, watery fluid,” at 7 o’clock this morning, and cramps half an hour subsequently. She states that she felt perfectly well up to this time, and had no premonitory diarrhoea, which was further confirmed by the testimony of her husband. *Symptoms*—Vomiting and purging, excessive thirst, livid appearance of the face, thready pulse, skin cool and covered with a clammy perspiration, suppression of urine. Death in 27 hours.

CASE 2.—*Admitted September 2d, 1854.* Sarah J. Y., daughter of preceding patient, aged 8 years, attacked at 1 o’clock this morning, with severe vomiting and purging. By careful inquiry of herself and father, it cannot be ascertained that premonitory diarrhoea had existed. *Symptoms*—Vomiting and purging, intense thirst, cold and cyanic state of the skin, feeble circulation, husky voice, and suppression of urine—no cramps. Death in 66 hours, from congestion of the brain.

CASE 3.—*Admitted September 2d, 1854.* Julia R., aged 22, went to bed perfectly well last night, slept soundly, and was attacked with vomiting and purging a watery fluid, and cramps in the stomach at 6 o’clock this morning. *Symptoms*—Vomiting, purging, feeble voice and circulation, lower

extremities cold, blueness of the surface, and suppression of urine. When admitted, and after her recovery, she stated positively that she had had no liquid discharges before the hour above mentioned.

CASE 4.—*Admitted September 3d, 1854.* Thomas O., aged 44, went to bed last night, slept as well as usual, and was awakened at 5 this morning with an inclination to vomit and purge, which soon after commenced. Cramps were developed at 6. *Symptoms*—Vomiting and purging, intense thirst, voice whispering, skin cold, clammy, and corrugated on the fingers, cramps, partial suppression of urine. Death in 35 hours.

CASE 5.—*Admitted September 16th, 1854.* Ellen M., aged 29, went to bed well last night, slept soundly, and arose, feeling as well as usual this morning. At 8 o'clock, violent vomiting and purging came on, and cramps at 9. On careful and minute inquiry, no evidence could be elicited that previous diarrhoea had existed. *Symptoms*—Vomiting, purging, thirst, skin cold and blue, suppression of urine. Death in 25 hours.

CASE 6.—*Admitted September 22d, 1854.* Margarett M., aged 36, having felt and slept well the preceding night, was attacked with vomiting and purging at 5 yesterday morning, and cramps at 6. She was carefully interrogated when admitted, and again after her recovery, but no evidence that she had liquid discharges prior to the onset of Cholera could be elicited. *Symptoms*—Vomiting and purging of rice-water fluid, thirst, feeble voice, skin cool, suppression of urine, cramps.

The sudden development in the above cases of severe vomiting and purging, and in one case (No. 3) cramps in the stomach also, followed by the more characteristic algide symptoms, afford unmistakable evidence that they were struck down, from perfect health, at once, by Cholera. The patients not only felt well, slept well, and ate as usual, but, on the most careful inquiry, it was ascertained that nothing like a diarrhoea—no liquid discharges had preceded the severe

attack. In two instances (Nos. 1 and 2), we have the additional evidence of the husband and father, and in Cases 3 and 6 of the patients again after recovery; and surely they could have had no motive for deceiving.

The writer has examined the pamphlet of Dr. Macloughlin, repeatedly, and with much care, in order that his views might be fairly presented, and the impression has been left, that he regards no case as Cholera until spasms commence, and certainly not until vomiting is developed. If this be his interpretation of Cholera, premonitory symptoms are certainly rarely absent; and even admitting his definition to be correct, we have an exception to this *invariable rule*, in Case 3, in which vomiting, purging, and *cramps* were developed simultaneously without any warning diarrhoea. But I imagine there are few physicians, who have seen much of Cholera, that have not occasionally met with cases in which spasms and even vomiting were absent during the whole course of the disease. Abundant evidence from generally recognised authorities might be adduced, in proof of this statement, if it was deemed necessary.

POST-MORTEM APPEARANCES.

One of the most astonishing phenomena presented by Cholera, which has been strongly attested by various writers, is the rise of animal heat that takes place soon after death. It is, however, not peculiar to Cholera. Cruveilhier observed a rise of temperature after death from asphyxia; *Anatomic Pathologique, livre 16me, p. 35*: similar observations were made by Dr. Dowler, in a Yellow Fever; *Experimental Researches, &c.*, New York, 1846: and Briquet and Mignet observed the same in peritonitis, pneumonia, &c.*

The following table contains a record of observations made by the writer, of the rise of temperature after death from Cholera, as indicated by the thermometer.

* *Report on the Morbid Anatomy of Cholera, to the Royal College of Physicians,* p. 7. London: 1854.

Case.	Age.	Sex.	Time of observation before death	Temperature.		Time of death.	Time of observation after death.	Temperature.		Remarks.
				Body.	Atmosphere.			Body.	Atmosphere.	
1 33	Male	9 h. A. M.	Very decided coldness of surface.	79°		2 h. 30 m. P. M.	8 h. P. M.	Axilla, 90° Perineum, 93° Over the heart, 90° Toes, 83° Fingers, 85°	74°	Rigor mortis well marked.
2 18	Female	July 6th, 10 h. 30 m. P. M.	Axilla, 92° Calf of leg, 87° Side of abdomen, 49° Vulva, 49° Mouth, 78°	80°		July 7th, 1 h. P. M.	5 h. 30 m. P. M.	Side of chest 94°	85°	
3 34	Female	July 9th, 11 h. P. M.	Coldness very marked	73°		July 10th, 8 h. P. M.	8 h. 30 m. P. M.	Mouth, 81° Axilla, 81° Vagina, 91° Lower extremities 72°	75°	
4 45	Female	July 27th, 4 h. P. M.	Hand, 80° Foot, 83° Side of chest 100°	84°		July 28th, 6 h. 30 m. A. M.	8 h. 30 m. P. M.	Hand, 83° Foot, 78½° Side of abdomen, 88°	74°	Rigor mortis well marked.
5 36	Female	10 h. A. M.	Surface quite cold.	80°		7 h. P. M.	10 h. P. M.	Pelvic Cavity, 104°	74°	
6 30	Female	11 h. 30 m. A. M.	Coldness very decided	86°		3 h. P. M.	4 h. P. M. 9 h. P. M.	Axilla, 104° Pelvic Cavity, 107°	87° 80°	

It is usually stated that the warmth vanishes when cadaveric rigidity commences, but this was not true in all cases, as is seen in the above table; the rigidity lasts also for a long time. The cause of this remarkable phenomenon has not been satisfactorily explained.

Muscular contractions.—The well known automatic movements of the body which take place after death, were noted in four cases; in one of which it is known that there had been no spasms during the six hours he was in the hospital, and probably for a much longer time. The movements of the hands and feet continued, in one case, for an hour after life was, to all appearance, extinct, and greatly alarmed the friends of the patient, who were unwilling to believe that he was yet dead.

The whole number of autopsies amounted to about twenty, but only five, that were complete, were recorded,

two of which died in collapse, and three from consecutive diseases. There were three males and two females, the youngest 22 and the oldest 45. I am indebted to Dr. Louis Bauer, of this city, for valuable assistance in conducting some of the autopsies.

External appearances.—The skin, in all cases, was more or less livid, but this was more marked in those that died in collapse. *Rigor mortis* well marked—when death occurred in the algide stage, excessive.

Head.—*Sinuses* and *membranes* of the brain preternaturally loaded with fluid blood, and there was more or less sub-arachnoid effusion of clear or reddish fluid; in one case—death from consecutive gastro-enterite—after four days' duration of severe symptoms, the arachnoid, where it passes over the sulci, was raised by air, which escaped when the membrane was punctured. The ventricles contained an unusual quantity of fluid, less in those that died in collapse, sometimes clear, and at other times bloody. The *substance of the brain*, both medullary and cortical, was softened in one case, in which the duration of severe symptoms was twenty-five hours, and death occurred, with symptoms of cerebral congestion, after partial reaction. In the remaining cases, it was normal in vascularity and consistency.

The *lungs* were engorged with dark fluid blood, in a majority of cases, especially at their lower and posterior part. In one case, the congestion, although considerable, did not exist in a corresponding degree in the other organs. In two cases the lungs were collapsed, and in some cases the surface presented spots of ecchymosis.

The *pericardium*, in three cases, contained a drachm or two of serous fluid, which was, in one case, tinged with blood; its surface was covered with a sticky fluid, in another. The *substance of the heart* was flaccid in two, and firm in three cases, and it was engorged, in common with other organs. In one case—death in collapse—the right cavities and the left ventricle were excessively distended with fluid

blood, as black as ink. This was the case in which the congestion of the lungs was not so marked as in other cases. In three cases, one of which died in collapse, fibrinous clots were found in the right cavities, with a few fragments of fibrine in the left ventricle of one subject, and a large quantity of dark fluid blood in all the cavities. In one case, the ventricles contained a small quantity of dark fluid blood, with some soft coagula.

The *liver*, in two cases, was greatly enlarged, its left lobe extending into the left hypochondrium. It was normal in two cases, and in one case its surface and substance was unusually pale.

The *gall bladder* was distended, in three cases, with dark green bile, in one case, with a pale green fluid, and in the subject which had so pale a liver, it was distended with two gall-stones, composed of cholesterine, with a nucleus of inspissated bile.

The *stomach*, in one case fatal in the algide stage, was perfectly healthy. In three cases, the mucous membrane was ecchymosed in large spots, thickened, and, in one case, softened, near the pylorus. In one case, death from consecutive gastro-enterite, the capillaries were highly injected, especially towards the pylorus, giving the whole surface a bright red appearance.

Small intestines.—In one case fatal in the cold stage, the mucous membrane of the jejunum and ileum was highly injected, and of a bright red color throughout its whole extent. It was normal in two cases, one of which died in the cold stage, and marked with spots of ecchymosis in another. In a case of consecutive gastro-enteritis, the whole mucous membrane was highly injected of a bright red color.

The mucous membrane of the *large intestines* was healthy in one case, marked by ecchymosed spots in three cases, and in one case in which death occurred in collapse, it was thickened and ecchymosed in the sigmoid flexure and descending colon.

Peyer's glands were enlarged in two cases, in one of which death had occurred in the cold stage. *Mesenteric glands* enlarged and hyperæmic in one case.

The *spleen* and *pancreas* were usually not altered.

The *kidneys*, with the exception of the engorgement common to other organs, were healthy in four cases. In one case, a fluid resembling pus, was observed to issue from the calices when exposed.

The *bladder* was filled with urine in one case that died of consecutive fever, empty and contracted in four cases; and in all the examinations that were made, it is distinctly remembered that the bladder was contracted and empty when death occurred in the cold stage.

The *peritoneum* was usually drier than natural, and covered, in some cases, with an adhesive fluid. In one case it is recorded, and in several others it is distinctly remembered, that the peritoneal surface of the alimentary canal presented a very pale, almost blanched appearance—a condition which has been faithfully represented by Pirogoff, in his *Anatomie Pathologique du Cholera Morbus*, Tab. 1. Atlas. St. Petersburg, 1849.

The condition of the *female sexual organs* was recorded in twelve cases. In five cases there was ulceration surrounding the os, with a bright red or dark and roughened appearance of the mucous membrane lining the cervix, body, and fundus uteri. Sometimes the lining membrane presented the appearance of having been macerated in water. In three cases, a tenacious, bloody mucus issued from the os, and also covered the internal surface of the uterus, from which it was with difficulty removed. In three cases, the canal of the cervix was marked by longitudinal fibres, the *arbor vite* being entirely obliterated. The *ovula Nabothi* were frequently found distended with a pearly fluid. The ovaries often contained watery cysts, and the Graafian vesicles were sometimes filled with blood. The vagina presented an ecchymosed appearance, and, in two cases, it was extensively ulcerated.

Physical condition of the blood.—In all cases the blood was tenacious, of a dark color, with little disposition to coagulate in the arteries as well as veins. In one case, death in cold stage, the blood was as black as ink, and no coagula were found in the body; in three cases, one of which died in collapse, fibrinous coagula were observed in the heart. On exposure to the oxygen of the air, the blood gradually assumed a brighter hue, but more slowly and less deeply than normal blood: it did not coagulate spontaneously out of the body.

Such is a rapid survey of the leading facts connected with the *post mortem* examinations of Cholera; few of them can be regarded as characteristic, or as necessary consequences of the disease. All observers admit that the most constant pathological condition is the lesion of the blood, which, as we have seen, is dark and fluid and less coagulable than in other diseases.

In a recent discussion at the N. Y. Pathological Society, a distinguished professor expressed the opinion, that the characteristic lesion in Cholera was inflammation of the alimentary mucous membrane. In many cases it is true that the gastro-enteric mucous membrane is highly injected and presents an inflammatory appearance, but it is not marked by the sequellæ of inflammation. Moreover, the well known experiments of Magendie, instituted in 1832, which were repeated by M. Contour, in connection with Professor Siewruck of Moscow, have satisfactorily shown that the redness is not inflammatory, but is owing merely to a venous *stasis* of the blood. These experimenters found, by injecting water into the intestinal arteries, that the blood gave place to the injected fluid, and the intestine became as clear and white as if it had never been discolored. This would not have been the case if the organic changes, which occur in inflammation, had been present. Another and fatal objection to the foregoing opinion is, that the alimentary mucous membrane is often found perfectly healthy when death occurs in the cold stage. This, it will be remembered, was

the case in one of the subjects examined by the writer. The intestinal glands also in some cases are perfectly healthy, and in others preternaturally developed. Did the limits of this article permit, it might be shown, that the phenomena of the disease during life do not point to inflammation as the pathological lesion, except as an accidental complication.

TREATMENT.—The most valuable experience derived from the observation of the recent epidemic is, that Cholera patients should be disturbed by remedies as little as possible. And whenever, in any case, we are at a loss to know what treatment to adopt, or if we find the patient growing worse under the influence of remedies that we think best adapted to the case, the better plan is to rely on the *vis medicatrix natura*. This I have repeatedly done with much satisfaction; patients in the deepest collapse having reacted without any treatment—in one case without even ice, beef-tea, or external applications.

Whenever, in any stage of the disease, nausea or vomiting was present, an emetic dose of common salt was first administered, and repeated, if necessary, until vigorous emesis was produced, differing from the vomiting of Cholera, which resembles more a simple regurgitation, attended with little or no effort. Undigested food was frequently discharged, which had remained in the stomach sometimes for 24 hours, notwithstanding the Cholera vomiting had persisted during the whole time. The operation of the emetic usually relieved the vomiting, and when it failed, all other remedies commonly used for the purpose, including large doses of calomel, creosote, aromatics, effervescing draught, narcotics and external applications, were equally inefficient.

When the vomiting proved obstinate, nothing but lumps of ice and teaspoonful doses of beef-tea were allowed, and frequently even these were withdrawn, and the patient permitted to remain unmolested by any kind of treatment, for 12, 15, or 20 hours, with the most satisfactory results, even when there was great depression of the circulation, the skin cold and cyanosed, and the rice-water purging con-

tinuing. Indeed, whenever vomiting was a marked symptom, a favorable termination was anticipated. After the operation of the emetic, one grain doses of calomel were given every hour, sprinkled on the back of the tongue and washed down with water; the discharges, especially when of the rice-water character, would gradually become less frequent, and bilious matter usually appear in them in 12 or 15 hours. Small doses of calomel were used, because they answered the purpose without the disturbing effects which might arise from inordinate doses. Even the small doses of calomel were often followed by bilious diarrhœa, sometimes of a troublesome character, after the subsidence of the Cholera discharges; and it undoubtedly would have been a much more frequent and obstinate symptom, if larger doses had been used.

Ice and iced barley-water were sufficiently indicated by the intense thirst, and the obvious requirements of the system. The quantity was regulated by the condition of the stomach and the effects following their use. If vomiting was present, or if it seemed to be provoked by them, the quantity was diminished or entirely prohibited, as already stated.

Beef-tea was often used for keeping up the failing powers of the system, and supplying nourishment in a concentrated form. The quantity required will not disturb the stomach by its bulk.

An epispastic was usually applied over the abdomen, and rest in the horizontal position was always enjoined. Cramps, when mild, could be relieved by forcibly extending the contracted muscle, and when severe, which rarely occurred, they were promptly relieved by inhalations of chloric ether. The hot-air bath was regarded as a valuable adjuvant.

In the treatment of the consecutive diseases which so often followed recoveries from collapse, we were guided by the pathological indications as under other circumstances, bearing in mind the depressed condition of the vital powers.

Such is a summary of the treatment found most beneficial in the Brooklyn Cholera Hospital. It was varied, of course, according to the stage of the disease, constitutional peculiarities, etc. During the course of the epidemic, a great variety of remedies were prescribed. At first stimulants were freely given in collapsed cases, because they *seemed* to be indicated; but I soon became convinced that they were of no use, if not positively detrimental.

Saline injections into the veins was practiced in five cases, but with only transitory benefit. It should be remarked, however, that all the cases in which it was tried had been for some time in extreme collapse, so that the value of the treatment cannot be regarded as having been fairly tested. And I cannot resist the conviction, that a treatment which produces such decided temporary benefit, such as arousing the patient from a profound lethargy, so that he looks and speaks intelligibly, restoring the activity of the circulation, improving the color and warmth of the skin, and, indeed, his whole appearance, may yet prove of immense value. The operation is a delicate one, and there are many nice points connected with it to be considered; such as the best method of introducing the liquid, the proper composition, temperature, specific gravity, quantity, and rapidity with which it should be introduced. When all these points are settled by experiment, which it is hoped the want of success hitherto will not discourage, we may, peradventure, be enabled to save the lives of many patients who would otherwise die.

The injected fluid consisted of three drachms of chloride of sodium and one drachm of alcohol in a pint of water, of which two pints were introduced into the median basilic vein, at a temperature varying from 100° to 115° Fahrenheit, and repeated when the algide symptoms reappeared. In some cases the solution of salt alone was injected, but its beneficial effects were less obvious.

The following composition, given in Dr. Gull's valuable report,* was also used in some cases:

* *Reports on Epidemic Cholera to the Royal College of Physicians*, London, p. 214.

Chloride of Sodium,	60	parts by weight.
“ Potassium,	6	“ “
Phosphate of Soda,	3	“ “
Carbonate of Soda,	20	“ “

“ By dissolving 140 grains of this salt,” remarks the Doctor, “ in 40 fluid ounces of distilled water, and filtering, we obtain a fluid having a decidedly saline taste, a faintly alkaline reaction, and nearly approximative in its composition to the fluid effused, minus the organic substances. These are small in amount, and their loss has apparently no important influence on the constitution of the blood.”

Sulphuric acid, so highly recommended by Dr. Fuller, was prescribed, but without any benefit. Opiates and astringents were not used, because they had been fairly tested in the epidemic of 1849 with very unsatisfactory results, and were then abandoned with obvious benefit; and the results of the simple treatment given above sufficiently attest, that they cannot be considered as necessary in the treatment of Cholera. In no hospital in this country or elsewhere, so far as I am aware, where these remedies have been relied on, or any other, indeed, has there been so large a proportion of recoveries, considering the stage of the disease when treatment was commenced, as has been shown to have occurred here. They are used for the purpose of arresting the alimentary discharges, which are considered as the cause of the sudden prostration of vital power which occurs in Cholera. The observations of the writer have induced him to adopt different pathological views. Every practitioner of much experience must have observed, in severe cases of diarrhoea and cholera morbus which recover, much more copious discharges than occur in many fatal cases of Cholera; and he must have been struck with the rapid development of the algide and cyanic symptoms, after so small an amount of the discharges, which, in other diseases, would not excite a feeling of uneasiness for the safety of his patient. Whenever a patient was admitted into the Brooklyn Cholera Hospital with copious and frequent vomiting and purging, especially of the rice-water fluid, if the discharges were not involuntary, a favora-

ble termination usually occurred, and, *vice versa*; and instead of death being the consequence of such symptoms, the conclusion seems more rational, that they are a curative means adopted by Nature to eliminate the poison from the system. Instead, therefore, of arresting the discharges, it was deemed best to *let them stop*.

From the materials presented in the preceding pages, the following conclusions, with others, may be legitimately deduced:

1st. If we may draw a general inference from the observations made in the Hospital in this city, Cholera should be regarded as a much less fatal disease than it is usually conceded to be.

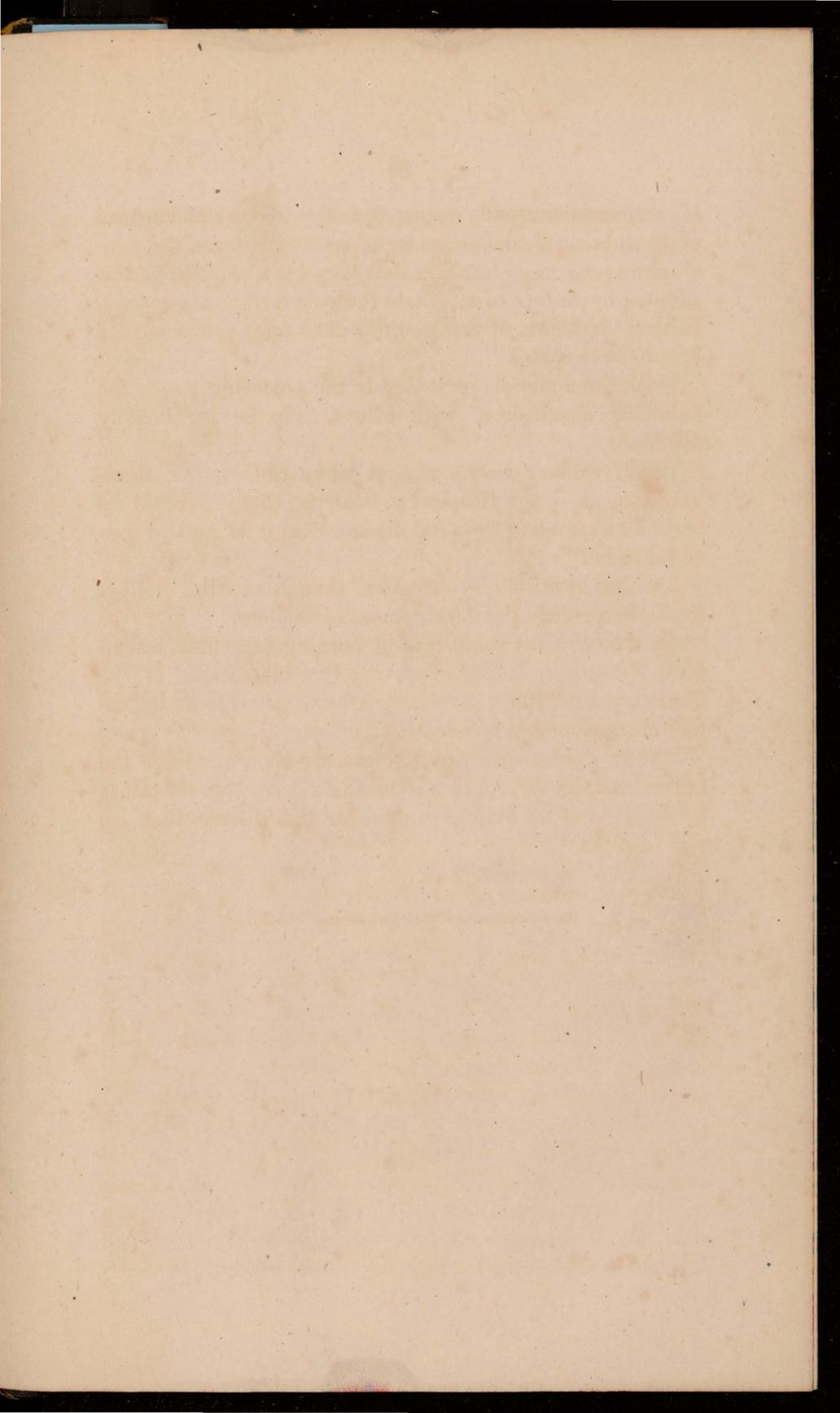
2d. That premonitory diarrhœa, though usually, *does not invariably* precede the development of Cholera.

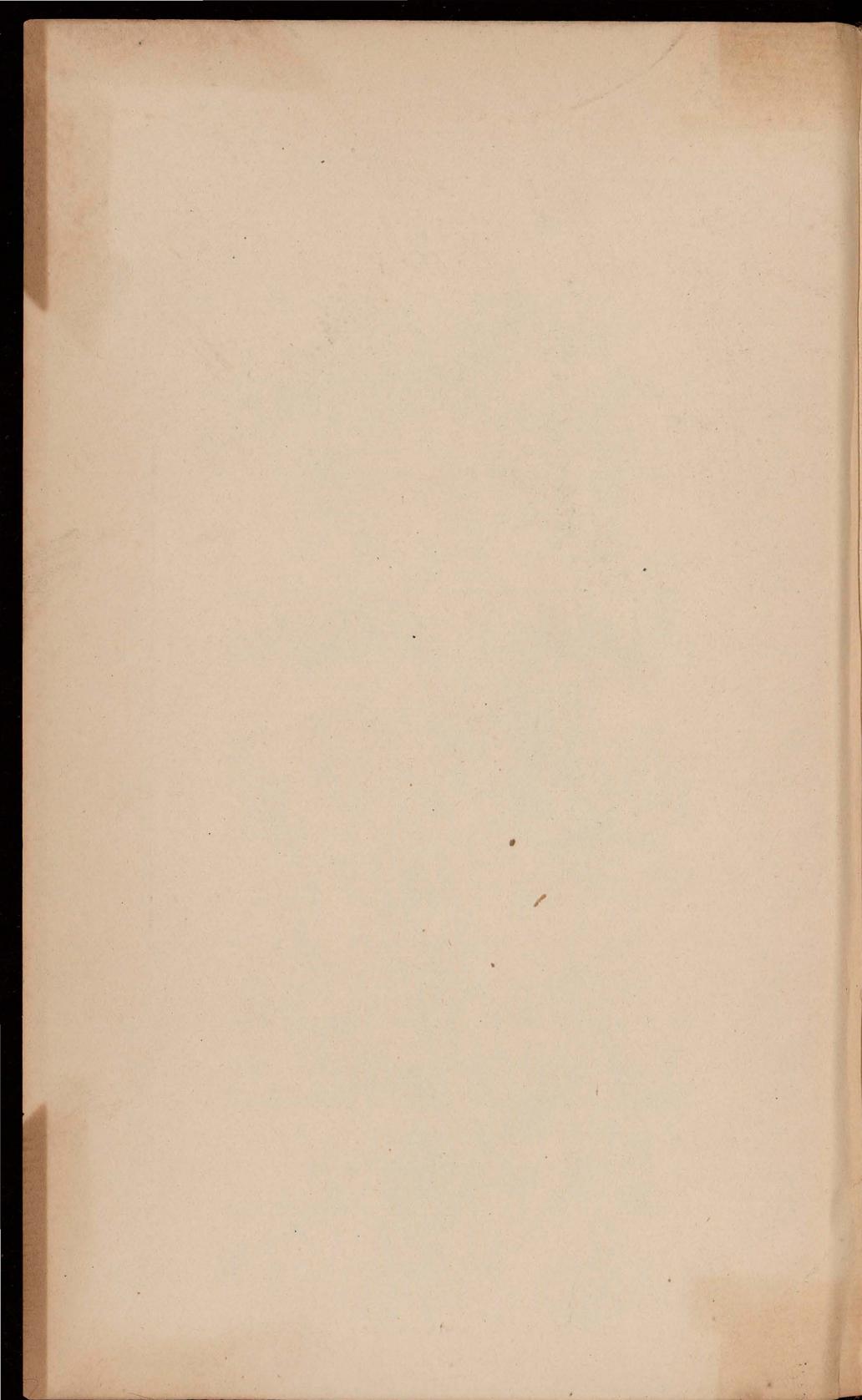
3d. The copious vomiting and purging of a fluid resembling rice-water, instead of constituting the essence of the disease, should, if not involuntary, be regarded as an indication of its favorable termination.

4th. In the treatment of Cholera, we should exhibit the highest respect for the *vis medicatrix nature*. I would rather be deprived of all other remedies, for this disease, than ice and beef-tea.

GREENE AVE., BROOKLYN, N. Y.

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Hutchison, Joseph, *History and observations on Asiatic cholera...*,
WC 264 H978h 1855

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