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LECTURES

ON

AMPUTATION,

AND ON THE

Nature, Progress, and Terminations of the Injuries for which it is required.

(Delivered at Sydenham Coll. Med. School.)

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LECTURE VI.

Second set of physical causes.—Influence of external and collateral circumstances on supervening actions; 1st, as to their character and degree; and, 2ndly, as to their number.—Observations on some of the chief forms of disease supervening during the treatment of complicated injuries of the extremities.—On secondary diseases of remote parts.—On morbid actions producing fatal results without apparent lesion of structure.

IN the last lecture the object of investigation was rather to determine the influence of degree and kind of injury upon the results, than of the circumstances under which treatment took place. Our next step is to determine the influence of this class of physical causes, and we shall then be enabled to draw certain conclusions in reference to their combined action and influence.

Influence of External and Collateral Circumstances upon the Nature and Gravity of Actions supervening.

To aid a due appreciation of the subject under this aspect, I shall refer to returns of both kinds of gunshot fracture; those involving the articulations, and those consisting of fracture simply.

EXTERNAL CIRCUMSTANCES FAVOURABLE.

Fractures, simply.

24 2 died, both complicated with wounds of chest.

Fractures, into Joints.

24 Died 6.

No. 911,

Character of Supervening Actions.

- 1 Shock.
 - 1 Gangrene of limb.
 - 1 Secondary hæmorrhage.
 - 1 Aguish fever.
 - 1 Hectic diarrhœa.
 - 1 Cause not ascertained.
- Term of development, exclusive of last, 27½ days.

EXTERNAL CIRCUMSTANCES, PARTIALLY UNFAVOURABLE.

Fractures, simply.

24. Supervening actions caused death in 9.

Character.

- 1 Cause not ascertained (died 3rd year).
 - 4 Hectic, with various complications—sloughing, gangrene, chest symptoms, diarrhœa.
 - 1 Hæmorrhage, and succeeding sphacelas.
 - 1 Continued fever, with effusion and vomicæ.
 - 1 Remittent, with pain of side—not examined.
 - 1 Fever, undefined in type.
- Average term of 7, exclusive of first and last, 56 days.

Fractures, involving Joints.

10 Supervening actions causing death in 7.

Character.

- 2 Hectic and diarrhœa.
 - 1 Exhausted, with sloughs and complicated nature of wounds.
 - 2 Febrile—character not defined.
 - 1 Effusion in cavities, gaugrenous and erysipelatous action.
 - 1 Angina pectoris.
- Average term, 61 days.

External Circumstances, Unfavourable.

Fractures.

Number of cases, 22—died 5.

Character of Fatal and Supervening Actions.

- All febrile—2 complicated with secondary abscesses of lungs.
- Average term of development, 25½ days.

No. XI.—Result of Amputations, and of Cases Treated without Amputation.—*Injuries involving Arterial Circulations.—External Circumstances Unfavourable.*

Site—Cause of Injury.	Amputations—(see Return No. IV.)												Cases Treated without Operation.												Return No. II. Mortality.		
	No. of Cases.				Recovered.				Died.				No. of Cases.				Cured.				Died.					General Total.	
	P.	I.	S.	Total.	P.	I.	S.	Total.	P.	I.	S.	Total.	P. I.	S. I.	Total.	P. I.	S. I.	Total.	P. I.	S. I.	Total.	Cured Died.	Total.				
KNEE.....	4	2	2	8	1	3	2	7	7	7	7	7	7	7	7	7	7	7	7	7	7	14	15	1,071			
ANKLE.....	1	1	1	3	1	1	2	4	1	1	1	3	3	3	3	3	3	3	3	3	3	1	1	1			
SHOULDER.....	2	1	1	4	1	1	1	3	2	1	1	4	1	1	1	1	1	1	1	1	1	2	5	2,500			
ELBOW.....	4	1	1	6	4	4	4	12	4	4	4	12	1	1	1	1	1	1	1	1	1	4	5	1,250			
WRIST.....	1	1	1	3	1	1	1	3	1	1	1	3	1	1	1	1	1	1	1	1	1	1	2	2	0		
WRIST.....	1	1	1	3	1	1	1	3	1	1	1	3	1	1	1	1	1	1	1	1	1	1	1	1	0		
Total.....	12	4	3	19	2	10	3	15	10	10	10	30	3	3	3	3	3	3	3	3	3	22	30	1,363			

No. XII.—Result of Amputations, and of Cases Treated without Amputation.—*Injuries not involving Arterial Circulations.—External Circumstances Favourable.*

Site—Cause of Injury.	Amputations—(see Return No. III.)												Cases Treated without Amputation in Return No. I.												Average Mortality.		
	No. of Cases.				Cured.				Died.				No. of Cases.				Cured.				Died.					General Total.	
	P.	I.	S.	Total.	P.	I.	S.	Total.	P.	I.	S.	Total.	Com-plete.	Par-tial.	Total.	Com-plete.	Par-tial.	Total.	Com-plete.	Par-tial.	Total.	Cured Died.	Total.				
FEMUR.....	3	1	5	9	2	3	1	6	4	3	2	9	2	2	3	7	3	3	6	3	3	6	4	12	3,000		
TIBIA and FIBULA.....	2	3	1	6	1	2	1	4	2	1	1	4	6	14	14	6	14	14	6	14	14	4	2	2	0		
HUMERUS.....	1	1	1	3	1	1	1	3	1	1	1	3	1	1	1	1	1	1	1	1	1	1	1	1	6,500		
HUMERUS.....	2	3	1	6	2	3	1	6	1	1	1	3	1	1	1	1	1	1	1	1	1	1	1	1	2		
RADIUS and ULNA.....	2	2	4	8	1	2	3	6	1	1	1	3	14	1	1	1	14	1	1	1	1	1	1	1	8		
BONES OF HAND.....	1	1	1	3	1	1	1	3	1	1	1	3	6	6	6	6	6	6	6	6	6	1	1	1	8		
BONES OF FEET.....	1	1	1	3	1	1	1	3	1	1	1	3	2	2	2	2	2	2	2	2	2	5	5	0			
Total.....	9	10	11	30	6	6	8	20	4	3	3	10	24	28	28	22	27	27	22	27	27	13	82	6,307			
Total injuries of joints under similar circumstances.....	12	3	9	24	11	2	6	19	1	3	5	9	11	13	13	6	12	12	6	12	12	11	48	4,363			
Total.....	21	13	20	54	17	8	14	39	4	6	6	15	35	41	41	28	39	39	28	39	39	24	130	5,116			

No. XIII.—Result of Amputations, and of Cases without Amputation.—*Injuries not involving Articulations.—External Circumstances Partially Unfavourable.*

Site—Cause of Injury.	Amputations included in Return III.												Cases Treated without Amputation, returned in No. I.				Mortality.	
	No. of Cases.				Cured.				Died.				General Total.					
	P.		S.		P.		S.		P.		S.		Com-plete.	Par-tial.				
	I.	Total.	I.	Total.	I.	Total.	I.	Total.	Com-plete.	Par-tial.								
FEMUR.....	1	1	.....	.....	1	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	2	.....	1.0
TUBIA and FIBULA.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	7	.....	1.
	1	1	.....	1	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	9	10	10.0
HUMERUS.....	1	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	6	.....
RADIUS and ULNA.....	1	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	1	.....
HANDS.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	0.
FEET.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	0.
Total.....	2	4	.....	4	.....	1	2	.....	3	.....	.....	.....	.....	.....	.....	16	28	2.333
Total unfavourable.....	18	7	1	26	.....	4	7	1	22	.....	.....	.....	.....	.....	.....	50	58	2.070
Total favourable.....	9	10	11	30	9	6	8	20	3	4	3	10	24	28	27	69	82	6.307
Total.....	29	19	12	60	11	6	8	23	13	4	4	35	70	38	115	53	168	3.169

No. XIV.—Amputations, and of Cases Treated without Amputation.—*Injuries not involving Articulations.—External Circumstances Unfavourable.*

Site—Cause of Injury.	Amputations included in Return IV.												Cases Treated without Amputation included in Return I.				Mortality.	
	No. of Cases.				Cured.				Died.				General Total.					
	P.		S.		P.		S.		P.		S.		Com-plete.	Par-tial.				
	I.	Total.	I.	Total.	I.	Total.	I.	Total.	Com-plete.	Par-tial.								
FEMUR.....	1	1	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1.0
TUBIA and FIBULA.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1.0
	3	3	.....	.....	3	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	10	20	2.0
HUMERUS.....	9	10	.....	10	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	8	16	2.0
RADIUS and ULNA.....	2	2	1	5	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	12	5	3.40
Total.....	18	7	1	26	4	.....	.....	4	7	1	22	10	22	9	5	30	58	2.071
Total injuries to joints under similar circumstances.....	12	4	3	19	2	1	1	4	3	2	15	1	3	1	7	8	30	1.363
Total.....	30	11	4	45	6	1	1	8	10	3	37	11	20	10	38	50	88	1.760

Joints.

Number of cases, 11—died 7.

Character of Fatal Supervening Actions.

- 1 Character unascertained.
- 1 Chiefly impression on nervous system.
- 1 Trismus.
- 1 Complicated wound, exhausted.
- 1 Hectic and diarrhoea.
- 1 Remittent, liver enlarged.
- 1 Irritative fever.

Average term of development, 35½ days.

In the character of these actions there is no very evident difference, the influence being chiefly developed in their *gravity* and *frequency*. The average term of develop-

ment, it is true, would make the most severe appear under the most favourable circumstances; but in one I have not been able to fix with accuracy the period, and one died of shock in a few hours; while the case of gangrene, also, died within ten days: these acting upon so small a number as three remaining, of course exercise too material an influence to show a fair average.

On Secondary Diseases of remote Parts.

As many of the remarks I have to offer, on this interesting subject, are equally applicable to the same diseases occurring after amputation at the three periods, and will be produced with most effect in conjunction with the considerations suggested by these, I will merely remark here, that in

21 cases where febrile actions were predominating, there were 5, and 4 suspected.
 In 17 more irregular and accidental causes predominating..... 5

38	10 ascertained. 4 suspected.
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Proportion 1 in 2.714 14

They are frequent therefore, forming more than one-third. The causes I will inquire into, in referring to their occurrence after amputations, when the whole question and the facts on which it rests will be before us.

On Morbid Actions producing Fatal Results without apparent Lesion of Structure.

I have shown that these form the cause of death in about one-half, depending evidently not upon *physical* and *material* alterations in the machine, but in the vitiated character or direction of dynamic forces. The nature and *degree* of injury—the state of constitution and character of temperament are to be looked to, as chief influences leading to such impressions on the nervous system as deleteriously affect the whole of the sensorial and secretory functions.

The most evident of the results, and brief in its development, is that described by the word “*shock*;” whether evinced by an unnatural calmness, or a pale and shrunken countenance, with a scarce perceptible pulse; or by an excited and incoherent manner, with a pulse rapid, fluttering, and uncountable, it is still the same, and destroys or absorbs, as it were, the powers of life, generally within twenty-four or forty-eight hours. Sometimes it is slower and more obscure in its progress; a small irritative fever is gradually developed—no state of collapse in the first instance, neither any healthy reaction subsequently—the febrile action becomes perceptible, but it is neither a simple, continued, nor an intermittent fever. It may, most correctly, be termed irritative; and, from the twelfth to the eighteenth day, the patient sinks without

any trace of organic lesion. Occasionally, after a very doubtful struggle, the patient may recover.

The remittent is one of the most fatal forms of fever; but this very frequently ends in secondary disease in distant organs, chiefly attacking the lungs or the liver. Tetanus carries off a small number of every large series, and forms another class, illustrative, not of physical but dynamic actions. In the thirty-eight two are presented; and in a third case, where tetanus threatened, the patient was destroyed, not by the full development of tetanus, but by a strong and visibly deleterious influence, chiefly on the nervous system, accompanied by extensive and most destructive disease of the joint injured. Delirium tremens is another manifestation of the effects of these injuries on the cerebral system especially, and generally destroys in a few days. There is no example included in this series, but I have met with many.

Whatever produces a shock to the system, there seems reason to conclude, vitiates, for a time at least, not only the healthy quality, but affects the quantity and the course of the nervous influence conveyed to the different organs of the body, on which the due performance of the functions depend; it would appear, that the equable distribution of the blood is impaired first, and its quality quickly afterwards vitiated. During this first impression, and the struggle that follows by nature's efforts to restore the equilibrium of the circulation, and quality, and distribution, not only of the blood, but of the nervous energy—if there be any weak or predisposed organ

unable to resist a sudden or irregular distribution, either of the blood or the vis nervosa—it becomes gorged with blood, its capillaries impeded, inflammation and suppuration rapidly succeeding. There is then, as a consequence, diseased lungs or liver; the organs in men most predisposed, or a sloughing action, or gangrene of the limb, or trismus. But if the patient has been healthy, and his constitution and system well prepared for such a trial, it is not peculiar organs that sink under the infliction; disease is developed throughout the whole circulating system; the injured limb is loaded with blood, the precursor to a copious and disastrous suppuration, sometimes accompanied with erysipelas: the safety of the limb and the patient's life are alike in great jeopardy for a considerable period; this may subside, and the patient undergo a cure or an amputation; and if the latter, a second and somewhat similar struggle generally may be remarked, from which he likewise may recover, or he may die; and beyond great local disease, occasionally involving the whole limb, no obvious or physical cause of death will appear in a post-mortem examination. All the principal organs may be found intact, and the pathologist is compelled, in order to class the case, to describe symptoms rather than tangible effects as causes of death, these forming the only palpable index.

These views, and such facts as illustrate them, will, I trust, be found to possess additional interest, when the causes of mortality, in cases amputated, are considered; and in this light they formed a necessary introduction to such an inquiry, that it may be determined whether any new element is introduced, by this second and different shock inflicted on a system labouring under diseased actions, or quickly following the first shock in a comparatively healthy subject, capable of producing or modifying the supervening actions we have just been analysing. It will still, however, be previously desirable to turn to the supervening actions, which *render amputation necessary* in the intermediary and secondary periods.

The primary amputations are, of course, performed before the supervention of disease, in anticipation of, and to prevent those which are about to be described, or those which occurring during treatment of fractures, have been already carefully analysed.

There still remain, however, some further conclusions to be drawn from the tables at present under consideration, and the views to which I have called attention in this lecture, in reference to the diseased actions resulting from injuries of extremities, and causing death, totally independent of amputation. These I will endeavour to place before you in a clear and practical manner in the next.

ON THE HISTORY OF THE
EMPLOYMENT OF CINCHONA BARK
IN THE
TREATMENT OF ACUTE RHEUMATISM.

By DAVID D. DAVIS, M.D., Professor of Midwifery in University College, London.

ON perusal of my late communication on acute rheumatism, it possibly occurred to the reader that I considered the merit and originality of prescribing bark as a remedy for that malady as due to the late Dr. Haygarth, of Bath, who had, indeed, previously resided at Chester for several years. A statement corrective of such an inference seems necessary to do justice to the almost unequalled candour and modest unpretentious merit of that excellent writer. As the practice may appear altogether a modern novelty to the greater part of the profession of the present day, a brief account of its adoption by Dr. Haygarth, and of the singular manner in which he became himself acquainted with it, cannot fail to prove interesting to many readers of THE LANCET. Dr. Haygarth shall give that account in his own words: "For several years after the period when I commenced the practice of physic at Chester, that excellent physician, the late Dr. John Fothergill, used annually to retire from the fatigues of his profession during about two months in the summer to Lea-Hall, in Cheshire. In this pleasing rural retreat, I had frequently opportunities of enjoying his very improving and entertaining conversation. He allowed me the very important privilege of stating to him the doubts and difficulties which often perplexed me as a young physician.

"With a truly liberal and enlightened mind, he frequently communicated to me his opinion and advice whenever he was thus consulted. In one of these friendly visits, I solicited his counsel for a patient ill of rheumatic fever. He recommended that the Peruvian bark should be administered. At this advice I expressed great surprise, observing that it was directly contrary to the mode of treatment which I had been taught by the most judicious and learned authors and professors, and that I had always understood the bark to be highly improper in all inflammatory disorders. To my objections he replied,—'When I was a young physician, in consequence of being twice called out of my bed to visit patients on a frosty night, I caught a very severe rheumatic fever. By the advice of my medical brethren, I had been bled repeatedly, and largely, even to seventy ounces. My disease remained unsubdued, and my blood still exhibited an inflammatory crust; hence I was convinced that the method of curing this fever by such copious evacuations was erroneous: soon after my