The restorative treatment of pneumonia / by John Hughes Bennett.

THE

RESTORATIVE TREATMENT

OF

PNEUMONIA

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BY

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I have issued this pamphlet with a view of bringing more prominently and more generally under the notice of my medical brethren the great practical importance of the questions concerned in the successful treatment of pneumonia by restoratives. It consists essentially of a table which appeared in the fourth edition of my "Principles and Practice of Medicine," published last April; of an extension of the statistical facts, and conclusions therein referred to; and a reply to the observations which several distinguished physicians have made on various points involved in the inquiry. I am induced to hope that its perusal will persuade hospital physicians and others to assist me in collecting carefully-taken cases of acute pneumonia, tabulated in the same manner as my own, whereby the advantages of the practice may be either confirmed or negatived by general experience. In this manner, it appears to me, might definitely be settled a long disputed and fundamental question in practical medicine.

J. HUGHES BENNETT.

EDINBURGH, *October* 1865.

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RESTORATIVE TREATMENT OF PNEUMONIA.

It must be admitted by every intelligent mind that the only proof of any successful medical practice must be the actual cures that are effected by it. But simple as this proposition may appear to the uninitiated, it is well known in medicine that nothing is more difficult than to establish the real curative power of any particular plan of treatment. If a disease can be proved to get well of itself—that is, if in the vast majority of cases it go through a certain progress and terminate favourably—one of two things may happen—1st, A considerable number of remedies, however opposite in their mode of action, may each be extolled as the means whereby the result is occasioned, although they may all be inert; the recovery, in truth, being entirely owing to the powers of nature: 2d, No remedies whatever may be given—the disease may be left to itself—when the question will arise, under what management or conditions does it disappear in the shortest time? Several diseases may now be considered as generally getting well of themselves, among which, uncomplicated delirium tremens, hooping-cough, and erysipelas, may be cited as examples.

There are other diseases, however, which have hitherto been considered very dangerous to life, and in which a number of fatal cases have always occurred, under whatever system of treatment they have been placed. Among these is pneumonia, which, from its frequency, from the violent symptoms it occasions, and from the anxiety it invariably creates, must

always command the attention alike of the public and of the medical practitioner.

With regard to this disease, long and careful observation, great accuracy in recording facts, and sufficient opportunity of observation, such as only a public hospital can furnish, are requisite to the satisfactory establishment of success in its treatment. Pneumonia has this advantage, however—viz. that its detection by the conjoined observation of functional symptoms and physical signs, is now rendered so certain, among skilled physicians, that the fallacies inherent in the diagnosis of many other affections are removed from it. On this account it has recently been made the subject of numerous observations in the public hospitals of this and other countries, and careful records have been drawn up of its progress and mortality, under different systems of treatment, so that discussion regarding it may be expected to yield more positive conclusions than those on any other disputed question in medicine. Under these circumstances, the results of my practice for the last sixteen years in the Royal Infirmary of Edinburgh appear to me worthy the attention of the profession; inasmuch, as while most satisfactory as to recovery, they are based upon a series of recorded facts, the accuracy of which will, I think, not be disputed.

The following Table includes all the cases of acute pneumonia which have been admitted into the Clinical Wards of the Royal Infirmary under my care from the 1st of October 1848 to the 31st of January 1865. During this period my term of service was at first four months in the year, and then, on alternate years, six months and three months. I find that, altogether, I have treated cases in the wards for 75 months, or a computed period of $6\frac{1}{4}$ years. The Table presents the leading facts presented by the cases, so as to enable the reader to judge of the effects of the treatment employed. The columns indicate—1st, The number of the case; 2d, The

name of the patient—D marks a double case, and Uns. an unsatisfactory one as to the duration of the disease; 3d, The age; 4th, The previous health, whether good, bad, or in any way particularly affected; 5th, The day of admission, counting from the rigor, which indicates the commencement of the disease; 6th, The duration of the disease, or the commencement of the convalescent state, counting in days from the period when the rigor occurred; 7th, The number of days in the hospital after admission, or, should the disease have commenced in the hospital, counting from the rigor; 8th, The frequency and character of the pulse on admission; 9th, The number and character of the respirations on admission; 10th, The side of the chest, and extent of pulmonary tissue involved; 11th, If complicated with other diseases it is marked by a X; 12th, The treatment; 13th, General remarks; and 14th, The volume and page where the case may still be found. It must be remembered that the cases were not recorded in reference to any statistical inquiry, but are those drawn up by my clerks in the Clinical Wards, at the bed-side, in obedience to long-established usage. They vary greatly, therefore, in value, and in a few the information on certain points required is defective. This is indicated in the Table by a note of interrogation.

The Table was commenced by my former able resident physician, Dr. Glen, whose early death, as medical superintendent in the Dundee Infirmary, in 1863, deprived the profession of a singularly well-informed and highly-educated physician. It was continued by Drs. Smart, Duckworth, and Macdonald, also my resident physicians in the Infirmary during the years 1863, 1864, and 1865, to whom I am greatly indebted for the pains they bestowed upon it. The fact that the table has been constructed and carefully revised, not only by myself, but by each of these four gentlemen in succession, affords the most convincing proof of the accuracy of its details.

TABULAR VIEW of all the Cases of ACUTE PNEUMONIA treated in the Clinical Wards of the Royal Infirmary by the Author, from 1st October 1848 to 31st January 1865, while on service for 75 months, or a computed period of 6 ¼ years.—Average number of Beds, 40.

MALE CASES.

No.	NAME.	AGE.	PREVIOUS HEALTH.	First seen after rigor. Days	Convalescence after rigor. Days	In Hospital. Days	PULSE. At commencement of Treatment.	Respirations at commencement of Treatment.	Extent, and Side involved.	COMPLICATED.	TREATMENT.	OBSERVATIONS.—As to Nature of the Case—Kind of Complication—Violence of Symptoms—Peculiarity of Physical Signs—Sequelæ, etc. etc.	REFERENCE TO RECORD IN HOSPITAL CASE BOOKS. WARD 1.
1	J. Aikencross	30	Winter cough for 3 years	8	16	32	92?	30, laboured	¾ lower R. S.		*Bled before admission*—amount not stated. Antimonials (1-16 gr. every 2d hour) Blister afterwards. Wine ℥vj, and nutrients.	A strong labourer, with slight pleurisy, and subject to cough in winter. After bleeding entered the house exhausted.	Vol. 2, p. 201.
2	B. King	40	Good	7	14	30	112, hard	Short	½ lower R. S.		*Bled to* ℥xij after admission by Clerk. Antimonials (1-8 gr. every hour). Afterwards blister. Nutrients.	Entered a week after attack. Was bled and antimonialised.	Vol. 3, p. 6.
3	J. Foreman	54	Good	3	8	17	100, full and strong	Dyspnœa	⅔ lower L. S.		Antimony 1 gr. every hour. Afterwards expectorant mixture, nutrients and porter.	A strong man—entered soon after attack. Not exhausted.	Vol. 4, p. 141.
4	J. Kell	40	Good	4	14	19	100, good strength	Hurried and short	½ lower L. S.		Antimony 1 gr. every two hours—then every hour. Afterwards opiates to procure sleep, and ℥iij of whisky daily.	A strong plethoric man, addicted to drink.	Vol. 4, p. 166.
5	J. M'Intyre	52	Good	14	21	30	80, good strength	Dyspnœa	⅓ lower L. S.		Antimony 1 gr. every hour—afterwards 1-16th gr. every fourth hour, combined with diuretics. Subsequently blisters.	Convalescence commenced soon after admission, but was prolonged.	Vol. 5, p. 119.
6	R. Hogg D 1	18	Weak	14	55	64	Natural	No dyspnœa	Both S. ?		*Bled, purged, blistered, etc., before admission.* Salines, wine ℥iv, nutrients. Astringents and opiates afterwards to check diarrhœa.	A weak young man, a teacher, treated antiphlogistically before admission, and convalescence further lengthened by supervening diarrhœa.	Vol. 5, p. 93.
7	F. Farrell	53	Good	2	23	25	100, full and hard	Dyspnœa	⅔ upper R. S.		½ gr. antimony every third hour; wine ℥iv; nutrients.	Disease at first existed in middle third of right lung, and subsequently extended to upper third.	Vol. 6, p. 129.
8	W. Hamilton	38	?	2	14	32	100, full	Easy	⅓ upper L. S.		*Cupped to* ℥viij. Antimony ¼ gr. every four hours; wine ℥vj. Blister. Quinine 1 gr. three times daily.	As pneumonia diminished, prolonged expiration and sibilant rale appeared at apex, convalescence lengthened.	Vol. 7, p. 111.
9	J. Conolly	19	Vigorous	8	14	34	90, full	?	½ lower R. S.		½ gr. antim. tart. every three hours. Nutrients. Rheumatic pains treated by aconite locally.	On the recovery of this case there supervened an attack of rheumatism, which prolonged his stay in the house.	Vol. 8, p. 174.

10	E. Lanon D 2	17	Vigorous	4	14	14	106, strong	Easy	⅔ lower L. S., ¼ lower R. S.		Salines; blister; nutrients.	A strong young labourer, with strong pulse and rapid recovery, though both lungs were affected.	Vol. 9, p. 41.
11	J. Kelly	40	Not good.	14	20	21	72, natural	Dyspnœa	⅔ lower R. S.		Salines; vin. colchici; nutrients.	A strong muscular-looking man, long subject to cough and rheumatism.	Vol. 9, p. 76.
12	J. Stewart	18	Vigorous	3	7	?	100, full and strong	Hurried	Whole of L. S.		*Bled to* ℥xij, *to relieve dyspnœa. Afterwards* 12 *leeches applied.* Salines; then nutrients and wine.	The bleeding relieved dyspnœa, but caused prolonged convalescence; the length of which is not stated.	Vol. 9, p. 186.
13	T. Monro	34	Weak and gouty	2	21	33	76, natural	?	½ lower R. S.		Pulv. opii gr. ss. every two hours. Nutrients, wine.	A debilitated man of gouty habit, treated with opium.	Vol. 11, p. 39.
14	H. M'Philips D 3	16	Good	4	12	34	100, strong	26, difficult	⅔ lower L. S., and ½ lower R. S.		Antimony ⅓ gr. every third hour, combined with 1-5 gr. of opium to relieve insomnolence and severe general pain.	This case was well 18 days before dismission, and the cause of his detention is not stated.	Vol. 14, p. 141.
15	D. Taylor	42	Winter cough for 22 years	4	14	24	100, full and strong	Dyspnœa	½ lower L. S.	X	¼ gr. of antimony and opium every third hour.	Complicated with bronchitis and emphysema.	Vol. 14, p. 153.
16	A. Millar	54	Good	2	7	7	100, small and soft	dyspnœa	½ lower L. S.		¼ gr. of antimony and opium every second hour.	A healthy man. Rapid recovery.	Vol. 14, p. 183.
17	W. Gray	17	Good	4	18	31	106, good strength	32, difficult	⅔ lower R. S.		⅛ gr., afterwards increased to ¼ gr., of antimony every third hour.	This patient was convalescent 14 days after admission, and the cause of his detention is not explained.	Vol. 17, p. 35.
18	S. MacDonald	25	Good	2	10	18	106, full	46, hurried	⅔ upper R. S.		1 gr. of antimony every two hours. Afterwards 8 leeches and a blister.	Detained in the hospital 6 days after complete recovery.	Vol. 18, p. 137.
19	J. Donaldson	26	Good	6	16	83	128, good strength	Hurried	½ lower R. S.	X	Salines; wine ℥viij, and nutrients.	Had recovered from the pneumonia 10 days after admission. Detained 73 days longer with continued fever.	Vol. 19, p. 21.
20	J. Scott	38	Ill four years	1	48	89	?	Dyspnœa	½ lower R. S.	X	Antimony ½ gr. every fourth hour. *Cupped to* ℥vi. Afterwards blister applied.	This was the fourth attack of pneumonia in four years. The former were treated antiphlogistically. Very slow convalescence with bronchitis.	Vol. 20. p. 168.
21	J. Leggat	19	Good	5	12	12	130, full	30, short	⅓ upper R. S.		¼ gr. antimony every hour; afterwards every second hour.	Vigorous young man. Rapid recovery.	Vol. 21, p. 36.
22	M. Mahon Uns. 1	12	Good	5	?	28	148, full and strong	56	Whole of L. S.		Antimony ⅛ gr. every three hours; afterwards nutrients.	A healthy boy, the date of whose convalescence, owing to absence of daily reports, could not be determined.	Vol. 21, p. 92.
23	J. Murray	53	Long cough	7	22	24	112, good strength	Dyspnœa	⅔ lower R. S.		Antimony ⅓ gr. every two hours. Blisters, diuretics, ℥ij wine, and nutrients.	Recovery delayed by chronic bronchitis.	Vol. 22, p. 135.
24	J. M'Naughton D 4	34	Bad	6	21	34	120, weak	44, difficult	⅔ lower on both sides		⅓ gr. of antimony every two hours. Diuretics, ℥vj wine, and nutrients.	A weak man of intemperate habits. Entered the house exhausted. Recovery delayed.	Vol. 22, p. 131.

No.	Name.	Age.	Previous Health.	First seen after Rigor. Days	Convalescence after Rigor. Days	In Hospital. Days	Pulse. At commencement of Treatment.	Respirations at commencement of Treatment.	Extent, and Side involved.	Complicated.	TREATMENT.	Observations.—As to Nature of the Case—Kind of Complication—Violence of Symptoms—Peculiarity of Physical Signs—Sequelæ, etc. etc.	Reference to Record in Hospital Case Books. Ward 1.
25	J. Shepherd	23	Very healthy	8	17	20	84 soft	24	⅔ lower L. S.		*Bled before admission to* ℥xx; and purged. ¼ gr. of antimony and ♏3 Sol. Mur. Morph. every second hour.	A vigorous young man in perfect health. The bleeding relieved dyspnœa, but protracted convalescence.	Vol. 22, p. 141.
26	P. Clarke	22	Rather impaired	7	14	8	104 strong	Dyspnœa	½ upper R. S.		¼ gr. of antimony every two hours; afterwards nutrients.	General health enfeebled by previous illness. He still made a good recovery.	Vol. 23, p. 1.
27	P. Convy D 5.	22	Cough for six weeks	5	16	23	112, soft	32	⅔ lower L. S., apex R. S.		¼ gr. antimony every four hours; diuretics; wine ℥iij, and nutrients.	Antimony caused diarrhœa and was discontinued. Detained a week after complete recovery.	Vol. 23, p. 104.
28	J. Proudfoot D 6	30	Cough for six weeks	4	21	49	100, full and strong	32, difficult	⅔ lower both sides		½ gr. of antimony every four hours. Wine and gin āā ℥iij, and nutrients.	A man long addicted to whisky-drinking, with impaired health. Convalescence tedious.	Vol. 23, p. 127.
29	C. Bangs	41	Rheumatic	2	13	37	80, good strength	?	Whole of R. S.		⅓ gr. of antimony every third hour. Expectorants; afterwards astringents to check diarrhœa.	An intemperate man, with chronic rheumatism. Detained in the house with persistent diarrhœa.	Vol. 24, p. 5.
30	R. Simpson	53	Good	8	13	15	?	Tranquil	½ lower R. S.		¼ gr. of antimony every three hours; afterwards stimulants and expectorants.	A simple case, in a healthy man, terminating in recovery on the 13th day.	Vol. 24, p. 166.
31	A. M'Naughton	27	Good	4	14	13	92, strong ?	24	½ lower L. S.		½ gr. of antimony, and ♏10 Sol. Mur. Morph. every four hours; blisters.	Natural progress of a simple pneumonia in a healthy man.	Vol. 25, p. 17.
32	J. M'Queir	19	Impaired	8	14	29	100, full	42, hurried	Whole of R. S.		*Bled twice before admission to* ℥xviii *each time;* antimony ½ gr., and subsequently ¼ gr., every three hours.	A dissipated youth with incipient phthisis. Convalescence retarded.	Vol. 26, p. 173.
33	R. Jude D 7	36	Good	9	14	23	96, weak	30	⅓ lower both sides		*Profusely salivated before admission.* Diuretics afterwards.	Recovery of appetite slow, and convalescence retarded.	Vol. 29, p. 135.
34	J. Cogans D 8	23	Good	4	18	38	92, strong	?	⅓ middle L. S., ⅔ lower R. S.	X	Salines; wine ℥ij, and nutrients.	Complicated with typhus fever, which prolonged convalescence.	Vol. 29. p. 161.
35	R. Macfarlane	20	Good	5	12	15	104, strong	24, easy	4-5ths lower R. S.		Salines; then diuretics with colchicum.	An ordinary case with good recovery.	Vol. 35, p. 2.
36	A. Bathgate D 9	23	Not good	7	18	33	120, full and hard	40	⅔ upper R. S., ½ upper L. S.		Salines; diuretics with colchicum; wine ℥iv, and nutrients.	A debilitated intemperate man. The pneumonia on L. S. came on 7 days after that on R. S.	Vol. 35, p. 37.

37	D. M'Phail	24	Weak	1	10	45	120, weak, then 128, hard and bounding.	36, catching	½ lower R. S.	X	Salines; blister; nutrients. Latterly quinine and cod-liver oil.	This case was one of pleurisy. Pneumonia came on in the ward on the 7th day. Convalescent on 17th day of pneumonia, but pleurisy continued.	Vol. 35, p. 192.
38	P. Robertson D 10	51	Robust	6	11	9	100, weak	40	⅔ lower R. S., ⅓ lower L. S.		Nutrients and stimulants; wine ℥iv; poultices to L. S. Quietude.	A strong man, with great dyspnœa and lividity of face threatening suffocation, which diminished in two days.	Vol. 32, p. 213.
39	S. Scougie	38	Good	8	20	24	95, weak	Dyspnœa	½ lower R. S.		*Bled to* ℥xviij. *Antimonial treatment before admission.* Afterwards wine ℥ij, then ℥iv, and nutrients.	The treatment before admission led to prostration and prolonged convalescence.	Ward 2, vol. 8, p. 16.
40	J. Adams	40	Somewhat intemperate	4	14	12	110 small and weak	Much dyspnœa	⅔ lower L. S.		Beef-tea; steak ℥vj; and wine ℥iij daily	In an attack at Glasgow 7 months before, was *bled*, mercurialized, etc., and recovered slowly, with great weakness. On this occasion recovered rapidly.	Ward 2, vol. 1, p. 20.
41	E. Sanders	20	Intemperate	4	11	16	108, small and weak	36, tranquil	⅔ lower L. S.		Salines, nutrients, and wine ℥iii.	A weak person.	Ward 1, vol. 39, p. 37.
42	Flannighan	18	Good	8	14	?	100, soft	?	Whole of R. S.		Salines, wine ℥iij, and nutrients.	This case now cannot be found—book missing.	
43	T. Doyley	40	Good	6	14	18	90, good strength	?	½ lower L. S.		Salines combined with diuretics; wine ℥iv, and nutrients.	A simple case.	Vol. 41, p. 11.
44	J. M'Farlane D 11	30	Long subject to cough, asthma, and occasional hæmoptysis	3	9	31	95, full and strong	40, difficult	⅔ lower of L. S. and ½ of R. S. apex.	X	At first, 1-16 gr. antim. tart. with ʒss sol. ammon. acet. every six hours. *Cupped on chest, and* ℥iv *of blood extracted* to relieve dyspnœa. Afterwards ℥iv of wine daily with nutrients. Rheumatism treated by alkalies internally.	A thin weak-looking man. Had chronic phthisis for ten years. All the pneumonic symptoms violent, and the physical signs well marked (*an exquisite case*), followed by acute rheumatism, which prolonged his residence in the house.	Vol. 41, p. 4.
45	Ed. Nugent	28	Good	1	5	7	98, weak	? laboured	¼ lower L. S.		Stimulants to relieve spasm and overcome collapse; then nutrients, and wine ℥iv daily.	A strong healthy-looking man. Seized with spasm of stomach and great weakness. Entered the house an hour afterwards. Rallied by rest and stimulants. On the third day pneumonia established. Rapid and complete recovery.	Vol. 40, p. 1.
46	J. Tait Uns. 2	47	Drunkard	?	?	53	72, small and weak	? great dyspnœa	½ lower L. S.		℥iv wine and ℥ij of whisky in 24 hours. Nutrients *ad lib.*	Detained in the house on account of chronic rheumatism and acute lichen.	Vol. 43, p. 169.
47	A. Robertson D 12	42	Weak for 15 months	14	19	24	112, weak	? dyspnœa	⅓ upper both sides		Diuretics; ℥iv wine, and nutrients.	Phthisical symptoms preceded attack, which disappeared.	Vol. 40, p. 68.
48	J. O'Donnel	14	Good	6	12	15	120, weak	48	½ upper R. S.		Wine ℥iv daily; liquid nutrients *ad lib.*; slight salines.	The pneumonia was at the apex, but recovered rapidly.	Vol. 40, p. 75.
49	R. Kay D 13	18	Good	6	11	13	100, full and strong	40	⅔ lower L. S., ⅓ lower R. S.		Salines; nutrients; wine ℥iv.	The pneumonia began and was most severe on the left side. There was a little pleurisy.	Vol. 42, p. 137.

No.	Name.	Age.	Previous Health.	First seen after Rigor. (Days)	Convalescence after Rigor. (Days)	In Hospital. (Days)	Pulse. At commencement of Treatment.	Respirations at commencement of Treatment.	Extent, and Side involved.	Complicated.	TREATMENT.	Observations.—As to Nature of the Case—Kind of Complication—Violence of Symptoms—Peculiarity of Physical Signs—Sequelæ, etc. etc.	Reference to Record in Hospital Case Books. Ward 1.
50	P. M'Shim D 14	56	Good	3	10	26	90, good strength	28, oppressed	⅔ lower both sides		Salines; strong beef-tea; wine ℥iv, afterwards increased to ℥viij.	Dismissal delayed, from want of shoes and clothes, 10 days.	Vol. 45, p. 185
51	W. Purdie D 15	17	Good	2	10	13	120, full and soft	46, hurried	⅔ lower R. S., ⅓ lower L. S.		Salines; strong beef-tea; wine ℥iv.	Dismissal delayed for 2 days from want of clothes.	Vol. 46, p. 1.
52	W. Sword D 16	31	Good	7	15	15	90, weak	44	⅓ upper and lower R. S., ⅓ lower L. S.		Slight diuretics. Wine, at first, ℥i every two hours, with a teaspoonful of brandy to counteract prostration; afterwards reduced to ℥iv daily. Strong beef-tea *ad lib.*	Very weak on admission; saved by stimulants.	Vol. 46, p. 23.
53	C. Hazard	24	Good	6	11	9	82, strong	48, laboured	Whole of R. S.		Salines; wine ℥iv; nutrients.	Strong vigorous man.	Vol. 47, p. 24.
54	J. M'Donald D 17	37	Good	3	8	11	100, fair strength	52, oppressed	⅔ lower L. S., ⅓ lower R. S.		Salines; wine ℥xij, afterwards diminished to ℥viij, with a little brandy.	Slight pleurisy of left side. Great exhaustion on 5th day, from which he was rallied by stimulants.	Vol. 46, p. 39.
55	J. M'Lauchlin	28	Good	4	8	10	88, fair strength	56, short	Whole of R. S.		Salines; nutrients; wine ℥ij.	Vigorous young man.	Vol. 47, p. 160.
56	J. Baker D 18	57	Bad	6	14	16	104, fair strength	56, urgent dyspnœa	Whole of R. S., ⅔ lower L. S.	X	Salines; diuretics; wine ℥viij.	Long subject to cough, palpitation, and dyspnœa. Rheumatism 9 years ago. Mitral regurgitation.	Vol. 46, p. 56.
57	F. Joyce D 19	19	Good	4	8	10	104, full and strong	48	⅔ lower R. S., ⅓ lower L. S.		Salines; nutrients; wine ℥iv.	Strong vigorous young man.	Vol. 46, p. 74.
58	F. Flinn	21	Good	5	8	7	104, weak	44, difficult	Whole of R. S.		Salines; nutrients; wine ℥iv.	A strong man, with rapid recovery. The disease occupied an entire lung.	Vol. 47, p. 66.
59	J. Bain	25	Good	4	7	12	96, fair strength	24, tranquil	⅓ middle R. S.		Salines; nutrients; wine ℥iv.	A vigorous young man, rapid recovery.	Vol. 46, p. 80.
60	J. Kitchen	47	Good	5	8	7	72, good strength	32, hurried	⅔ upper R. S.		Salines; diuretics; nutrients; wine ℥iv.	An intemperate man; delirium; good recovery.	Vol. 46, p. 86.
61	J. Doran	40	Good	5	14	16	104, good strength	56, dyspnœa	⅔ lower L. S.		Salines; slight diuretics with colchicum; wine ℥vj; nutrients.	Very severe case.	Vol. 46, p. 157.

62	J. Allan	20	Cough	4	13	12	104, strong	? dyspnœa	⅔ upper R. S.		Salines; strong beef-tea; wine ℥vj.	No phthisis; made a complete recovery.	Vol. 46, p. 161.
63	J. Walker	57	Good	3	7	10	92, full	36	⅔ lower L. S.		Salines; nutrients; wine ℥iv.	Rapid recovery, ushered in with slight diarrhœa.	Vol. 48, p. 170.
64	W Smith	24	Good	5	10	12	92, feeble	?	½ upper L. S.		Salines; nutrients; wine ℥iv.	No phthisis; made a complete recovery.	Vol. 48, p. 137.
65	J. Gordon D 20	42	Cough	8	16	18	102, weak	?	⅓ middle R.S., ¼ L.S.		Salines; nutrients.	Bronchitis. Broncho-pneumonia.	Vol. 50, p. 77.
66	P. Murray	37	Good	3	9	10	96, strong	?	⅔ R. S.		Salines, etc.; wine ℥iv.	A strong vigorous man.	Vol. lost.
67	R. Robertson	18	Good	8	19	51	100, good strength	Easy	⅔ lower L. S.	X	Salines; nutrients; wine ℥vj.	Strong man. Typhoid fever well pronounced. Slow convalescence.	Vol. 53, p. 31.
68	A. Muirhead	39	Good	4	10	11	105, weak	33, dyspnœa	⅔ lower R. S.		Salines; nutrients; wine ℥iv.	Simple case, recovering quickly. Strong man.	Vol. 53, p. 75.
69	A. Stass Uns. 3	41	Weak	?	?	51	74, weak	36, dyspnœa	Whole of R. S.	X	Nutrients; wine ℥x.	Chronic pleurisy with effusion, commencing six weeks prior to admission. Commencement of pneumonia could not be determined.	Vol. 52, p. 43.
70	L. Shorthouse D 21	23	Good	3	14	26	100, weak	30, dyspnœa	⅔ lower L. S., ½ upper R. S.		Salines; nutrients; wine ℥vj.	A strong young man. Commenced on right side, and appeared afterwards on left side.	Vol. 54, p. 69.
71	J. Potter D 22	47	Good	3	27	38	106, weak	42, urgent dyspnœa	Whole of R. S., ⅓ lower L.S.		*Bled before admission to* ℥xx. Salines; nutrients; wine ℥viij.	Extreme weakness. Slow convalescence. Dismissed with slight condensation of apex of right lung.	Vol. 54, p. 95.
72	B. Goldie Uns. 4	29	Good	8	?	44	110, weak	Short and hurried	½ lower R. S.	X	*Cupped and purged before admission.* Nutrients; wine ℥xviij.	A case of typhoid fever, with ulcerations. Slow recovery.	Vol. 55, p. 99.
73	R. Lindsay	41	Good	8	17	23	66, weak		½ lower L. S.		Wine ℥xij; nutrients.	A man exhausted by a week's starvation before admission.	Vol. 52, p. 112.
74	J. Potter	47	Weak	3	21	32	104, weak	Dyspnœa	½ lower R. S.		*Cupped before admission*—to what extent unknown. Wine ℥vj; nutrients.	This is the same case as No. 71. Another attack. On dismission still condensation of apex of right lung.	Vol. 54, p. 213.
75	J. Millan D 23	24	Good	3	9	10	120, feeble	66, urgent dyspnœa	½ lower R. S., ½ lower L. S.		Nutrients; wine ℥vj.	A vigorous young man. Rapid recovery.	Vol. 55, p. 103.
76	W. Smith	22	Good	1	5	7	100, good strength	45, difficult	⅓ middle R. S.		Nutrients; wine ℥iv.	Very slight pleurisy.	Vol. 55, p. 127.
77	Ralph Guthrie	32	Cough for 3 months	6	12	28	94, weak	26	¾ lower R. S.		Nutrients, etc.; wine ℥vj.	Slight pleurisy with effusion.	Vol. 58, p. 7.
78	Mark Stedman	17	Good	6	12	11	110, weak	50, dyspnœa	⅔ upper R. S.		Nutrients; wine ℥vj.	Vigorous young labourer.	Vol. 57, p. 55.

No.	Name.	Age.	Previous Health.	First seen after Rigor. Days	Convalescence after Rigor. Days	In Hospital. Da	Pulse. At commencement of Treatment.	Respirations at commencement of Treatment.	Extent, and Side involved.	Complicated.	TREATMENT.	Observations.—As to Nature of the Case—Kind of Complication—Violence of Symptoms—Peculiarity of Physical Signs—Sequelæ, etc. etc.	Reference to Record in Hospital Case Books. Ward 1.
79	Geo. Fleming	22	Not good	?	9	25	98, weak	30	½ lower L. S.	X	Nutrients; wine ℥vj.	The pneumonia followed a severe and prostrating attack of rubeola.	Vol. 57, p. 25.
80	John Devine	28	Good	7	10	8	98, weak	40, dyspnœa	⅔ lower R. S.		Nutrients; wine ℥vj.	A strong man—rapid recovery.	Vol. 57, p. 71.
81	A. Henderson	32	Good	8	13	13	96, full, of good strength	24, no dyspnœa.	½ lower L. S.		Nutrients; wine ℥iv.	Strong healthy man. Diarrhœa on admission. Yeast-like stools up to 15th day from rigor.	Ward 10, vol. 4, p. 13.
82	J. Welch	42	Good	3	10	14	70, soft	27	½ lower L. S.		Salines; poultices to side; ℥iv of wine for two days. Blister to side subsequently.	A healthy man, given to spirit-drinking. Formerly had pleuro-pneumonia.	Ward 1, vol. 60, p. 75.
83	J. Duffie	19	Occasional Bronchitis	6	9	10	108, strong	28	⅔ lower L. S.		Salines; beef-tea.	Much bronchitis, which completely disappeared.	Vol. 59, p. 76.
84	Mich. Brannen	16	Good	6	11	14	90, weak	34	⅔ lower R. S.		Salines; nutrients; ℥vj wine.	Much bronchitis. Exhausted by starvation previous to admission.	Vol. 61, p. 217.
85	John Bell	32	Good	5	12	15	96, fair strength	48, dyspnœa	½ lower L. S.		Salines; nutrients; ℥viij wine.	Second attack of pneumonia. Habits intemperate.	Vol. 60, p. 154.

FEMALE CASES.

Ward 11.

86	S. Flynn Uns. 5	14	Ill 3 months	6	?	18	120, small	Dyspnœa	⅔ lower L. S.		*Bled to* ℥xij *on admission.* ½ gr. antim. tart. every two hours.	Record defective. Commencement of convalescence cannot be determined.	Vol. 1, p. 75.
87	M. Dixon Uns. 6	42	Ill 8 weeks	?	19	32	121, soft	?	½ lower R. S.		Salines; blister.	Commencement of pneumonia not stated.	Vol. 1, p. 131.
88	E. M'Cormack D 24	40	?	8	20	20	126, hard	Suppressed	⅔ lower R. S., ½ lower L. S.		½ gr. antim. tart. every second hour; blister.	Previous health not stated.	Vol. 3, p. 60.
89	A. Connor D 25	9	Not good, emaciated	8	21	42	132, soft	Hurried	½ lower R. S., ¼ upper L. S.		Tr. digital. ♏v every four hours; laxatives; *afterwards* 3 *leeches* to side to relieve pain.	Great exhaustion and unusual action of the heart in this case.	Vol. 3, p. 105.
90	A. Donally	20	Long had bronchitis	1	10	12	100, full	Dyspnœa	⅔ lower R. S.		8 *leeches;* 1 gr. antim. tart. every hour, with ⅓ gr. pulv. opii.	Strength good in this case on admission.	Vol. 6, p. 193.

91	M. Cowan Uns. 7	26	Cough and dyspnœa for 8 months	?	?	32	100, weak	Dyspnœa	⅜ lower R. S.		Wine ℥iv ; ½ gr. antim. tart. every four hours ; 8 *leeches afterwards to relieve pain.*	The previous illness caused commencement of pneumonia to be undetermined.	Vol. 6, p. 202.
92	M. Carle	15	?	5	10	8	100, full	Dyspnœa	¾ lower R. S.		12 *leeches to painful side ;* ⅛ gr. antim. tart. every three hours ; blister.	Considerable pain in side—relieved by leeches.	Vol. 7, p.
93	M. Dickson	34	?	8	19	25	104, good strength	Urgent dyspnœa	⅜ lower R. S.		½ gr. of antimony with ½ gr. of opium to relieve pain ; diuretics ; subsequently 12 *leeches* and 2 blisters were applied.	Previous health not stated.	Vol. 8, p. 93.
94	B. White D 26	28	?	8	13	5	92, strong	Dyspnœa	½ lower Both Sides		Salines ; 8 *leeches* and blister ; wine ℥vj.	Previous health not stated.	Vol. 9, p. 7.
95	B. Reynolds	26	?	5	15	26	120, full and strong	Hurried	¾ lower R. S.		1 gr. antimony every two hours ; discontinued after 24 hours ; *afterwards* 12 *leeches were applied ;* wine ℥vj ; blister.	General health probably enfeebled by previous nursing. Very weak after subsidence of febrile symptoms.	Vol. 9, p. 110.
96	C. M'Donald	15	Cough for a month	1	10	25	120, soft and weak	36	Whole of L. S.		Salines ; 8 *leeches,* and afterwards blisters were applied.	A simple pneumonia, with unretarded recovery. No indication for wine.	Vol. 11, p. 14.
97	M. Hodges	38	Good	7	16	23	80, strong and full	Difficult	Whole of L. S.		1 gr. antimony every four hours, and a blister applied to the side.	Rigors and cough, but no physical signs on admission. These appeared on 4th day.	Vol. 12, p. 46.
98	M. M'Donald	20	Feeble	10	18	24	66, weak	No dyspnœa	⅜ lower R. S.		Salines ; ℥iij wine and nutrients, with ⅛ gr. of tartar emetic. Blister to right side.	Subject to occasional cough and pain in the chest before the attack.	Vol. 12, p. 119.
99	J. Smith Uns. 8	13	- ?	10	?	14	80, strong	?	½ lower R. S.		Salines and nutrients.	Had not been under treatment before admission, though ten days had elapsed since the rigor.	Vol. 13, p. 152.
100	H. Balloch	18	Rheumatic	1	19	102	100, moderate strength	46	⅜ lower L. S.	X	¾ gr. of antimony every four hours ; a blister ; wine ℥iv, increased to ℥vj, and nutrients. Rheumatism treated with diuretics and anodynes.	Acute rheumatism and cardiac disease detained her in the hospital. Pleuro-pneumonia commenced two days after admission.	Vol. 14, p. 28.
101	M. Ross	35	Subject to coughs	3	16	53	104, weak	Labored	⅜ lower L. S.		Salines with small doses of morphia ; blisters ; ℥viij wine.	Diarrhœa in the course of convalescence, which was prolonged.	Vol. 16, p. 74.
102	A. Smith	32	Weak	9	26	23	78, weak	?	⅜ lower L. S.		⅛ gr. tartar emetic ; 3 gr. calomel daily for a week ; 4 *leeches ;* salines ; wine ℥vj ; 7 *leeches ;* nutrients.	In weak health previously. Period rather long before convalescence occurred.	Vol. 17, p. 120.
103	M. Corrigan	25	Good	5	14	18	96, strong	?	¾ lower L. S.		Slight salines ; blister applied ; and wine ℥iij.	A simple pneumonia in a previously healthy woman.	Vol. 17, p. 165.
104	M. Kay	40	Not good	6	18	43	106, weak	?	⅜ lower R. S.		⅛ gr. of antimony every two hours ; blisters applied ; afterwards diuretics.	A weakly woman, allowed to linger too long in the hospital.	Vol. 19, p. 15.
105	C. M'Lean	16	Good	7	17	42	120, soft	?	⅜ lower R. S.		Antimony ⅛ gr. and diuretics.	Detained in the hospital on account of pleurisy.	Vol. 19, p. 128.
106	M. M'Donald	40	Weak	2	8	31	130, full and strong	32 to 36, hurried	⅜ lower L. S		Antimony ⅛ gr. every third hour ; afterwards diminished to ¼ gr. every fourth hour ; 8 *leeches.*	This patient was a night nurse, and suffered from debility and leucorrhœa.	Vol. 19, p. 159.

No.	Name.	Age.	Previous Health.	First seen after Rigor. Days	Convalescence after Rigor. Days	In Hospital. Days	Pulse. At commencement of Treatment.	Respirations at commencement of Treatment.	Extent, and Side involved.	Complicated.	TREATMENT.	Observations.—As to Nature of the Case—Kind of Complication—Violence of Symptoms—Peculiarity of Physical Signs—Sequelæ, etc. etc.	Reference to Record in Hospital Case Books. Ward 11.
107	J. Gordon	58	Good	5	11	86	112, bounding	40, hurried	⅓ lower L. S.		½ gr. of antimony every hour; 10 leeches, and a blister; diarrhœa, treated with astringents.	A robust woman, who recovered rapidly, but, *per incuriam*, remained in the house for two months after convalescence.	Vol. 20, p. 2.
108	J. Jackson	26	Not good	5	14	18	98, not strong	Dyspnœa	⅓ upper R. S		Salines; expectorants; nutrients.	Cough and expectoration for 12 years, with occasional hæmoptysis.	Vol. 22, p. 27.
109	J. Douglas D 27	22	Not good	1	15	81	92, soft and jerking	52, laboured	½ lower L. S. ⅔ lower R. S. D.	X	The acute rheumatism and pericarditis which existed throughout this case were treated with alkalies and diuretics; the pneumonia with blisters, stimulants, and nutrients.	This was a case of acute rheumatism and heart disease. The pneumonia ran its course in 15 days. See p. 561.	Vol. 23, p. 89.
110	M. Armstrong	28	Strong	1	7	12	105, compressible	22, easy	⅔ lower R. S.	X	Wine ℥vj and nutrients.	Supervened on severe erysipelas of the face, 5 days after admission.	Vol. 23, p. 111.
111	A. Mackay D 28	42	Weak	11	18	24	120, weak	Urgent dyspnœa	¾ lower R. S., ½ middle L. S.		Wine ℥vj; nutrients?	Subject to cough for three years previously.	Vol. 28, p. 69.
112	R. Dickson Uns. 9.	60	Bad	?	?	8	88, weak	Dyspnœa	⅔ lower R. S.	X	Diuretics; blister applied; wine ℥iv.	Complicated with albuminuria and delirium.	Vol. 29, p. 66.
113	E. Drummond D 29	20	Good	5	19	19	96, weak	30, dyspnœa	½ lower L. S., ⅔ lower R. S.		Nutrients; wine ℥iij.	Little fever. Slight pneumonia on the left side, which soon disappeared. Dense hepatization on right side.	Vol. 29, p. 200.
114	J. Dunlop	17	Bad	1	9	19	120, weak	Dyspnœa	⅔ lower R. S.	X	Salines; nutrients; wine ℥iv.	Complicated with bronchitis and phthisis.	Vol. 33, p. 26.
115	S. Hamlin	17	Good	7	15	17	96, weak	Dyspnœa	Whole of L. S.		Salines with nitric ether; ℥i of wine every two hours, and strong beef-tea *ad lib.*	Very weak on admission.	Vol. 33, p. 29.
116	B. Clarke D 30	15	Cough for a twelvemonth	3	14	26	150, small	56, urgent dyspnœa	¾ lower L. S., ½ upper R. S.		At first salines; afterwards diuretics; ℥ss of wine every half hour; new milk and strong beef-tea *ad lib.*	The double pneumonia proved an exquisite case. Great weakness and dyspnœa. Saved by ℥ss of wine every half hour.	Vol. 34, p. 38.
117	U. Robertson	70	Bronchitis	5	14	49	100, small and weak	Dyspnœa	⅓ lower R. S.	X	Expectorants; wine ℥vj; nutrients.	Complicated with mitral incompetence and bronchitis.	Vol. 32, p. 205.

118	A. White	15	Weak	5	11	49	115, fair strength.	36	Whole of R. S.		Salines; wine ℥iij, and steak diet.	Pneumonia over whole of right side all disappeared. Afterwards tubercular condensation of right apex.	Vol. 36, p. 33.
119	A. English	28	Good	7	12	79	102, feeble	Orthopnœa	¼ lower R. S.	X	Salines; beef-tea, wine ℥vj.	Preceded by abortion, and accompanied by bronchitis and phthisis.	Vol. 38, p. 229.
120	A. Kinniburgh	19	Long cough	8	16	23	108, feeble	Orthopnœa	⅔ lower R. S.	X	Beef-tea; wine ℥iv.	Had cough for 17 years following measles. Pleurisy.	Vol. 38, p. 215.
121	E. Bruce	27	Long cough	7	15	50	92, feeble	?	½ lower L. S.	X	Beef-tea; wine ℥iv.	Long had cough. Phthisis. Pleurisy.	Vol. 40, p. 118.
122	A. Aitken	17	Good	3	11	11	118, moderate	36, tranquil	½ lower R. S.	X	Beef-tea; wine ℥vj.	Complicated with pleurisy.	Vol. 44, p. 63.
123	E. Ainslie	37	Good	4	11	13	106, weak	22	½ lower R. S.		Beef-tea; wine ℥iv.	A simple pneumonia.	Vol. 44, p. 118.
124	Jessie Baxter	30	Good	8	12	16	120, weak	65, dyspnœa	Whole R. S.		Salines; wine ℥iv; nutrients.	Treated previously for an abscess in the axilla.	Vol. 42, p. 165.
125	C. M'Pherson	48	Good	8	23	21	100, soft, weak	35, dyspnœa	Whole R. S.		Wine ℥iv ad ℥vj; nutrients; salines, with vin. colchici.	A healthy woman, but very weak on admission.	Vol. 48, p. 1.

FATAL COMPLICATED CASES.

No.	Name.	Age	Extent, and Side Involved.	COMPLICATION CAUSING DEATH.	Reference to Record in Hospital Case Books.
126	T. Morrison	18	½ upper R. S.	Had uncontrollable diarrhœa from the first, apparently excited by purgatives before admission. He sank exhausted in five days, notwithstanding the use of astringents, opiates, nutrients, and latterly stimulants. On dissection, in addition to hepatization of lung, enlargement and extensive ulceration of follicles in jejunum and ilium.	Vol. 24, p. 78. Ward 1.
127	Margt. Currie	37	½ lower R. S.	This woman had albuminuria, and was first attacked with headache and vomiting. She entered the house on the 8th day of the pneumonia, when delirium came on, and died the day after admission. No examination of the body could be obtained.	Vol. 1, p. 159. Ward 11.
128	D. Murray	43	¾ lower R. S.	Two days after admission the mind became confused, and he died delirious 3 days subsequently of acute meningitis.	Vol. 19, p. 37. Ward 1.
129	Margt. Lamont	46	Whole of R. S.	She was recovering from the pneumonia when, on the 13th day, fatal meningitis appeared. She had also aneurism of an aortic valve.	Case book missing.

With regard to treatment, it will be observed that the earlier cases were ordered larger doses of tartar emetic than the later ones, and that in the last cases this drug was not prescribed at all. By *Salines* is to be understood small doses of the acetate of ammonia, with $\frac{1}{24}$ of a grain of tartar emetic. By *Diuretics* is to be understood ℈j doses of Sp. Æther. Nit., sometimes associated with ♏x of Tr. Vin. Sem. Colchici. By *Nutrients* is to be understood beef-tea and milk, taken early, with beef-steaks, mutton chops, and eggs, as soon as they could be eaten by the patient. In the first cases, it will be seen they accompanied other treatment, and though not specially mentioned, were still given. In the latest cases they constituted the whole treatment.

Concerning the mortality connected with pneumonia, it is necessary to observe, that in addition to the four fatal cases recorded, I have found in the pathological registers kept by Drs. Gairdner, Haldane, and Grainger Stewart, thirteen other cases, in which, as the result of chronic, cerebral, spinal, cardiac, hepatic, renal, or other pulmonary disease (such as phthisis and chronic bronchitis), pneumonia appeared before death, adding a fatal complication to previously existing maladies. Not one of these can properly be considered as a case of acute or primary pneumonia. They have all been entered by the clerks in the ward-books as softening of the brain or spinal cord, morbus cordis, phthisis, Bright's disease, cirrhosis of the liver, or other lesion, for which the patients entered the Infirmary and were treated. In most of them it was the *pneumonie des agonizans* of the French, and in all must be regarded as the consecutive chronic or latent pneumonias of medical writers.

These, then, are positively all the cases of acute pneumonia which have entered the clinical wards of the Infirmary, when under my care, during the last sixteen years, so far as I can discover them. Every case has been treated publicly,

and is open for inspection in the ward-books; and the result is that the mortality of all the acute pneumonias, complicated and uncomplicated, in the practice of the clinical wards while under my care, is, up to February 1865, 1 death in $32\frac{1}{4}$ cases. Taking only the cases of uncomplicated pneumonia, however, 105 in number, not one has died, although many of them have been very severe, involving the whole of one lung in 15, and portions of both lungs in 26 cases.

In the four fatal cases, death was evidently caused by complications independent of the pneumonia. They ought to be regarded as pathological accidents, for in not one of them could the pulmonary disease be properly regarded even as assisting the mortality. The Table shows that in many instances where weakness was much greater than existed in any of them, pneumonia rapidly passed through its natural progress. To arrive at true statistics *with regard to treatment*, therefore, it becomes necessary to eliminate these four cases, as has been done by many other hospital physicians, and to fix our attention on the first 125 cases reported in the previous table.

Sex.—Of these 125 cases, 85 were males and 40 were females. In the Table, the latter have been enumerated after, and so separated from the former.

Age.—The average of the males was $31\frac{1}{2}$ years; the average age of the females, $28\frac{1}{2}$ years; the average age of both $30\frac{1}{2}$ years. Between the ages of 5 and 15 years was 1 case—a girl; between 10 and 20 years, 29 cases—12 females; between 20 and 30 years, 35 cases—11 females; between 30 and 40 years, 23 cases—7 females; between 40 and 50 years, 24 cases—6 females; between 50 and 60 years, 11 cases—1 female; between 60 and 70 years, 1 case—a female; and between 70 and 80 years, 1 case—a female.

The state of health previous to the attack of pneumonia was recorded in 118 cases. Of these 84 were males and 34 were females, and we have to determine the influence exercised by the general health—1*st*, On the duration of the disease; and 2*dly*, On the duration of the convalescence.

Of the 84 males, 57 were in good, and 27 in impaired health. The average duration of the disease in the former was 12 days, and in the latter 16½ days. Of the 34 females, 12 only were in good, and 22 were in impaired health. The average duration of the disease in the former was 14 days, and in the latter 16 days.

In determining the influence of health on the convalescence, it becomes necessary to deduct from the 57 male cases those which remained in the house in consequence of severe complications, want of clothes, or other causes unconnected with the pneumonia. These were 10 in number. Among the 47 which remain, several, though marked as having good health previous to the occurrence of the disease, were still in a state of great exhaustion on entering the Infirmary, either from previous bleeding or starvation. The average duration of the convalescence, including such cases, was 15½ days. For the same reason, deducting 5 from the 28 cases which are described as weak on admission, or who had had cough, rheumatism, or other weakening disease previous to the pneumonia, the average duration of convalescence in the remaining 23 cases was 23¼ days. Of the 34 women, the average duration of the convalescence in the 12 recorded as being previously in good health was 14 days. Of the 22 females said to have impaired health previous to the attack of pneumonia—after deducting 6, whose residence was prolonged by complications—the average duration of the 16 which remain was 23¾ days.

Simple or uncomplicated Pneumonia.—Of the 125 cases,

there were 105 simple or uncomplicated, and 20 complicated. Of the former there were 74 males and 31 females. 79 were single and 26 double cases. Of these I find that the clerk has omitted to state either the exact day of rigor or of convalescence in six, so that no conclusion can be derived from them as to the duration of the disease. Of the remaining 99 cases, 73 were single, and 26 double, and the duration of the disease in the whole on an average, was $14\frac{1}{4}$ days.

The duration of the disease in the 73 *cases of single uncomplicated pneumonia,* counting from the occurrence of rigor to the commencement of convalescence, was as follows :—2 cases recovered in 5 days ; 4 cases in 7 days ; 5 cases in 8 days ; 2 cases in 9 days ; 8 cases in 10 days ; 7 cases in 11 days ; 7 cases in 12 days ; 4 cases in 13 days ; 13 cases in 14 days ; 2 cases in 15 days ; 3 cases in 16 days ; 3 cases in 17 days ; 3 cases in 18 days ; 1 case in 19 days ; 2 cases in 20 days ; 3 cases in 21 days ; 1 case in 22 days ; 2 cases in 23 days ; and 1 case in 26 days. The average duration $13\frac{3}{7}$ days.

The duration of the disease in the 26 *cases of double uncomplicated pneumonia,* counting from the occurrence of the rigor to the commencement of convalescence, was as follows :—2 cases recovered in 8 days ; 1 case in 9 days ; 2 cases in 10 days ; 2 cases in 11 days ; 1 case in 12 days ; 1 case in 13 days ; 4 cases in 14 days ; 1 case in 15 days ; 2 cases in 16 days ; 2 cases in 18 days ; 2 cases in 19 days ; 1 case in 20 days ; 3 cases in 21 days ; 1 case in 27 days ; 1 case in 55 days. The average duration $16\frac{3}{4}$ days.*

Effects of bleeding.—Of the 105 simple or uncomplicated cases there were 9 bled by venesection, and subjected to an

* If the case of Hogg (No. 6), a weak young man, much reduced by bleeding and other antiphlogistic treatment before admission, and the duration of whose disease in consequence was 55 days, be subtracted, the average duration of these double cases would only be 14 days.

antiphlogistic treatment, before or immediately upon admission, before I saw them. The amount of blood extracted varied from 12 to 30 oz., the latter in two bleedings. The duration of one case is not stated. Of the remaining 8 cases, the duration was as follows :—One case recovered in 7 days ; 2 cases in 14 days ; 1 case in 16 days ; 1 case in 17 days ; 1 case in 20 days ; 1 case in 27 days ; and 1 case in 55 days. The average duration was $21\frac{1}{4}$ days.

The duration of residence in hospital of the single uncomplicated cases of pneumonia—excluding 2 cases in which the date of dismission is omitted, making 77 cases—was on the average, $21\frac{3}{7}$ days. For the males (52) $18\frac{3}{5}$ days, and for the females (25) $27\frac{1}{5}$ days. Of the 26 double uncomplicated cases, the average duration of residence in hospital was $23\frac{3}{5}$ days. Of the males (20) $23\frac{17}{20}$ days ; of the females (6) $22\frac{2}{3}$ days.

All these averages are far too high, as will be at once seen on referring to the Column of Observations in the Table, Nos. 14, 17, 18, 19, 27, 29, 50, 51, 100, 104, 105, 107, 109, in all which, detention in the house, for various reasons irrespective of the pneumonia, makes the period of residence on account of that disease much too long.

The average duration of residence in hospital of 8 cases, bled early in the disease (the 9th case being excluded in consequence of the day of dismission not being entered in the case-book), was 32 days.

The extent of pulmonary tissue involved in the pneumonia was carefully determined by percussion and auscultation from the amount of dulness, crepitation, tubular breathing, and increased vocal resonance present in each case. The average duration of the disease in the 95 single cases remaining after deduction of the 10 unsatisfactory ones, counting from the

rigor to the commencement of convalescence, was as follows :—$\frac{1}{4}$ of the lung (2 cases), average duration, $8\frac{1}{2}$ days ; $\frac{1}{3}$ the lung (12 cases), 12 days ; $\frac{1}{2}$ the lung (25 cases), $15\frac{3}{4}$ days ; $\frac{2}{3}$ the lung (34 cases), 14 days ; $\frac{3}{4}$ the lung (6 cases), $14\frac{2}{3}$ days ; $\frac{4}{5}$ the lung (1 case) 12 days ; the whole lung (15 cases), $10\frac{3}{4}$ days. Of these 95 cases, the right lung was affected in 58, the left lung in 37.

Pneumonia confined to the upper lobe occurred among the 95 single cases in 11, or nearly 1 in 9 of the whole, and the average duration of the disease in these was 13 days, and of their residence in the hospital $14\frac{1}{2}$ days.

Complicated cases of Pneumonia.—Of the 20 complicated cases of pneumonia, 16 were single and 4 double, and the duration of the disease on an average was $15\frac{1}{2}$ days.

Of the 16 single complicated cases, the duration of the disease cannot be determined in 3. Of the remaining 13, the duration was as follows :—One case recovered in 7 days ; 2 cases in 9 days ; 1 case in 10 days ; 1 case in 12 days ; 2 cases in 14 days ; 1 case in 15 days ; 2 cases in 16 days ; 2 cases in 19 days ; and 1 case in 48 days. The average duration, 16 days.

Of the 4 double cases of complicated pneumonia, 1 case recovered in 9 days ; 1 case in 14 days ; 1 case in 15 days ; and one case in 18 days. The average duration 14 days.

A careful study of the preceding facts will, I think, tend to establish some new truths, and correct several prevailing errors with regard to pneumonia. I would remind those, however, who, being yet sceptical as to the value of a restorative treatment, may imagine that some of these cases might not have been pneumonia, that they were all diagnosed, and treated publicly in the Royal Infirmary ; were examined not only by myself, but by my intelligent clerks and assistants, and were all made the subject of Clinical Lectures and com-

mentaries at the bedside. In all of them the physical signs and the functional symptoms were precisely and minutely recorded. There is, therefore, the positive certainty not only that every one of these cases was a genuine example of pneumonia, but that no other cases of the disease but what are tabulated were treated by me during the period referred to. It should be explained, however, that a few cases were partly treated by my colleagues either before I assumed duty, or after I left it, in the too frequent changes which occur among the Clinical Professors in this University. Such cases are not inserted. It is also necessary to point out that two or three cases brought into the house by the police in an exhausted condition, and who died before I saw them, are not inserted. It is the more important to refer to such occurrences, because they serve to account for the differences which must always exist between the general hospital and clinical statistics. Grisolle has very unjustly alluded to this difference in the hospital of Vienna, with a view of throwing distrust on the conclusions of Dietl. (2d edit. pp. 564, 565.) But every hospital physician must be aware that the records of the dead-room, or of the hospital generally, afford no index whatever to the number of acute pneumonias treated clinically, comprehending as they do not only consecutive, latent, and chronic pneumonias, but not unfrequently cases of pneumonia which have entered the house in a dying condition, and have not been treated at all.

1. The first great fact which the preceding figures serve to establish is, that simple primary pneumonia, whether single or double, if treated by the restorative plan, is not a fatal disease. Surely 105 consecutive cases, of which 26 were double, are sufficient to establish this proposition, especially when it is considered that they were diffused over sixteen years, and occurred in all seasons. Among these, also, the whole of one lung was involved in no less than 15 cases,

and the symptoms in many of them were exceedingly severe. Neither will anything that has been said as to strength of constitution, or change of type in disease, explain the result, as several of the cases were those of healthy vigorous young labourers, whilst others were those of weak and broken down sempstresses. In any and every case the disease goes through its natural progress, if the system be not too much exhausted, either naturally or by the interference of the physician; and if a judicious restorative treatment be adopted.

2. As a general rule, it will be observed that prostration and weakening complications or remedies not only lengthen the period of the disease, but especially prolong the convalescence. This will be seen on referring to Nos. 6, 20, 71, 100, 101, 104, 118, and 119 in the Table. An analysis of the whole number of cases shows that women, even when in good health, recover less quickly than men; and that when the health is impaired in both sexes, the difference in the duration of the disease and of the convalescence is strongly marked—especially in men. Thus, on the average, the disease lasts $8\frac{1}{2}$ days longer in a weak man than in a strong one, while the period of convalescence is $8\frac{1}{4}$ days longer. Among the women, weak individuals were more numerous than healthy ones, and in them the disease lasted 2 days, and the convalescence $9\frac{1}{4}$ days longer on the average.

3. It is generally supposed that the amount of lung affected by pneumonia must influence the result and duration of the disease. As to the result, all my cases recovered, even the 15 cases where the whole of one lung was involved, as well as the 26 cases where portions of both lungs were affected. In one complicated case (No. 56) the whole lung on the right side, and two-thirds of the lung on the left side were simultaneously involved, thus leaving only one-third of a lung to respire with, and yet without bleeding, but aided by nutrients and restoratives, the woman was convalescent on the

fourteenth day, and left the house quite well, after a sixteen days' residence. With regard to duration, the extent of the disease does not exert so much influence as is generally supposed. If only a fourth of one lung be affected, the recovery may take place in 8 days: but after that, whether the half or the whole of one lung, or two-thirds of both lungs, be involved, it does not appear to cause much difference. Cases with half a lung pneumonic, recovered in 15, with two-thirds of a lung in 14, with a whole lung in 10, and with portions of both lungs in 14 days, on the average.

4. Since the observations of Louis, it has been supposed that a pneumonia at the apex of a lung was more fatal and more prolonged than one at the base; and so it may be with an antiphlogistic treatment. But with a restorative treatment, the preceding facts show that in 11 cases where the disease was confined to the apex, recovery took place in all, and on an average on the thirteenth day.

5. In no single instance has a case of acute pneumonia in my hands degenerated into the chronic form, or become gangrenous, even in the 11 cases where the disease was confined to the apex. Several cases, however, have entered the house already chronic from neglect, want of nutrients, or as the result of a lowering treatment—circumstances that indicate sufficiently well the causes which produce it.

6. Among the whole number of my cases, deaths only occurred from severe complications, a circumstance which induces me to believe that under a restorative treatment, begun early in the case, the influence of age and sex on the mortality is not appreciable. Neither is the duration of the disease much influenced by complication so long as the general health is not impaired.

COMPARATIVE STATISTICS AS TO THE TREATMENT OF ACUTE PNEUMONIA.

In order that the contrast between my own cases and those of other practitioners may be as exact and fair as possible, I propose only to refer to such as are drawn from a pretty equal or a larger number of cases. For the same reason, I shall not jumble the experiences of different practitioners together under one head, or confound the statistics of a whole general hospital with those of an individual practitioner in it. I shall, in the first place, condense shortly the results of each; then give the general hospital statistics of pneumonia; and lastly, contrast the whole with the results of my own practice.

I. *Results of Bleeding in Pneumonia.*—The total number of cases, recorded by M. Louis, was 107.* Of these 32 died, or 1 in $3\frac{1}{3}$. In 78 of those cases, which occurred at La Charité, bleeding was performed from the first to the ninth day, and the deaths were 28, or 1 in $3\frac{1}{7}$. The duration of the disease in the cases which recovered was $15\frac{1}{2}$ days. Of the remaining 29 cases, which occurred at La Pitié, the bleeding was performed earlier, that is during the first 4 days, and of these only 4 died, that is 1 in $7\frac{1}{4}$. The duration of the disease, however, in the cases that recovered, was $18\frac{1}{4}$ days. This diminished mortality, but greater length of recovery, M. Louis attributes to the bleedings not having been so large, and the greater amount of tartar emetic employed. Hence, the proposition he sought to establish, that although bleeding has a very limited influence on pneumonia, it should be practised early. With regard to M. Louis's results, it should be remembered, 1*st*, That the cases which were unfavourable from previous bad health, or from other causes, were excluded, so that all his patients enjoyed excellent health when they were

* Recherches sur les effets de la Saignée. Paris, 1835.

attacked; 2*dly*, That they were uncomplicated, and that the duration of the disease was estimated from the occurrence of febrile symptoms, up to the time when light food could be taken, which was generally three days after the fever had ceased.

II. M. Bouillaud's* account of his treatment by the *coup sur coup* treatment is, that of 102 cases treated by him from 1831 to 1834, the deaths were 12—that is, 1 death in 8$\frac{2}{3}$ cases.

III. In a memoir by M. Briquet† there is some confusion of numbers. He informs us that his cases were 141 (T. 7, p. 477), but in giving the ages of these, he enumerates 144 cases (T. 7, p 479); and in speaking of the influence of age on mortality, his cases are only 140 (T. 9, p. 28). Of these 140 cases, 29 died; that is, there was a mortality of more than 1 death in 5 cases. Almost all these cases were bled, according to the strength of the patient (T. 8, p. 283). In three-fourths of the cases, blisters and tartar emetic were also employed.

IV. M. Grisolle‡ advocated more moderate bleedings than those so frequently had recourse to, his conscience preventing the abandonment of venesection altogether (p. 561). He analyses 75 cases of Bouillaud, pointing out that only 49 were treated by the *coup sur coup* mode of bleeding, of which 6 died, or 1 in 8 cases, a favourable result, which he attributes to the youth of the patients treated. Of his own cases, one group of 50 cases were bled only in the first stage of the disease; of these 5 died, or 1 in 10. Those cases that died were bled most, each losing about 4 lb. 4 oz. of blood in successive bleedings. All the cases in this group were uncomplicated, and of the average age of 40 years. Of the 45 who recovered, convalescence commenced on the 10th day, and they resumed their occupations on the 21st day, as an average. Of 182 cases that were bled in the second stage, 32 died, or more than 1 in 6. Here also those who died

* Art. Pneumonie, Dict. de Médicine, en 15 vol., 1835.

† Archiv. Gen. de Médicine, 3 Serie, Tom. 7, 8, 9. 1840.

‡ Traité pratique de la Pneumonie. Paris, 1841.

were bled most—the bleedings varying in amount from 8 or 12 oz. to 8 lbs. The average quantity lost was 3 lbs. All the cases in this group were uncomplicated, and of the average age of 35 years. Of the 150 cases that recovered, convalescence commenced on the 17th day, and they resumed their occupations on the 22d day—as an average. He admits that the pneumonia can never be jugulated by bleeding. Of the whole 232 cases, 37 died, that is, about 1 in 6⅓, as the general result of M. Grisolle's hospital practice, a mortality only one-half that of M. Louis's cases, although the circumstances under which they occurred were the same, with the exception of not being so heroically treated. Laennec also, who only bled moderately at the commencement of the disease, regarded the mortality to be 1 death in 6 or 8 cases.*

In 1864 M. Grisolle published another edition of his work, in which these same statistics are repeated without any change whatever, and this notwithstanding his acquaintance with the author's researches, and the immense improvements which have taken place in the art and science of medicine during the long interval of 23 years. What seems very surprising is, that he wishes to have it believed that his antiphlogistic treatment, with a mortality of 1 in 6 cases, is still the best.

V. Acerbi† bled largely and frequently in 142 cases, of whom 16 died, or 1 in 9. Of those who died 4 had been bled from three to four times; 5 from five to eight times; and 7 from nine to thirteen times. 30 of the 142 were bled from ten to twenty times, 12 ounces each time, who therefore lost from 120 to 240 ounces. From 4 to 8 grains of tartar emetic were also given daily.

VI. Dietl treated 85 cases by large bleedings, of whom 17 died, that is 1 in 5.

* Forbes' Translation. Fourth Edition, p. 237.

† Medico-Chir. Review, July 1858, p. 11.

VII. In 1842 Dr. Hughes* published an account of 101 cases treated for the most part antiphlogistically in Guy's Hospital, of whom 24 died, or 1 in 4⅕. Of these, however, only 47 were actively treated by bleeding, antimony, calomel and opium, etc. In 37, general bleeding was not practised. The complications, excluding pleurisy and bronchitis, were 27, and the double cases 19.

VIII. The most successful account of the treatment of pneumonia by bleeding is that published by Wossidlo,† who treated 112 cases, of whom 4 died, or 1 death in 28 cases. There were only 11 complications, including 4 with tubercle, 2 with blenorrhæa, 1 with catarrh, 2 with pregnancy, 1 with sciatica, and 1 with atrophia mesenterica. 50 of his cases, however, were below 20 years of age; and 44 of these were children below 10 years of age. To these it seems only a few leeches were applied. The amount to which he bled, and the diet given to the adults, are not stated.

IX. Dr. Glen, my former resident clerk, was so good as to tabulate for me all the cases of pneumonia given in the army returns, and reported by Colonel Tulloch.‡ These returns give us no information as to the mode in which the diagnosis was determined, or what was the treatment. The favourable mortality of 1 death in 13 cases, which, according to Dr. Glen, is the general result, is supposed to result from the bleedings having been performed early, and in young vigorous subjects.

X. *Treatment by large doses of Tartar Emetic.*—Rasori,§ in the great hospital of Milan, treated 648 cases by large doses

* Guy's Hospital Reports, vol. vii.

† Schmidt's Jahrbucher Band, Bd. 51, 1846, p. 125; and Brit. and For. Med. Chir. Review, July 1858, p. 16.

‡ Government Statistical Reports on Mortality among the Troops. 1853.

§ From an analysis of Rasori's practice—Annales de Therapeutique, Janvier 1847.

of tartar emetic, of which 555 were cured, and 143 died, that is, 1 in 4½. In publishing this statement, Rasori gives the result as one more favourable than the practice of blood-letting, which of course he would not have done unless the latter treatment was then well known to have been attended with a greater mortality than that by tartar emetic, or 1 death in 4½ cases.

XI. M. Grisolle treated 154 cases with large doses of tartar emetic, of which 29 died—that is, 1 in 5⅓; and (XII.) Dietl treated 106 cases, of which 22 died—that is, little more than 1 in 5.

XIII. Von Wahl treated, during six years in St. Petersburg, 354 cases, of whom 84 died, or 1 in 4⅔ cases.* Only those having great congestion were bled, but in most cases tartar emetic was given in large doses early. (XIV.) Thielmann,† in the Peter and Paul's Hospital of St. Petersburg, treated with large doses of tartar emetic 110 cases of pneumonia, of which 12 died, or 1 in 9⅙. Opium was given to check diarrhœa.

Expectant or Dietetic Treatment.—This treatment essentially consists in allowing the disease to go through its natural course. During the stage of fever diet is light, or withheld altogether, and cold water allowed for drink; subsequently better diet is allowed, and occasionally wine, according to the nature of the symptoms. Sometimes a dietetic is converted into an *expectant treatment*, when remedies are given to meet occasional symptoms, as in the practice of Skoda, in the Charity Hospital of Vienna (XV.) An account of this has been given to us by Dr. George Balfour, who found from the books of the hospital, that during a period of three years and five months, commencing 1843, 392 patients were treated, of whom 54 died, or 1 in 7¼. Occasionally opium was given in small doses if there was much pain. Venesection was also

* Petersburg Med. Zeit., i. 6, 1861. Canstatt, 1861, p. 237.

† Canstatt, 1852; iii. p. 231.

practised early if there was much dyspnœa, and emetics given if the expectoration consisted of tough mucus.

Dr. G. Balfour has also given some statistics of the Homœopathic Hospital of Vienna, accompanied, however, with statements which render it doubtful whether every case that applied was admitted, and consequently not fairly comparable with other hospital statistics. There can be no doubt, however, that many severe cases of pneumonia recovered under a system of treatment which, it appears to me, most medical men must consider to be essentially a dietetic one. The best homœopathic statistics are those of Tessier,* who had 3 deaths in 41 cases; and (XVI.) of Wurmb of Vienna,† who of 119 cases had 8 deaths—nearly 1 in 15.

XVII. Dr. Dietl published in 1848 an account of 189 cases treated by diet only, of which 14 died, that is 1 in 13½. The following is his table of 380 cases, exhibiting the result of the three kinds of treatment :—

	Vene-section.	Tartar Emetic.	Diet.
Cured	68	84	175
Died	17	22	14
	85	106	189
Per cent	20.4	20.7	7.4
Deaths	1 in 5	1 in 5.22	1 in 13½

It was further observable that of the 85 cases treated by blood-letting, 7 of the fatal cases were uncomplicated; whilst of the 189 cases treated by diet, not one of the deaths was an uncomplicated one. In 1852 he gave the result of 750 cases, treated dietetically, of which 69 died, or 1 in 10.9.

We are informed by Grisolle (2me. edit., p. 570) that Legendre, after having treated the pneumonia of infants entirely by bleeding and antiphlogistics, left a memoir which

* Homœopathic Treatment of Pneumonia, 8vo, New York, 1355.

† Brit. Journal of Homœopathy, vol. iv. p. 75.

was published after his death,* in which he sought to show that a dietetic treatment was far preferable. His views, which were founded on only 15 cases, have since been supported by (XVIII.) M. Barthez, who, on the 8th of April 1862, informed the Imperial Academy of Medicine, that of 212 children, varying in age from 2 to 15 years, he had treated in the hospital of St. Eugenie, only 2 had died. Of these, however, what is called a slightly active treatment was employed in $\frac{1}{8}$th of the cases. In accepting this important result M. Grisolle only sees in it a confirmation of the fact that pneumonia in young subjects has a tendency to spontaneous recovery, but denies that such treatment is useful at a more advanced age.

Mixed Treatment.—In recent times cases of pneumonia have been treated after a mixed fashion, according to the nature of the symptoms, but with no very marked beneficial effect. As examples of this system I may refer to the results given by Lebert, Huss, Bamberger, Flint, Rigler and Morehead.

XIX. Deducting from the 222 pneumonic cases of Lebert† 17 which died on the day of entrance into the Zurich Hospital, or on the following day, there remain 205, which he treated during 5 years, of whom 15 died—that is, exactly 1 death in 13$\frac{2}{3}$ cases. 4 cases were complicated, all of which died. The other 201 uncomplicated cases were regularly treated, and of these 11 died, or 1 in 18. Among the whole number were 22 double cases. The treatment consisted of general and local bleeding in the majority of the cases, but if there was prostration, antimony in full doses was relied on. Various other remedies were employed to meet particular indications, such as mercurial inunction, muriate of ammonia, acetate of lead, opium, quinine, camphor, benzoin, etc. In the later stages with weakness, he gave stimulants, nourishment, and wine.

* Archiv. Gen. de Médecine, September 1859.

† Handbuch der praktischen Medicin, Band 11, p. 69, 1859.

XX. The most important memoir recently published is that of Professor Huss of Stockholm,* who employed bleeding and heroic remedies in the early stage, and in the later ones antimony, mercury, and various remedies—among the rest turpentine, camphor, morphia, and quinine. During 16 years the number of cases treated was 2616, of which 281 died; that is 1 in $9\frac{1}{3}$ cases. The uncomplicated cases were 1657, of whom 96 died, or 1 in 17 cases. The complicated cases were 959, of whom 185 died, or 1 in 5 cases. There were 384 cases of double pneumonia, of whom 88 died, rather more than 1 in $4\frac{1}{2}$ cases. The treatment employed was adapted, as it was thought, to the emergencies of the case, and may be called a modified antiphlogistic practice, many cases not having been bled at all. Its superiority over the rigid antiphlogistic system, and even over that of Grisolle, therefore, is marked.

It was during the first 8 years that blood-letting, general and local, was practised. Of 1040 then treated, 120 died, or 1 in 9 cases; while during the second 8 years 1576 cases were treated, of whom 161 died, not quite 1 in 10 cases. This difference is not great, but still leads Huss to the conclusion that blood-letting is injurious to a curative result (p. 158). He found also that it prolonged the disease 3 days (p. 160). In the first two stages a low diet only was allowed.

XXI. Dr. Bamberger† treated 186 cases without general blood-letting in the Julius Hospital of Wurzburg. Only a few leeches and fomentations were applied in some cases, and inf. digitalis given internally, which he says so clearly diminished the temperature and lessened the pulse, as to constitute it an important remedy in fever. To assist expectoration, tartar emetic, kermes, mineral, ipecacuanha, and sal ammoniac,

* Die Behandlung der Lungen-entzundung, etc. Leipsig, 1861.

† Wiener Wochenschrift, No. 50, 1857; and Canstatts Jahresberficht, 1858, iii. p. 284.

were given in small doses. Occasionally emetics were administered, and narcotics to relieve restlessness and procure sleep. In the more adynamic forms, senega, arnica, benzoin, vin. antim., quinine, camphor, musk, and other remedies were prescribed. Nothing is said of diet or wine, nor of complicated cases. Of these cases, 21 died, or 1 in 9.

XXII. Dr. Flint* has given the result of 133 cases he treated, during 12 years, in the cities of New Orleans, Louisville, and Buffalo, in the United States of America, of whom 35 died —more than 1 in 4. Among the 112 uncomplicated cases were 19 deaths, and among the 21 complicated cases 16. There were 11 cases of double pneumonia, of which 8 died; 37 cases where the whole right lung was involved, of which 19 died; 9 cases where the whole left lobe was affected, of which 1 died; that is of all the cases, 57, in which the pneumonia extended over two or more lobes, one-third died. Of the remaining uncomplicated cases only 2 died. The treatment varied according to the case; 12 were bled, 12 were treated with tartar emetic; 100 cases took opium in variable doses: of these 49 had full or large doses, among whom 11 died. Alcoholic stimulants and quinine were also occasionally employed.

XXIII. Rigler treated† in the General Hospital of Gratz 119 cases, of which 20 died, or 1 in 6 cases. Venesection was practised in only 4 cases—leeches were applied in several to remove local pain. A strictly dietetic regimen was enjoined to diminish fever, and if the pneumonia spread, tartar emetic to the extent of one grain a day was given. Demulcent mixtures, friction of the extremities, and morphia were also occasionally employed. The duration of the disease on the average was 21 days. Of the 119 cases, 14 were double; 16 had pleurisy; 10 pericarditis; 2 strong intestinal catarrh (diarrhœa?), and 1 albuminuria.

* American Journal of the Med. Science. July 1859.

† Canstatt, 1858; iii. p. 285.

XXIV. During six years from 1848 to 1853, Dr. Morehead* treated in the Jamsetjee Jejeebhoy Hospital of Bombay 103 cases, of whom 32 died, or 1 in 3¼ cases. The native Hindoos, we are told, are of feeble constitution. Only 3 therefore were bled generally, but local blood-letting was adopted in 57 cases. Tartar emetic, from a sixth to half a grain, every second, third, or fourth hour, was given in 66 cases; mercury in 21 cases; blisters in 52 cases, quinine, liquor potassæ, and stimulants were also given. Of the 71 cases which recovered, 14 were discharged within 10 days; 23 between 11 and 20 days; 16 between 21 and 30 days; 18 above 31 days. Nothing is said as to diet, but under the head of stimulants we are told these should be employed when the pulse fails, etc.

XXV. *Treatment by Iron and Copper.*—Kissel† of Eilenburg treated 112 cases of pneumonia, of whom 5 died with complications, or 1 death in 22 cases. Where the urine was alkaline, he gave an ounce of the tincture of acetate of iron daily; when it was acid, he gave one and a half drachms of the tincture of the acetate of copper daily. The duration of the disease was from 2 to 9 days; but when complicated with typhus phenomena, reached 16 days. The abstract in Canstatt does not inform us whether these cases were treated in a hospital, the nature of the complications, or the diet ordered.

XXVI. *Treatment by Stimulants.*—The late Dr. Todd abandoned the treatment of pneumonia by blood-letting and antiphlogistics about the same time that I did so myself, but was gradually led into a system of stimulation. He considered alcohol given in small but repeated doses as nutritive, and ordered half an ounce of brandy to be given every half hour, hour, or two hours, according to the urgency of the case. He also

* Clinical Researches of Diseases in India, vol. ii. p. 315, *et seq.*

† Canstatt, 1852; iii. p. 229.

supported the patient by nutrients, and gave good beef-tea early. The result of this practice was, that among 53 cases he had 6 deaths, or about 1 in 9.

General Hospital Statistics.

It has already been stated that the general statistics of a public hospital afford no index to the number of cases of acute pneumonia treated clinically (p. 28). It must also be evident that in institutions which contain several physicians, who treat their cases in a different manner, little is to be learnt of that treatment by mixing their cases together. Hence the various General Hospital Statistics of pneumonia ought only to be compared with one another, and never referred to as a means of comparison with the individual practice of physicians.

Statistics of Pneumonia in the Royal Infirmary of Edinburgh.—It appears from the published statistics of the Royal Infirmary of Edinburgh, that upwards of one-third of all the patients affected with pneumonia died who entered during a period of ten years when bleeding and an antiphlogistic treatment was universally practised. No doubt, it cannot be pretended that perfect accuracy as to diagnosis was attained in all the cases. It is certain also that numerous complications, and the debilitated constitutions so frequently met with in the practice of a large hospital, served to swell the mortality. It is remarkable, however, that this proportion of deaths to recoveries is nearly the same as has occurred in the Infirmary since the commencement of the present century, as well as what resulted in the cases so carefully observed by M. Louis in the hospital of La Charité, at Paris.

* Clinical Lectures by Beale, p. 310.

TABLE showing the Number of Patients affected with Pneumonia treated in the Royal Infirmary of Edinburgh, and the results, from July 1st 1839 to October 1st 1849.

Years.	Total No. of Patients entering the Infirmary.	Cases of Pneumonia admitted.	Cured.	Relieved.	Died.	Statistician.
1st July 1839 to 1st Oct. 1841	7,969*	139	85	5	49	Dr. John Reid.
1st Oct. 1841 to 1st July 1842	3,537	42	23	3	16	Dr. T. Peacock.
,, 1842 ,, 1843	2,760	41	26	0	15	
,, 1843 ,, 1844	7,204*	31	16	4	11	Dr. Hughes Bennett.
,, 1844 ,, 1845	3,252	50	33	4	13	
,, 1845 ,, 1846	3,638	61	40	6	15	
,, 1846 ,, 1847	7,435*	93	47	5	41	
,, 1847 ,, 1848	7,446*	103	52	6	45	
,, 1848 ,, 1849	3,724†	88	66	5	17	Mr. M'Dougall.
	46,965	648	388	38	222	

* At these periods there were great epidemics of fever.

† At this period considerable changes took place among the medical staff of the Infirmary.

My former clerk, Dr. Thorburn, was kind enough, at my request, to go over 208 case-books of the Infirmary, dated between the years 1812 and 1837, and belonging to twelve physicians, all of whom practised an antiphlogistic treatment. He found that of 103 cases of pneumonia, 55 were cured, 41 died, and 7 were relieved—that is, 1 death in $2\frac{1}{2}$ cases. Dr. Thorburn then carefully read over these 103 cases, and rejected all those that were incomplete, or which presented no evidence of having been pneumonia. The remainder were tabulated, and it may safely be said that they were all cases of pneumonia, or of acute inflammations of the chest closely allied to that disease, and the result was :—Number of cases, 50; died, 19; cured or relieved, 31—that is, more than 1 death in 3 cases. The last ten years' statistics in the same institution, as furnished to me by the present statistician, Mr. M'Dougall, gives the following results :—

TABLE showing the number of Patients affected with Pneumonia treated in the Royal Infirmary of Edinburgh, and the results from 1854 to 1864.

Years.	Total No. of Patients entering the Infirmary.	Cases of Pneumonia admitted.	Cured.	Relieved.	Died.
1854-5	3,990	64	47	6	11
1855-6	3,816	51	38	3	10
1856-7	3,358	39	32	4	3
1857-8	3,465	39	32	3	4
1858-9	3,718	45	37	1	7
1859-60	3,894	33	26	1	6
1860-1	3,937	68	61	2	5
1861-2	3,892	59	47	3	9
1862-3	4,384	75	64	2	9
1863-4	4,253	45	39	1	5
	38,707	518	423	26	69

The last ten years' experience of the treatment of pneumonia in the Royal Infirmary of Edinburgh therefore exhibits a mortality of 1 death in $7\frac{1}{4}$; that which existed before 1848 having been rather more than 1 death in 3 cases. The result is striking, and proves that twice and one-third as many persons as previously now recover. Nor have I any doubts that when large doses of antimony are abandoned, and a vigorous restorative treatment becomes the rule, the mortality will be still further diminished. Even as it is, the foregoing figures contrast favourably with those of some other hospitals. For, according to Dr. Arthur Mitchell,* the number of cases of pneumonia admitted into the General Hospital of Vienna from 1847 to 1858 inclusive—that is, for 10 years—was 5909, of which 1439 died, or 1 death in 4·1 cases. Dr. Arnold von Franque† informs us that in sixteen years, from 1849 to 1855 inclusive, there were admitted into the Julius Hospital of

* Edin. Med. Journ. vol. iii. p. 399.
† Inaugural Dissertation, Würzburg, 1855, p. 42.

Würzburg 874 cases of pneumonia, of which 176 died—nearly 1 death in 5 cases. These proportions have undergone very little change since, for we find that in the Wieden Hospital of Vienna, according to Dinstl,* during five years (1857 to 1861), among 33,557 cases, 1212 cases of pneumonia were treated, of whom 277 died, or 1 in $4\frac{1}{3}$—considered by the reporter to be a favourable result. During a similar period of five years (1856 to 1860) in the General Hospital of the same city, 3014 cases of pneumonia were treated, of whom 748 died, or a little more than 1 in 4 cases.

Conclusions derived from the preceding statistical facts.

With a view of rendering the inquiry as exact as possible, I have omitted from the preceding list all experiences which are not on the same footing as my own with regard to extent and other circumstances, with the exception of the treatment by stimulants, and this because the statistics given by the late Dr. Todd are the only ones as yet published as to the effects of those remedies. For the same reason I have omitted the recent researches of Hannover, as to 1382 cases of chest inflammations,† not being able from the abstract in Canstatt to determine the exact mortality and treatment of pneumonia, as distinguished from other thoracic affections. Numerous other valuable papers have on the like ground not been referred to. I feel satisfied, however, from their perusal that they add nothing of essential importance to the facts which have been already recorded.

These, then, I think distinctly prove—

1. That an extreme antiphlogistic treatment has always been attended with a large mortality, amounting to 1 death in 3 cases; but that when modified in various ways—that is, by diminishing the amount of lowering remedies, selecting

* Canstatt, 1862. iii. p. 219. † *Ibid.*, iii. p. 224, 1864.

cases, or by the cases being those of young and vigorous subjects—the mortality varies from 1 death in $4\frac{1}{2}$ (VII.*) to 1 death in 13 cases (IX.) When one-half the cases are those of children, or persons below twenty years of age, and the lowering treatment slight, the mortality diminishes to 1 death in 28 cases (VIII.)

2. That a treatment by large doses of tartar emetic has been accompanied by a mortality varying from 1 death in $4\frac{1}{2}$ (X.) to 1 death in $9\frac{1}{8}$ cases (XIV.)

3. That a dietetic or expectant treatment has been followed by a mortality varying from 1 death in $7\frac{1}{4}$ (XV.) to 1 death in 10·9 cases (XVII.) In children, according to Barthez (XVIII.) the mortality is almost *nil.*

4. That the results of a mixed treatment, in which various remedies have been employed, according to the nature of the case and the stage of the disease, are a mortality varying from 1 death in $3\frac{1}{5}$ (XXIV.) to 1 death in $13\frac{2}{3}$ cases (XIX).

5. That a tonic treatment with iron and copper, according to Kissel, was attended with a mortality of 1 death in 22 cases (XXV.)

6. That a treatment by stimulants, according to Todd, was followed by a mortality of 1 death in 9 cases (XXVI.)

7. That the restorative treatment of the author having been attended, in the worst point of view, by a mortality of only 1 death in $32\frac{1}{3}$ cases, is the most satisfactory yet published. But when it is considered that the 4 deaths resulted from pathological complications unconnected with the pneumonia, this treatment may be said to render the mortality in true cases of pneumonia *nil.*

8. That 105 uncomplicated cases, occurring consecutively in the clinical wards of the Royal Infirmary when under my care, during a period of 16 years, should all have recovered,

* These numerals correspond to those giving an abstract of the treatment in the previous pages of this section.

is a fact which can only be ascribed to the nature of the treatment, as is shown by contrasting the results of that treatment with those of a lowering, expectant, mixed, or specific practice.

9. That just in proportion as other treatments approach the restorative principle, and avoid lowering the system, so much the greater is their success. It will further be observed that even where a direct lowering practice has been avoided, if the diet has been restricted, or opium largely given, or digitalis, alcohol, or other drug, tending to weaken the system and diminish appetite employed, no great advantage has been arrived at. So that—

10. The variations which appear to follow the same treatment by different physicians are explicable by the amount of weakness in the patient, or circumstances in the treatment causing weakness, such as low diet, bleeding, tartar emetic, narcotics, etc. etc. It follows that supporting and restoring (not stimulating) the nutritive powers of the system, and avoiding all weakening remedies, ought to constitute the practice in pneumonia.

PATHOLOGY OF ACUTE PNEUMONIA.

Pneumonia is a lesion consisting of liquor sanguinis poured into the air vesicles, minute bronchial tubes, and parenchyma of the lung. The exudative process may be very limited, indeed confined to a few air vesicles and the minute bronchial tubes connected with them. This is *vesicular pneumonia.* We know it may be confined to a lobule or occupy an entire lobe, constituting the so-called *lobular* and *lobar pneumonia.* In either case the essential phenomenon of inflammation—that is, exudation—has occurred, distinguishable on careful examination of the pulmonary tissue, by the blocking up of air vesicles with a finely-molecular matter. Occcasionally the vesicular

exudation may be felt on handling the lung in the form of minute indurations, varying in size from a millet seed to that of a pea—often red, but occasionally yellow, and in the latter case very liable to be mistaken for tubercles. Such small indurations, however, at length soften, and are converted into pus, like the lobar and lobular forms of pneumonia.

Microscopic examination of the pulmonary tissue shows us, in the first instance, that the air vesicles, the minute bronchi, and the areolar tissue, are infiltrated with a molecular and granular exudation, which often forms a complete cast or mould of the vesicles and bronchi, easily separated mechanically by washing and pressure. Not unfrequently, as was shown by Remak, these moulds are expectorated entire, and may be disengaged from the gelatinous matter with which they are associated by throwing the contents of the spit-box into water, and teazing out the branched filaments. These, when magnified, present a fibrous exudation, in which are imbedded commencing pus corpuscles, with a greater or less number of epithelial cells. Such portions of exudation as remain in the lung are transformed into pus, become ultimately disintegrated and absorbed into the blood, where they are chemically changed, and at length excreted from the system, principally by the kidneys. If, from the extent of the disease or weakness of the patient, this process is checked, the patient may die, either from inability to excrete the effete matter in the blood, or from interruption to the respiratory functions. If the exudation be limited in extent, or have been poured out slowly from the commencement, it may become what is called chronic. Under such circumstances, the epithelial and pus corpuscles of the pulmonary tissue may undergo the fatty generation, and numerous compound granule cells be the result. If blood should have been extravasated, mingled with the other formations described, there will be often found red crystals of hæmatine, blood corpuscles surrounded by an

albuminous layer, and presenting the numerous transformations which they are known to undergo after extravasation.

Dr. Todd* observes, "When a patient suffers from pneumonia, the tendency is for the lung to become solid, then for pus to be generated, and at last for the pus-infiltrated lung-structure to be broken down and dissolved. Such are the changes when matters take an unfavourable course. On the other hand, recovery takes place, either through the non-completion of the solidifying process or by the rapid removal, either through absorption or a process of solution and discharge of the new material, which had made the lung solid." Now, I have directed special attention to the method in which the exudation is absorbed, and have frequently examined lungs after death in the stage of red hepatisation, where death had occurred from cerebral hæmorrhage or other disease. In some lungs there has been a pneumonia in all its stages, incipient in some places, solidified and red in others, grey and purulent in a third. In all these places a gradation in pus formation has been observable. In the most solid hepatisation young pus cells may be observed somewhere beginning to form; so that I am convinced that the exudation is always broken down through the agency of purulent formation—in short, that this is the normal process. I have never seen any evidence that a coagulated exudation is simply disintegrated and absorbed without the development of pus cells, and I conceive that all analogy, as well as direct observation, is opposed to the supposition. It follows that, so far from the formation of pus being the evidence of an unfavourable course of the disease, it is the normal and necessary transformation of the solid exudation, whereby it is broken up and caused to be absorbed.

This view, based upon numerous careful histological examinations of pneumonic lungs, and easily capable of demon-

* Beale's Archives of Medicine. No. 1, p. 2.

stration in any recent specimen of the disease, as well as by many preparations in my collection, shocks the notions of certain pathologists of the French school. M. Grisolle recently observes of it :—"I cannot accept a doctrine that is not justified by any direct proof, against which the clinical sense in a manner revolts, and which is manifestly contrary to what has been taught, and is still taught every day, by the simplest observation of physicians throughout the world."* If, before writing such a criticism, M. Grisolle had investigated the subject in the only way in which it can be investigated—that is, with the microscope—he would have seen in red hepatisation pus corpuscles in all stages of formation, and thus convinced himself of a truth which, so far from revolting the clinical sense, presents to it new and important arguments for a more successful practice, as will be subsequently shown. The microscope has proved that many so-called purulent fluids are not purulent at all; whereas it distinctly demonstrates that the disaggregation, softening, and liquefaction of the plastic exudation in pneumonia—processes admitted by M. Grisolle—are in truth the result of a vital growth of pus-cells; by favouring which we can cause recovery in our patients, and by diminishing or interfering with which we increase the mortality among them. The direct proof that M. Grisolle requires he may himself obtain by making a few sections of any pneumonic lung with a Valentin's knife, and carefully examining them, first under a magnifying power of 25, and then of 250 diameters linear, when he will see appearances similar to those now figured, and recognise—1st, Molecular exudation in the air-vesicles; 2d, Passage of this by molecular coalescence into pus-cells; and 3d, Formation and subsequent degeneration of such cells. Indeed, so constant is the formation of pus in pneumonia, and so clearly can it be seen to form by molecular aggregation, independently of pre-existing cells, as

* Traité de la Pneumonie, 2me edit. 1864, p. 53.

in itself to carry with it a complete refutation of Virchow's doctrine, "omnis cellula e cellulâ," or what is commonly called "cell pathology."

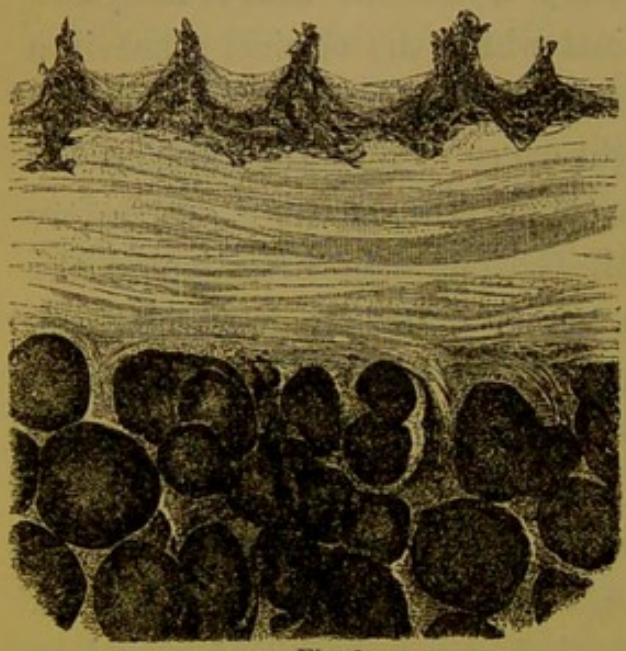

Fig. 1.

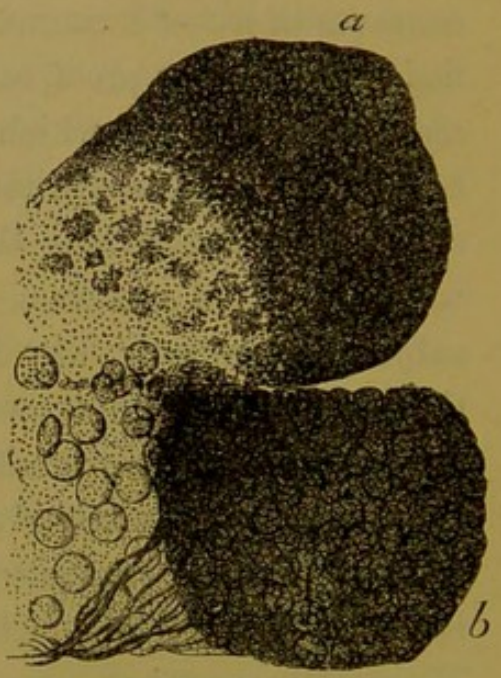

Fig. 2.

Fig. 1.—Vertical section through the outer portion of a lung affected with pleuro-pneumonia, magnified 25 diameters linear. Externally, the exudation on the surface has formed a thick layer of molecular fibres, and shows villi, which, on becoming vascular, absorb the serous fluid. The lower half of the figure shows the air vesicles of the lung blocked up with the coagulated molecular exudation.

Fig. 2.—Two air vesicles in red hepatisation of the lung, magnified 250 diameters linear. *a*, Filled with molecular exudation, aggregating into small masses to form pus corpuscles. *b*, A neighbouring air vesicle, in which the exudation has proceeded further in development, and is forming pus-cells.

The exudation having been transformed into pus-cells, these, after a time, become fatty, break down, disintegrate, and liquefy, and are absorbed into the blood, from whence they are excreted by the emunctories, but more especially by the kidneys, in the form of urates.

It is the pathology of the disease, as now explained, that many years ago forced upon my mind the conviction that blood-letting and antiphlogistics must be injurious. Pus-cells must be regarded as living growths, and as such require an excess of blood, good nutrition, and exalted vital force to hurry

on their development and carry them successfully through the natural stages of their existence. If the resolution of a pneumonia simply consisted of a retrograde process—of a so-called necrosis of the exudation—an antiphlogistic practice, by favouring it, might be expected to relieve the lung rapidly and cure the disease. But my conviction, that such removal was dependent upon vital processes of growth, led me to an opposite treatment, viz., never to attempt cutting the disease short, or to weaken the pulse and vital powers, but on the contrary to further the necessary changes which the exudation must undergo in order to be fully excreted from the economy. To this end, during the period of febrile excitement I content myself with giving salines in small doses with a view of diminishing the viscosity of the blood. At the commencement of the treatment I order as much beef-tea, milk, and other nutrients as can be taken, and as soon as the pulse becomes soft, solid food, and from 4 to 8 oz. of wine daily. As the period of crisis approaches I give a diuretic, consisting of half a drachm of nitric ether, and sometimes ten minims of colchicum wine, three times daily, to favour excretion of urates. But if crisis occurs by sweat or stool, I take care not to check it in any way. I do not consider that the salines and diuretics do more than assist the natural progress of the disease. The essential part of the treatment consists in the rest, nourishment, and support given to the body throughout.

The object of this practice has been greatly misunderstood, and by none more so than by M. Grisolle, who calls it an expectant treatment. It seems to me to differ entirely from it in the care which is taken to nourish the weakened frame *from the beginning*, and thus, according to the pathological views formerly explained, assist the vital powers to change the coagulated exudation, first into a new growth (pus), and then into a fluid capable of absorption. I cannot call it a dietetic treatment, because this term has been applied on

the Continent to withholding diet rather than giving it—the "diete absolue" of the French, meaning starvation. This fact explains the fatal result of the practice, and especially the ill success of M. Grisolle, when he tried expectancy—or, as he understands by that method, withholding all nourishment—while at the same time the bowels are acted on by injections and castor-oil.* My pathology, in his opinion, appears strange, and useless to refer to ;† but as it has led me to cure every case of single and double uncomplicated pneumonia, whereas M. Grisolle's treatment produces a mortality of one in every six cases, I hope he will permit me to think that my theory is better founded on observation than he supposes, while my practice unquestionably supports its correctness.

I have dwelt very shortly on the pathology of Pneumonia in this place, because in the present state of science it can only be fully understood by entering at length into the great subject of inflammation. My object has been to point out that, so far as my own practice was concerned, I was led to it by scientific research. But now, after carefully observing and recording cases for seventeen years in the wards of an hospital, I venture to think that I am justified in maintaining that truth in practice coincides with truth in theory, and that the one supports and confirms the other.‡

OBJECTIONS ANSWERED.

In a question of great practical importance like the present, in which a procedure is recommended much opposed to past

* Traité de la Pneumonie, 2me edit. p. 559.

† *Idem*, p. 568.

‡ For a fuller consideration of the pathology of this subject the author would refer to the fourth edition of his Principles and Practice of Physic, 1865, more especially what is said under the heads of "Molecular and Cell Theories of Organisation" (p. 115); "Inflammation" (p. 155); "The natural Progress of Disease" (p. 295); and "On the Diminished Employment of Blood-letting and Antiphlogistic Remedies in the Treatment of Acute Inflammations" (p. 302).

experience, and to the opinions of many able physicians, it was not to be expected that no objections could be offered. Indeed these have been freely expressed, as the views now published have from time to time been made public in my lectures and writings. Without referring to these individually, I now propose to answer them under distinct heads.

Objection 1. *No Plan of treating Pneumonia can be applicable to all Cases.*

A very general objection offered to the restorative plan of treatment in pneumonia is founded upon the presumed success of former modes of practice in cases peculiarly adapted to them. No one kind of treatment, it is said, can possibly be successful in all cases of pneumonia, inasmuch as some occur in robust and others in feeble constitutions. It has also been urged that the disease may occur under varied circumstances of age, sex, climate, constitution, etc., etc.; may present great differences in phenomena as regards pain, sleeplessness, breathlessness, expectoration, and so on ; nay, more, the extent of the disease and its complications may give it peculiarities ; and that all these will require variations in the treatment. These assertionss appear not only fascinating, but most reasonable. It is even urged by many who have been obliged to admit the fatality of general blood-letting, tartar emetic, and antiphlogistics, that the cause of this is their not having been judiciously employed. If, it is argued, bleeding were only practised in such cases, and antimony, opium, and digitalis only given in such others, the result would have been different. Yet these and all such statements only constitute so many assumptions, wholly destitute of proof by those who make them.

Wherever, on the other hand, judicious medical men have practically acted on these ideas, although a marked improve-

ment on the old antiphlogistic treatment has occurred, a considerable mortality has still taken place—which, when contrasted with the restorative treatment, exhibits the vast superiority of the latter. Thus we cannot doubt that these views have been ably carried out by Lebert, Huss, Bamberger, Flint, Rigler, and Morehead ; and yet a reference to p. 37 will prove that the highest success thus arrived at, which was by Lebert, is 1 death in 13 cases, and that, according to Huss, even uncomplicated cases so treated die in the proportion of 1 in 17 cases. To me, therefore, it appears certain that attempts to relieve particular symptoms by remedies which diminish strength and lessen appetite are objectionable, and that, although some patients may be apparently benefited, the practice as a rule should be avoided.

In reasoning with medical men who hold the objection here referred to, it will always be found that their arguments rest upon special cases. We have shown that where a strict antiphlogistic practice was the rule, one case of pneumonia in every three so treated died. This must be admitted to be a frightful mortality, occurring as it did in chosen uncomplicated cases, all of which, under a restorative treatment, may now be cured. But while one in three died, two in three recovered. If sixty cases had been treated, forty got well ; and the practitioner, in recounting the results of his practice in after years, dwells with complacency on the number of individuals he has saved with his lancet. These have made a strong impression on his mind. Those who died were forgotten. It must be clear that no correct conclusions can be arrived at as to the success of any treatment, unless all the cases are taken into consideration, and the number of fatal ones compared with those which recovered. When then it is assumed that vigorous or plethoric persons attacked with pneumonia require to be bled, whereas it is only the weak that should be supported,—where, I ask, is the proof of such

a dogma? In the same manner, when it is asserted that excessive dyspnœa, or the disease attacking both lungs, demands blood-letting,—where, I ask, is the proof? On the other hand, I appeal to the facts tabulated at p. 12, *et seq.*, as showing that both strong and weak individuals recover easily under restoratives, and that the amount of dyspnœa, or the disease attacking one or both lungs, in no way affects the mortality.

That various circumstances greatly increase or diminish the mortality and duration of pneumonia, has been proved by various writers, but by no one more clearly than by Dr. Sibson in his able article on this subject in the *Brit. and For. Med. Chir. Review* for July 1858. The circumstances he more especially alludes to are age, sex, and constitution of the patient; the season, the climate, the previous destitution of the patient, the early neglect of the disease, the extent, character, and stage of the disease, the complications, the change of type, and the hospital accommodation. Several of his conclusions, looked at by the light of the facts I have now published, require to be modified, especially those which refer to the influence of the extent of the disease, and change of type, which in truth produce little effect on the progress of pneumonia. All the other circumstances may I think be resolved under one head, viz., various causes producing weakness. Thus the reason that the disease is less fatal among young persons under twenty than among adults or elderly people, is evidently that they are more vigorous, and because the nutritive processes in them are more active. We have also seen that among women, they being weaker than men, the disease is more prolonged. In like manner, neglect of the disease at an early period, and feebleness of constitution, as among the Hindoo races, produce injurious effects. It should be noticed that the observations of Dr. Sibson, and of other commentators, on a past treatment, refer for the most part to the results of an anti-

phlogistic, expectant, or mixed treatment. We have shown that under a restorative treatment most of those circumstances which have been shown to affect pneumonia unfavourably are at once removed. The great fact that all my cases recovered except the four who died from fatal meningitis, ulcerated intestines, or kidney disease, shows that in this climate, under restoratives, age, sex, season, and constitution of the patient, have no influence on the mortality, although to some extent they affect the duration of the disease.

Perhaps there is no circumstance that influences the mortality and progress of a pneumonia more than neglect of the disease in its early stage. The lower classes not only starve themselves after the onset of the fever, but not unfrequently continue their work, until they become thoroughly exhausted, before entering an hospital. Such are the cases which when first seen are in a dying state, and which, if they do not die, have a prolonged convalescence. On the other hand, it is often remarkable how restoratives cause such individuals to rally and triumph over the disease. Thus, while in the strong, a restorative treatment enables them to pass quickly and safely through the malady, in the weak, it is the only method of averting death and securing recovery.

Objection 2. *The Success of the Restorative Treatment is owing to a Change in the Type of the Disease.*

No sooner in 1848 had I commenced to make a trial of the restorative treatment of pneumonia in the clinical wards of the Royal Infirmary, than my very eminent colleague, the late Professor Alison, necessarily had it brought under his notice. Struck apparently with the results, so contrary to all his preconceived notions, he was led to the conclusion that they could only be explained by supposing that the type of inflammatory diseases had changed since the days of Cullen and Gregory. This

view he first put forth in his clinical lectures, delivered in 1850 and 1852, but more especially in a paper published in 1856,* and to which I replied at length in 1857.† This last paper gave rise to what was called the blood-letting controversy of 1857 in this country, and which was even participated in on the continent and in the United States of America.

The theory put forth by Dr. Alison was, that the altered practice in pneumonia and other acute diseases does not result from an improved knowledge or an advance in diagnosis and pathology, but that these diseases themselves have changed. He thought, for example, that imflammation is no longer the same now that it was in the time of Cullen and Gregory; that the human constitution (in a manner which he did not explain) is fundamentally altered, and has become weaker; so that medical men were as right in treating disease by blood-letting in former days as they are now in abstaining from it. So satisfactory did this theory appear to its founder, that he claimed for it the dignity of an ultimate fact or axiom. Thus, says Dr. Alison, changes of type in inflammatory diseases constitute a "part of the general dispensations of Providence as to those diseases, and are, as far as yet known, *an ultimate fact in their history.*" Dr. Watson says, no less emphatically, in the last edition of his work on the "Practice of Physic:" "I am firmly persuaded, by my own observations, and by the records of medicine, that there are waves of time through which the sthenic and the asthenic characters of disease prevail in succession; and that we are at present living amid one of its adynamic phases."

* "Reflections on the results of experience as to the symptoms of internal inflammations, and the effects of blood-letting, during the last forty years" (*Edin. Med. Journal*).

† "Observations on the results of an advanced diagnosis and pathology, applied to the management of internal inflammations, compared with the effects of a former antiphlogistic treatment, and especially of blood-letting." —(*Edin. Med. Journal*, vol. ii. p. 769.)

Let us for a moment consider what this theory implies—viz., that the constitution of mankind has become weaker and less capable of bearing depletion now than formerly; that the human pulse, by which this is tested, beats less vigorously when diseased than it did for hundreds of years before the days of Cullen and Gregory; that when a strong man, now-a-days, is seized with an inflammation, he presents all the phenomena that used to be observed in a weak one: in short, that the human race has so degenerated during the last five-and-thirty years that the reaction which formerly used to take place in the economy no longer occurs, and that it cannot bear depletion so well.

But surely this idea may be said to repose on no facts whatever, but merely on supposition; for, when we investigate the effects of injuries after the battle of Waterloo and after the battle of the Alma, we find them, in the British army, identically the same. Neither has any change been observed in this respect in our civil hospitals. Further, the people, generally, are better fed, clothed, and housed than they used to be; the comforts and enjoyments of life are far more widely diffused, and its absolute value, according to the bills of mortality, is greatly augmented. Our mental strength, commercial enterprise, engineering skill, martial daring, and bodily vigour might easily be shown never to have surpassed what this country can now boast of—facts entirely opposed to this theory.

The treatment of inflammation without antiphlogistics has also been introduced among veterinary practitioners. Is it to be maintained, therefore, that our horses and cattle have, as the result of civilisation, been enervated, and that in them, also, the type of disease is altered? We nowhere observe this any more among them than among mankind; they still draw the same loads—still plough with the same depth of furrow—still run with the same if not greater speed.

Besides, it should not be forgotten that the antiphlogistic was a fatal practice—in acute pneumonia amounting to one death in from three to six cases (I.-IV.) In my wards there were no deaths in similar uncomplicated cases under a restorative treatment. To prove that this is a result of treatment, and not of change of type, it is only necessary to consider that, in countries such as Spain and Italy, where the old practice is still followed, it produces the same fatal result. Have we not all recently been startled by the death of Count Cavour, which followed five bleedings for a fever? It surely will not be maintained that whilst the people of Britain, France, and Germany have degenerated, those of Spain and Italy have retained their pristine vigour? In Paris M. Bouillaud continues to pursue his system of bleeding by the *coup-sur-coup* method. He is the only one in that capital who does so. Can we, on this account, believe that in his wards the type of disease has not changed, whilst in every other hospital and ward it has? On the contrary, we find that wherever large bleedings are practised at present, the same great mortality exists which formerly prevailed—showing that the disease is unaltered.

Then it has been argued that epidemic fevers change their type, and so they unquestionably do, but it in no way follows that organic diseases should do so likewise. The morbid poisons in the atmosphere, arising from various sources, are more powerful at one period than another, and not only induce symptoms varying in intensity, but cause varied symptoms, such as occur in typhus and typhoid fevers. It is the latter changes which constitute difference in type. But there have been strong and weak men in all ages; while blows, injuries, and changes of temperature have similarly affected them, occasioning symptoms proportioned to their bodily vigour, but in no way altering the character of the symptoms themselves. Have cancer, tubercle, or other structural changes undergone

a change of type? Tubercular diseases of the lung were until lately considered to be almost always fatal; now, owing to an improved treatment, it is known that they frequently recover. Are we therefore to believe that, while persons affected with inflammations are weaker, those affected with phthisis and scrofula are stronger than they used to be?

But it is stated that the pulse has altered: formerly it was found to be strong, now it is comparatively weak. Why, within the last twenty-five years nature should have changed the pulse of man and animals is not very clear. Judging from the circumstances to which I have alluded, especially the more abundant food and prosperity of the people, it ought to be stronger instead of weaker. But some have already brought forward ideas to explain the suppositious fact. Thus it has been said the use of tea instead of malt-liquor, spirits, and wine, renders people weaker and more nervous. Some have thought that the use of potatoes, and others the employment of railways, has something to do with it. Dr. Watson is of opinion that it is attributable to the epidemics of cholera, which, in a manner he has not sought to explain, "leave traces of their operation on the health and vitality of a community long after they have ceased to prevail as epidemics." (*Pneumonia*, vol. ii. p. 97.) Mr. Robertson of Manchester is satisfied from experience that it is the boil epidemic which has caused this remarkable change of type. Some suppose that it is dependent on the altered relations between our urban and rural populations. Would it not be well for those who are already discussing the causes of a change that is by no means apparent, to ask themselves, in the first instance, how they establish the fact that the pulse is changed at all?

I need scarcely say that memory and mere opinion in a case of this kind are not of much value. How often do our senses deceive us when objects are at hand; how little can

they be depended on when it is simply asserted that in the memory of this or that practitioner a pulse was stronger twenty years ago than it is now. And yet we have no further evidence than this advanced by the supporters of a theory which claims as its fundamental fact a diminished vital force in the heart and pulse of man and animals, to explain a change of practice. But what say science and positive observation to these assertions? It so happens that there is no subject in all physiology with regard to which we possess more elaborate and more exact information than we do concerning the pulse. In 1732 Stephen Hales published a remarkable series of experiments regarding the static force of the pulse, and the rapidity of the blood through arteries of different calibres. In 1828-29 similar observations were made by Poisseulle with an instrument invented for that purpose, which he called the "hæmadynamometer," that led him to the same conclusion as that arrived at by Hales. In these experiments the force of the pulse was determined by the height to which the impulse of the blood could elevate a column of mercury. It resulted that the static force with which the blood is impelled in the human aorta is equal to the pressure of 4 lb. 4 oz. on the square inch, and in the radial pulse is equal to about 4 drachms. Valentine confirmed these results in 1844, Ludwig in 1847, and Vierordt so late as 1855; so that not only is there no fact whatever in support of the notion that the pulse of man or animals is weaker now than formerly, but all positive researches during a period of one hundred and thirty years prove the very contrary. It appears to me, therefore, that the theory of change of type, so far from being established on well-known facts, is, on the contrary, altogether erroneous, being entirely opposed to the accurate data which histology, physiology, and pathology have accumulated in modern times.

I would refer the readers interested in this subject to a

detailed analysis of the papers which appeared during the blood-letting controversy of 1857, in the third edition of my "Principles and Practice of Medicine," 1859, p. 297. The preceding summary of the argument is reprinted from the fourth edition, 1865. While these pages, however, are passing through the press, Professor Stokes of Dublin has added his distinguished name to those of the physicians who have contended strongly for a change of type in pneumonia during the last thirty or forty years. He says: "I well remember observing the frequent occurrence of the phenomena mentioned by Dr. Christison—the vehement action of the heart, the incompressibility of the pulse, the vivid redness of the venous blood, and the force with which it spouted, almost *per saltum* from the orifice in the vein."* It must be regarded as a singular circumstance, that whilst Dr. Stokes is appealing to his memory in order to support the theory of change of type, Dr. G. Balfour should publish a paper in which he quotes the cases of Cullen and Gregory, from notes of their Lectures preserved in the libraries of the Edinburgh College of Physicians and of the London Medico-Chirurgical Society. These records of cases taken at the time, distinctly prove that the pneumonia which occurred in their day presented exactly the same type as pneumonia does now. In most of the cases the pulse was soft. Indeed, so far from the pulse being strong and incompressible, as it was according to the memories of Drs. Christison and Stokes, Dr. Gregory lays it down as a rule that "in respect to the fulness of the pulse in pneumonia in the beginning before the patient was blooded, it is not only soft but small; but commonly after the patient is blooded it becomes fuller, although it always retains its softness."† Surely positive facts written down at the bed-side during the life of the patient must constitute more valuable evidence of

* Address in Medicine to the British Medical Association, 1865.

† Edinburgh Medical Journal, September 1865, p. 216.

what really existed, than mere remembrances of the past by physicians, however eminent. It follows that the change of practice in modern times cannot be ascribed to change of pulse and a typhoid type of disease, as has been supposed.

Another statement of Dr. Stokes will, I venture to think, on inquiry be found in no way to support his doctrine. Alluding to the appearances presented by pneumonia in specimens presented to the Pathological Society of Dublin in recent times, as compared with the years 1820-30, he says: "As a general rule these specimens all showed appearances indicative of a less degree of pathologic energy. In pneumonia, for example, the redness, firmness, compactness, and defined boundary of the solidified lung was seldom seen; and that state of dryness and vivid scarlet injection to which I venture to give the name of the first stage of pneumonia became very rare. In place of these characters, we had a condition more approaching to splenisation, the affected parts purple, not bright red; friable, not firm; moist, not dry; and the whole looking more like the result of diffuse than of energetic and concentrated inflammation; or we had another form, to which Dr. Corrigan has given the name of blue pneumonia, in which the structure resembled that of a carnified lung, which had been steeped in venous blood." Accepting the facts as detailed by Dr. Stokes, they admit of easy explanation without the necessity of supposing that organic alterations of the human frame have in recent times undergone any sensible alteration in their physical characters. In the first place, in consequence of an improved treatment very few persons now die in the first stage of pneumonia, a circumstance quite sufficient to account for the rarity of that solid and defined red hepatization of the lung to which Dr. Stokes has alluded. But every pathologist must be aware that when he does examine a primary uncomplicated pneumonia in the early stage, it presents exactly the same aspect and characteristics now as it always did. In the second place,

there can be no doubt that the greater frequency with which *post-mortem* examinations are now performed, and the increased attention which has been paid to morbid anatomy, have brought to light lesions which were formerly little understood, such as splenisations, carnifications, and collapses of the lung. It must be evident, however, that the decrease in number of true examples of firm red hepatisation, and the apparent increase of the splenisations and softer lesions of the organs so frequent in fevers, is no proof of change in the same lesion, but rather of a lessened mortality of the one disease, and a consequent comparative increase of the others.

Dr. Stokes further denies that an advanced diagnosis and pathology have had any influence in reducing the mortality in cases of acute pneumonia. As to diagnosis, he asserts that no improvement has taken place since the days of Laennec. But while this may be admitted in the sense that Laennec and a few of his followers could detect pneumonia physically as well as physicians can now, it must also be conceded that the skill they possessed is at present far more widely diffused among medical men, and that practically such extension of diagnostic power has greatly contributed to give precision in detecting the disease. As to the influence of cell pathology, I have from the first maintained that it was the consideration that pus cells were vital formations, through the agency of which the exudation was removed, that led me to change my own practice. This pathology, however, as previously explained (see p. 47, *et seq.*), has nothing to do with the cell pathology of Virchow, with which it has been strangely mingled by Dr. Stokes. The doctrine of Virchow is that every cell springs from a pre-existing cell, and arises in no other way, and that we must not transfer the seat of real action to any point beyond the cell. To this doctrine I have always been opposed, and shown that there exist such striking facts proving the existence of vital action without cells at all, as to render the hypothesis of Virchow untenable—the

pus cells, for example, which infiltrate the lung in cases of pneumonia may readily be shown to originate independent of previously existing cells. On these important points, however, I cannot here enter at further length, but would refer the reader to a series of lectures I published in the *Lancet* on molecular physiology, pathology, and therapeutics, during 1863, and to a short account of molecular and cell theories of organisation, p. 115 of the last edition of my "Principles and Practice of Medicine." It must be clear, however, that it is to the law of nutrition, as arrived at by the cultivation of histology, that we are indebted for the present theory of inflammation, and for the successful practice which has been founded upon it.

In the whole of this discussion I have endeavoured to avoid saying anything that could wound the feelings of those who formerly employed antiphlogistics in the treatment of pneumonia. My object has not been to show—as my esteemed friend Dr. Stokes seems to think—that our "predecessors were deficient in observation and erroneous in practice." On the contrary, I believe that former physicians were thoroughly conscientious, and acted in perfect harmony with the pathology of their day, and the then state of knowledge. But now that pathology has greatly advanced, and our knowledge has been correspondingly extended, it surely becomes us, instead of remaining slaves to the authority of our forefathers, to imitate them at least in this—viz., to bring our theory and practice into harmony with one another. My real purpose has been to demonstrate that our acquaintance with diseased processes has led us to a treatment which has greatly diminished the mortality of acute inflammations, and if I have succeeded I shall rejoice that the end has been obtained, while I regret that such eminent physicians as Drs. Alison, Christison, Watson, and Stokes have differed with me in opinion.

OBJECTION 3. *Bleeding should still be employed under certain circumstances.*

In my paper in 1857, when demonstrating the injurious effects of bleeding and antiphlogistics on the mortality and duration of pneumonia, I took great pains to point out that these remedies unquestionably relieved symptoms, and might, therefore, in appropriate circumstances, if used cautiously, be employed as palliatives. I said, "But whilst large and repeated bleedings, practised with a view of arresting the disease, appear to me opposed to a correct pathology, small and moderate bleedings, directed to palliate certain symptoms, and especially excessive pain and dyspnœa, may reasonably be had recourse to, and, unless there be great weakness, without any fear of doing injury. I have often been struck, especially in cases where large thoracic aneurisms cause these symptoms, with the small loss of blood which will occasion marked relief. The same result may be hoped for in other cases where the congestion is passive, even when this is associated with active repletion of blood, followed by exudation. But I need scarcely remark that this mere palliative object of blood-letting is not the ground on which the practice has hitherto been based, and that in this point of view it requires to be very differently explained."

And again, "There are cases, which were formerly often mistaken for inflammation, in which blood-letting may still be useful. I allude to those where an obstruction to the circulation exists in the heart and lung dependent on overdistension of the right side of the former organ, and cases of venous congestion, engorgement, and perhaps œdema of the latter; also certain cases of bronchitis preventing aeration, of aneurisms, and of asphyxia. Although even here the true value of the remedy has yet to be positively ascer-

tained, the special cases demanding it more carefully discriminated, and the mechanical principles which justify the practice determined. The temporary benefit occasioned in many of these cases by the loss of a trifling amount of blood is often very remarkable, and has been previously referred to. I have seen instances where great dyspnœa and pain, caused by large thoracic aneurisms in vigorous men, have been greatly alleviated, and inexpressible relief produced for from twelve to twenty-four hours, by a bleeding to the extent of only five ounces. It seems probable that this may arise from diminishing for a time the tension of the whole vascular system. But whatever be the explanation of this fact, I hold that, as a palliative, and practised to a limited extent in cases where no great debility exists, blood-letting may still be had recourse to. So with regard to antimonials, although in the large doses, which weaken the heart and force of the pulse, they are not serviceable, in smaller doses, together with other neutral salts, they may assist in diminishing the viscosity of the blood, and in favouring the excretion of the effete matters by the skin and kidneys."

To these views I still adhere, although of late years I have never found it necessary to have recourse to blood-letting even as a palliative, having found that warm poultices locally produce just as much relief.

Another passage from my original paper in 1857 deserves consideration here :—"It has been argued that the immediate beneficial effects of blood-letting justify the practice. This is a therapeutical question of the greatest importance, and one which I venture to think has not been sufficiently considered by medical men. No doubt pain is a great evil, and mankind instinctively seek for relief, and sometimes at any cost. But if the possession of life be an advantage, it is oft-times only to be maintained at the price of suffering more or less privation and pain. It is in this point of view that disease

may frequently be considered as a benefit and a great good, mercifully sent by a wise Providence to reconcile man under a variety of circumstances to death itself, as to a great relief. But such is not the therapeutical or curative method of considering the question; the great object of the physician being *first* to cure, and, should his attempts in that direction fail, *then* to relieve. If both objects can be accomplished, so much the better; but if the means of relief are opposed to those of cure, then to obtain the latter the former must be unhesitatingly sacrificed. I have pointed out in another place how much this principle has been overlooked in the treatment of pulmonary consumption;* and in no case does it appear to have been more disregarded than in inflammation. For assuming it as granted that in some cases the pain is for a time relieved by bleeding, and that in pneumonia the respiration temporarily becomes more free, at what a cost are these advantages obtained should the patient be so weakened as to be unable to rally. Even if he does rally, a large bleeding almost always prolongs the disease. I do not consider it necessary to cite cases in proof of the fact, that in many instances bleeding has done great mischief, because this will be readily admitted by all candid medical men."

Very recently it has been contended by Dr. Markham, that under those circumstances which, from the first, I pointed out, admitted of very limited bleedings of four or five ounces, venesection until the patient shows *signs of relief or of fainting* is not merely a palliative, but, to use his own language, "a most sovereign and life-saving remedy." Now, to carry bleeding so far as this, is in my opinion injurious and unnecessary, from four to eight ounces being quite sufficient. In a healthy man at 36, with double pleuro-pneumonia, accompanied by pain and dyspnœa (nothing said of the pulse), Dr. Markham

* The Pathology and Treatment of Pulmonary Consumption, by the Author. Edinburgh 1859, 2d edit., p. 143, *et seq.*

took sixteen ounces of blood from the patient by venesection, to his very great and immediate relief, a week after the onset of the disease. The pain in the right side returned again in the evening, and therefore eight or ten leeches were then applied. Next morning the man was comparatively in a most comfortable state. "But," it is observed, "I do not intend to follow out the history of this man's case through his long convalescence. I will only add, that in addition to the double pneumonia, he was afterwards attacked with pericarditis; and that subsequently a pleuritic abscess of the right side opened into and discharged its contents through the lungs and the trachea." Instead of having doubts, however, as to the value of the remedy in this case, it is confidently stated that "the man would have perished had he not been bled."

The clinical lecture of Dr. Markham on this and another case concludes as follows:—"Let no theoretical arguing draw us away from the patent fact which we have seen with our eyes. We saw a man, to all appearance *in extremis*, fighting an unequal battle with disease. We found him to be a subject of pleuro-pneumonia. We saw an immediate stop, then and there, put to the violence of this deadly struggle by bleeding. We saw the man recover from the moment of the bleeding. You may have heard him declare that the bleeding was the saving of his life, though you need not, perhaps, take any great account of a patient's opinion on such a point. You have seen all this. I think a man must be sceptical indeed, beyond all bounds of reason and common-sense (if I may invoke that sense here), who refuses to connect effect with causation, the consequence with the antecedent, the cure of the disease with the venesection, in the cases which I have brought under your notice. And this one other word let me add suggestively, what other remedy do you know of under the sun which is capable of producing off-hand, then and there, such great results in such formidable disease?"*

* British Medical Journal, vol. i. 1865, pp. 107, 108.

This eulogistic praise of blood-letting is exactly the same in kind as was employed thirty years ago, and results from a similar observation of the immediate relief produced by the remedy, irrespective of its dangers and subsequent effects. Although the healthy man of 36 had a lingering convalescence, although pericarditis and pleuritic abscess followed, these were esteemed to be of little moment. The pneumonia is assumed to be a formidable disease, the dyspnœa, so common in double cases from the fourth to the seventh day, is described as placing the man *in extremis*, and the "unequal battle with disease," "the deadly struggle," is at once put a stop to by bleeding! Now, in my opinion the real danger which this patient was exposed to arose from the pericarditis, pleuritic abscess, and subsequent exhaustion. Why should a man in health be attacked by such sequelæ? Were they caused by the bleeding and leeches employed on the seventh day, when he was already prostrated by a week's fever? Might not the loss of four or five ounces of blood have produced all the palliative effects of the larger quantity taken? Might not a warm poultice locally, with an ethereal draught and nourishment, have put him into as comfortable a state next morning without bleeding at all? How can it be shown that this man, with his lingering convalescence, and his subsequent pericarditis and pleuritic abscess, was in any way benefited by bleeding? Might it not be argued more consistently with the dictates of "reason and common-sense," that a proper connection of "effect with causation" would demonstrate that the patient gained a temporary palliation at a risk which nearly cost him his life?

To answer these questions correctly, let us leave assumptions and glowing descriptions, and attend to the sober facts exhibited in our tabulated cases. Among these were thirty cases of double pneumonia, all of whom recovered, and the effects of bleeding upon them will be observed by running the eye over those distinguished by the letter D in the second

column. It is a most instructive fact, that wherever bleeding was practised in those cases prostration supervened, and the convalescence was greatly prolonged; whereas, in every case where the patient was healthy, as in the man treated by Dr. Markham, notwithstanding the most urgent dyspnœa and pain, recovery under restoratives was rapid and perfect (see Cases VI., XLIV., and LXXI., and contrast them with Cases X., XIV., XXXVIII., L., LI., LIV., LVII., LXX., LXXV., CXIII.)

As a contrast to the case of Dr. Markham, Case XXXVIII. may be referred to (See Table, p. 14). A robust man, æt. 51, in whom both lungs were affected, with lividity of face and intense dyspnœa. He also might have been described to be "*in extremis*, fighting an unequal battle with disease." He was not bled; had nutrients and stimulants; and instead of a lingering convalescence, with pericarditis and pleuritic abscess, was quite well and left the hospital in nine days.

A still more important lesson, however, may be derived from this discussion—viz., that in medicine no sound conclusion can be drawn from the glowing description of a few cases in illustration of any treatment whatever. Sober facts, well attested and tabulated, are what we require, with all the leading phenomena of the disease accurately observed and recorded. More especially, it is necessary for arriving at truth to give a series of cases in which the failures as well as the successes are considered, avoiding all assumptions and rhetorical efforts, and depending alone upon completeness and exactitude of detail.

In a subsequent paper on this subject * Dr. Markham explains that he would only bleed in those cases of pneumonia in which the respiration is seriously interfered with. He further seeks to draw a distinction between bleeding with, and bleeding without, starvation, and certainly, as either proceeding is bad, both together are doubly so. The latter, how-

* Brit. Med. Journal, vol. i. 1865, p. 477.

ever, he seems to think, so far from being bad, is, as we have seen, "a most sovereign and life-saving remedy." This I cannot admit, for in the face of the facts I have referred to it cannot be shown that it saves life. It *does* temporarily relieve pain and dyspnœa, but if it prolong the convalescence, and give rise to such sequelæ as pericarditis and pleuritic abscess, can it be said to be free from danger?

Dr. Markham further remarks—"When Professor Bennett talks of the dangers attending the loss of a few ounces of blood in pneumonia, I cannot help asking him to explain how it is that we daily see so many patients in hospital, surgical and medical, the feeble as well as the strong, losing without apparent injury, and often—and especially in lung and heart diseases—to their very great relief, large quantities of blood? What proof do these very numerous facts daily under our eyes afford of the danger of the loss of a few ounces of blood?"

The proof is clear—viz., that wherever we have authentic records of cases of pneumonia treated by the loss of from twelve to twenty ounces of blood, even when starvation was not practised, we find among the uncomplicated cases a certain proportion of deaths; whereas, under a restorative treatment we have no deaths. Of 71 cases treated in this moderate way by Dr. Bell of Glasgow,* 4 died—that is, 1 death in 18 cases,—and the average duration of their residence in the hospital was 47 days; whereas in my 105 cases there were no deaths, and the average residence was only 21⅞ days. Are there better statistics than those of Dr. Bell to be found? and if not, how can Dr. Markham maintain there is no danger in the practice of bleeding even as a palliative?

As to the argument, that we see many cases in a hospital recover after large bleedings, it has been made to support the worst practice that could be devised. I have already pointed out that when 1 person in every 3 died of pneumonia, the large

* Glasgow Med. Journal, July 1857.

number that recovered was constantly appealed to in support of the antiphlogistic practice (p. 54). The idea, therefore, that bleedings, to the extent implied by Dr. Markham, may be practised with impunity, not to talk of benefit, is disproved by all known facts, and cannot be overthrown by vague statements as to the large number who recover. The question is, not the number who recover, but how many die? and if Dr. Markham will show that in his hospital 100 cases of pneumonia with dyspnœa have been bled consecutively without a single death, he will do much to solve the practical question at issue. Even then, to establish that it is superior to a plan of restoratives without bleeding, it would be necessary to prove that the amount of relief obtained more than counterbalanced the weakness which renders residence in a hospital twice as long.

The whole of this discussion strongly indicates how necessary it is that we should emancipate ourselves from confident plausibilities and fallacious assumptions. When a highly respected and experienced medical man asserts that he has found this or that practice advantageous, what does he mean? He should point out in what way or to what extent it is advantageous, and how it influences the mortality and duration of disease. Yet how seldom is this attempted to be done. No stronger authority, no more illustrious names in medicine, can be found than what supported the practice of venesection and antiphlogistics in pneumonia. Yet the most rigorous proof has shown us that they were utterly unconscious of the great mortality among the cases they treated, and regarded a recovery of 2 cases out of 3 as a triumph of their art. It follows, that to determine results we must count our cases, number the bad with the good ones, and instead of viewing medical practice from the one-sided aspect of what is apparently successful, sternly determine to give the unfavourable results a prominent place in the picture. This leads me to consider—

OBJECTION IV. *Statistics are incapable of determining the value of treatment.*

On no subject does the contradictory character of medical reasoning become more apparent than on that of medical statistics; because, whilst every practitioner is constantly endeavouring to multiply those cases which seem to prove his treatment to be successful, he regards with aversion everything that reminds him of failure. Nothing is more common than to see all sorts of remedies recommended to our notice on the faith of a few apparently good cases, whereas nothing is so rare as to find careful records of treatment in a series of cases, including the failures. How common, also, is the tendency to ascribe recoveries to medical skill, while the deaths are referred to the inevitable progress of the malady. Although philosophical physicians have in all times pointed out the fallacy of these beliefs, they still hold almost universal sway over the medical profession. The descriptions of systematic writers on medicine have tended to foster this state of things, in which we find accounts of maladies neatly divided into stages, forms, and varieties, and a treatment recommended—said to be successful according to experience—much of which, however, when tested clinically, is soon recognised to be inconsistent with reality. There is only one method of extrication from the difficulties so created, and that is by numbering and analysing well-recorded cases. In every proposition regarding the treatment of disease, we cannot avoid the consideration involved in statistics. It is no argument to say that they may be defective. If so, they must be rendered exact; and cases must be carefully taken, rigorously collected, and critically analysed. In no other way can we guard ourselves against representations of sanguine persons, generalisations from imperfect data, and confident assertions and

assumptions based on the memory of success and the forgetfulness of failure.

The great objection always brought against medical statistics is the limited number of the facts from which conclusions are drawn. No one observer, it is argued, is capable of collecting a sufficient number of cases to enable him to derive exact information from them. Dr. Barclay, in a small work entitled "Medical Errors," has recently endeavoured to support this view by an algebraical formula, which leads him to the conclusion that, if variable circumstances exist to the number of 15 in any given disease, no less than 32,000 cases would be required before we could meet with two of them exactly alike. He goes on to point out that these variable circumstances, such as differences in time, place, age, etc., oppose an insurmountable obstacle to obtaining similarity in cases. But it may be asked, is such exactitude in every particular necessary? because, if so, it might just as reasonably be argued that we ought not only to avoid comparing cases which occur in different countries and cities, but also in different houses, or even beds. The line of argument adopted by Dr. Barclay might apply to the chances of meeting with exactly the same combination of numbers in throwing ten or fifteen dice, but is wholly inapplicable and out of place in reference to medical cases. It is well observed by Louis* that the leaf of a tree having been well described, can always be recognised. It is not necessary, in order to compare one tree with another, that every individual leaf on each be identical in size and form. So with diseases: the essential characters admit of being known and so compared with one another as to allow the formation of general laws, which every-day experience confirms.

But Dr. Barclay declares that an attempt lately made to

* See his admirable memoir on the numerical method, in the first volume of the *Mémoires de la Société Médicale d'Observation*, p. 38.

obtain a large number of cases of pneumonia by the aid of the British Medical Association can lead to little benefit; because, among other reasons, "acute pneumonia is just one of those diseases in which a certain number of individuals attacked will die, in spite of any treatment yet known, while a certain number will recover if entirely left to themselves." The assumptions contained in this one sentence afford an excellent example of loose reasoning, and of the necessity of that statistical knowledge which the author condemns. What entitles Dr. Barclay to affirm that a certain number of individuals attacked will die in spite of any treatment yet known? The statement is evidently a gratuitous assumption, and begs the very question at issue. Its correctness is opposed by the fact, demonstrated in these pages, that 105 consecutive cases of primary and uncomplicated pneumonia under a restorative treatment all recovered. Should he not, consistently with his own argument, instead of opposing the employment of statistics among the members of the British Medical Association, urge them to second my endeavours? For if, according to his calculations, 32,000 cases be required, and the members of that Association number 2500, only 13 cases from each, instead of the 129 I have myself furnished, would serve to solve the problem in his own way. I believe, however, that 100 well-recorded consecutive cases, and in some instances half that number, are amply sufficient to test the value of any therapeutical remedy whatever.

Dr. Barclay, after pointing out the necessity of extreme similarity in the cases which are to be compared, and fully admitting the propriety of not "jumbling together the different experiences and cases of different practitioners," refers to the able paper of Dr. Sibson formerly alluded to, who has collected statistics of pneumonia from various sources, and given them in a tabular form, divided into two columns, headed, "Bleeding and Non-Bleeding Plan" respectively. Of

this he remarks: "Although he (Dr. S.) draws various conclusions from a strict analysis of all that admit of it, he does not even sum up the figures which he gives as a whole." But what Dr. Sibson as an able statistician did not do, knowing well the absurdity of adding together cases which, although bled or not bled, differed widely otherwise with regard to their treatment, Dr. Barclay actually does, with the following result: "Of 1750 patients, treated by repeated or large bleedings, the mortality was 18.5 per cent. Of about 1000 treated by few and small bleedings, it was 13.5 per cent. Taking both these together, the cases in which blood-letting formed one part of the treatment, gave a death rate of 164 in the thousand; while 10,000 cases, treated almost entirely without venesection, gave a death rate of 203 in the thousand." It is thus made to appear, from cases treated in the most opposite manner, that bleeding in pneumonia causes only 164 deaths, while non-bleeding increases the mortality to 203 deaths in the thousand. So that the arguments, calculations, and peculiar statistical views of the author of "Medical Errors" has conducted him to what must be recognised by every medical practitioner to be one of the most erroneous conclusions ever arrived at in modern times. I hold it to be unnecessary to expose more in detail the argument by which Dr. Barclay endeavours to show that counting cases is useless in medicine, as its fallacy must be obvious to the merest tyro in statistical inquiry.

What is really required is that cases should be carefully observed and recorded by hospital physicians on a uniform plan. I still venture to think that, with reference to treatment, the facts recorded in the schedule issued to the members of the British Association are amply sufficient, and that they are easily arrived at. They are exactly the same as those in which I have recorded my own cases (see p. 12, *et seq.*) If others would follow the same plan, it is clear compari-

sons might be instituted, and all the essential sources of error avoided.

I cannot help thinking that the slight trouble required, and the general want of interest which prevails on such topics amongst the members of an overtaxed profession, are the real causes which led to the failure of the attempt in 1863.* A few also were doubtful as to whether cases of pure pneumonia, uncomplicated with pleurisy, bronchitis, or other disease, were required. It seldom happens that a pneumonia exists independent of some bronchitic or pleuritic affection; but this, if slight, in no way affects the result. If, on the other hand, it be intense, so that the pneumonia be secondary in importance, this, if recorded, must be stated in the appropriate column, and all error will be avoided in collecting the cases.

I still hope that the sanction of large numbers may be given to the views contained in this pamphlet, so that a great practical subject in medicine may be finally settled. We might then hope that a similar investigation might afford trustworthy results in other diseases; and thus the practice of our art approximate more towards uniformity. Notwithstanding all that has been said about the fallacy of statistics and the trouble of drawing them up, I can conceive no other method of settling the vexed questions of medical practice than a careful record of cases on some general plan—obtaining exact and similar facts—and then counting the results.

So far, therefore, from believing that correct statistics are incapable of determining the value of treatment, I consider it to be demonstrated that they offer us the only means of recognising the superiority of one treatment as compared with another, and of establishing how far remedies diminish mortality and shorten the natural progress of disease.

* I may observe that only 15 members of the British Medical Association returned their schedules to me, containing 45 cases of Pneumonia.

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