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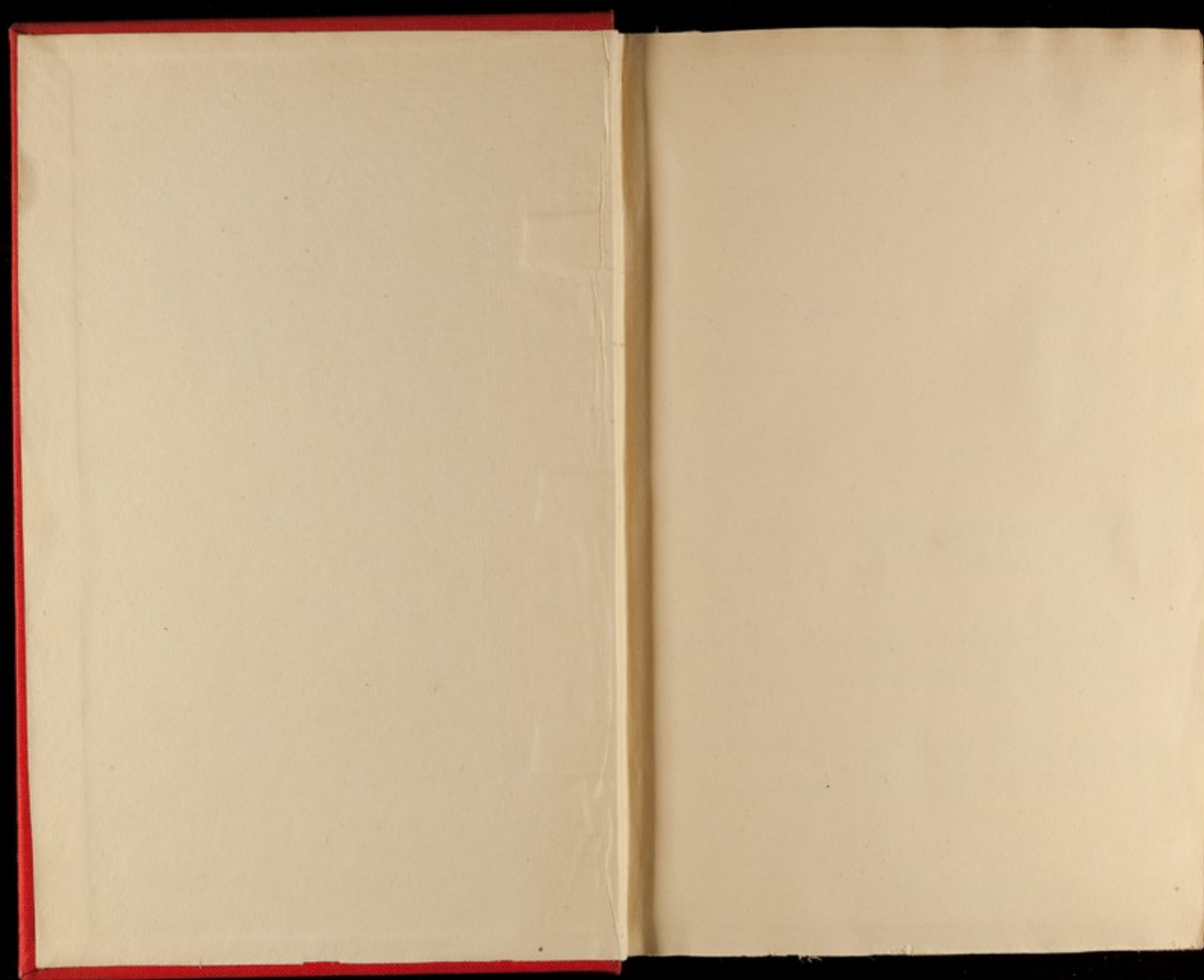
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ETS



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SUPPLÉMENT

à la Statistique médicale

de l'armée néerlandaise

pour l'année 1898

COMME CONTRIBUTION À LA STATISTIQUE

médicale militaire internationale

ROYAL ARMY MEDICAL
COLLEGE LIBRARY.

LA HAYE.
Imprimerie Nationale.
1899.



Examen médical des miliciens de la levée de 1898.

La levée annuelle pour la milice est de 11 000 hommes.
Les conscrits sont désignés au sort, entre les jeunes gens entrés dans leur vingtième année.

Le remplacement est admis ¹⁾.

Une visite médicale de tous les conscrits n'a pas lieu.
Ceux qui désirent être exemptés du service à cause d'infirmités, doivent se présenter devant les conseils de milice (en cas d'appel devant les conseils de révision) au mois de décembre.

Il va sans dire que ceux des inscrits qui sont exemptés du service à cause de circonstances particulières (fils unique, service militaire de frère etc.) ne se présentent pas devant les médecins des conseils quand même ils auraient la conviction d'être infirmes.

Au moment de l'incorporation (au mois de mars) tous les miliciens désignés pour le service dans une autre arme que celle de l'infanterie ordinaire, subissent la visite médicale ²⁾.

Dès leur arrivée au régiment tous les miliciens sans exception sont examinés par les médecins militaires.

Les miliciens qui ne sont pas jugés bons pour le service, soit au moment de l'incorporation, soit à la suite de la visite d'arrivée, soit enfin dans un délai de quatre mois après l'incorporation, doivent se présenter pour la réforme, devant le conseil de révision. Ayant été réformés, ils sont remplacés par d'autres conscrits. Après quatre mois de service et pour ceux ayant moins de service dont l'invalidité est la suite de maladies commencées après l'incorporation, la réforme se fait dans les mêmes conditions que pour les volontaires et les remplaçants, c'est-à-dire sans intervention des autorités civiles. Les militaires de cette catégorie forment la plus grande partie des réformés mentionnés dans le tableau IV ci-après.

¹⁾ A partir du 1^{er} septembre 1898, le remplacement est aboli.

²⁾ On exige pour tous les miliciens la même aptitude corporelle au service.

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Ont été inscrits pour la levée de 1898 . . . 47 068 hommes.
 Ont été exemptés du service : à cause de cir-
 constances particulières 16 324 .
 à cause d'une taille au dessous de 1,55 M. 818 .

Restaient . . . 29 926 hommes.

De ce nombre ont été déclarés non aptes au service,
 par les conseils de milice 2973
 révision 1371

Total . . . 4344

c'est à dire 145,1 ‰ des inscrits non exemptés.

La réforme était prononcée :

à cause de faiblesse corporelle générale (debilitas). 17,1 ‰

„ „ de tuberculose pulmonaire et de tuberculose
 d'autres organes (tuberculosis pulmonum et
 tuberculosis ceterorum organorum) 3,84 „

„ „ de myopie (au dessus de 2,5 D sur l'oeil
 droit) 13,2 „

„ „ de maladies du coeur (vitia valvularum
 cordis) 4,3 „

„ „ de goitre (struma) 0,23 „

„ „ de varices, varicocèle et haemorrhoides 1,6 „

„ „ de hernies 6,0 „

„ „ de pieds plats (pedes plani). 2,1 „

„ „ d'autres maladies non mentionnées ci-
 dessus 96,5 „

Comme ceux qui ont tiré les plus hauts numéros n'ont pas
 besoin de subir la visite médicale devant les conseils, parce
 qu'ils ont beaucoup de chance de ne pas être appelés sous les
 armes, les nombres cités de donnent point du tout un aperçu
 complet des infirmités existant chez les inscrits pour la milice.

TABLEAU II.

Mouvement général des malades par Circonscription militaire.

Circonscriptions militaires	Moyennes annuelles de l'effectif prise t.	M A L A D I E S.			S O R T I E S.				Journées de traitement à l'hôpital.
		Au quartier.	Entrés à l'hôpital.	Total des malades.	Guéris (après au service)	Décé- dés.	Autres sorties.	Total des sorties.	
Ire Circonscription.	8 870	6 619	6 084	12 703	12 418	16	397	12 815	82 635
Ile „	9 111	5 433	7 694	13 117	12 689	31	594	13 214	100 389
IIIe „	8 229	5 065	5 829	10 894	10 522	19	430	10 971	70 361
	26 210	17 137	19 577	36 714 ¹⁾	35 629	65	1 421	37 115	252 285

1) Non compris les 578 restants au 1er janvier 1898.

TABLEAU III.

Mouvement général des malades par Circonscription militaire.

Circonscription.	Sur 1000 hommes d'effectif.				Sur 1000 sorties.			Journées de traitement à l'hôpital.	
	Ont été malades au quartier ou à l'hôpital.	Sont entrés à l'hôpital.	Sont sortis de l'hôpital.	Sont guéris ou sortis des services.	Décédés.	Autres sorties.	Sur chaque homme de l'effectif moyen.	Sur chaque homme du contingent malades entrés à l'hôpital.	
1 ^{re} Circonscription.	1432.1	685.9	1.89	977.8	1.24	39.9	9.31	13.2	
2 ^e id.	1430.6	841.1	3.40	1533.0	2.32	44.6	12.00	14.2	
3 ^e id.	1323.8	708.3	2.30	1530.0	1.73	23.1	8.33	12.0	
Moyenne pour l'armée.	1400.7	749.9	2.51	1539.9	1.77	38.2	10.00	13.	

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TABLEAU IV.

Mouvement des malades par Armes ou Corps.

A R M E S ou C O R P S.	Effectif moyen présent.	Malades		Sorties.				Sur 1000 hommes d'effectif total.				Sur 1000 sorties.	
		En général.	Rattrapés à l'hôpital.	En général.	Guéris sortis des services.	Décédés.	Réformés.	Malades en général.	Malades à l'hôpital.	Décès.	Réformés.	Décès.	Guéthons.
		En général.	Rattrapés à l'hôpital.	En général.	Guéris sortis des services.	Décédés.	Réformés.	Malades en général.	Malades à l'hôpital.	Décès.	Réformés.	Décès.	Guéthons.
Infanterie.	14 015	21 081	11 650	21 062	21 143	32	242	1547.1	831.2	2.28	17.2	961.3	1.45
Cavalerie	2 529	3 196	1 892	4 033	3 819	13	62	1320.6	747.8	5.13	34.9	104.3	3.92
Artillerie de campagne	2 544	2 675	1 706	2 635	2 729	2	44	1031.4	777.1	0.78	17.2	103.2	0.73
de batteries	2 901	3 157	1 331	3 108	3 007	8	30	1088.2	458.8	2.75	10.3	942.1	2.22
Corps du Génie	765	260	322	573	543	1	14	743.7	512.4	1.30	18.3	947.6	1.74
Corps de Pontonniers	179	320	392	521	512	—	12	2888.8	1057.1	—	66.6	982.7	—
Corps de Troupes	199	207	43	300	372	—	1	1400.0	215	—	5	900.0	—
Compagnies sautoires et Mitrailleuses	422	225	65	230	303	1	7	500.0	144.4	2.22	15.5	922.7	4.51
Autres institutions de l'armée	2 614	3 642	2103	3 614	3 331	9	36	1362.2	804.5	3.44	13.7	977.0	2.40

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TABLEAU V.

Mouvement des malades par mois.

	Effectif malades moyen présent, général.	Entrées à l'hôpital, général.	Sorties.		γ_{100} de l'effectif.		γ_{100} des sorties.	
			En général.	Dans ces sorties sont compris: Guéri-sons.	Malades en général.	Entrées à l'hôpital.	Guéri-sons.	Décès.
Janvier	22 084	1284	2200	2186	6	108.9	83.2	0.26
Février	22 378	1050	2280	2214	4	98.7	41.4	0.17
Mars	21 582	430	3750	3617	9	106.6	114.7	0.41
Avril	26 337	4206	3411	4192	3004	5	118.4	85.0
Mai	30 681	4035	2244	4420	4243	12	131.5	72.1
Juin	30 263	4462	3877	4173	7	147.2	87.0	0.23
Juillet	30 820	5392	3165	3333	5	119.7	58.6	0.16
Septembre	27 385	2606	1457	3372	2	103.1	33.2	0.07
Octobre	24 885	2224	2618	2433	4	93.3	45.1	0.16
Novembre	22 191	1625	1894	1894	1	89.0	40.3	0.04
Décembre	23 110	1336	1824	1718	6	65.4	26.2	0.21

TABLEAU VI.

Mouvement des malades par garnison ayant plus de mille hommes d'effectif présent.

	γ_{100} de l'effectif ont été observés.		
	Malades en général.	Entrées à l'hôpital.	Décès.
Amersfoort	1453	894.4	4.21
Amsterdam	1147	682.7	2.10
Arnhem	1101	905.1	2.60
Bergen op Zoom	2042	815.6	1.35
Breda	1136	766.2	3.06
La Haye	1331	666.6	0.66
Bois-le-Duc	500	457.3	0.86
Leyde	1562	727.0	1.53
Utrecht	941	677.4	3.53

TABLEAU IX.

Maladies principales par Arme ou par Corps.

Maladies ou groupes de maladies du tableau nosologique international.	Maladies par % de l'effectif moyen.							
	Infanterie	Cavalerie	Artillerie de campagne	Artillerie de forteresse	Corps de Gendarmerie	Corps de Pontonniers	Corps de Troupes à pied	Autres institutions militaires de l'armée
1: Alcoholisme acutus, inclusive Delirium tremens	0.35	—	0.39	—	1.3	—	—	—
2: Bronchitis acuta	58.8	41.1	45.4	41.0	43.1	94.4	—	8.8
3: Cholera asiaticus	—	—	—	—	—	—	—	—
4: Cholera nostrum	—	—	—	—	—	—	—	—
5: Diphtheria et Croup	0.14	0.39	—	—	—	—	—	1.1
6: Dysenteria	0.25	—	—	—	—	—	—	—
7: Erysipelas	4.5	3.1	3.9	—	—	—	—	0.38
8: Febris intermittens (Malaria)	6.9	12.2	4.3	6.8	1.3	38.3	15	4.4
9: Febris recurrens	—	—	—	—	—	—	—	—
10: Gonorrhoea	23.0	45.8	45.9	20.3	16.9	94.4	15	13.3
11: Herpes	2.9	2.7	1.1	1.0	—	—	—	—
12: Influenza	23.2	9.0	10.6	9.3	6.0	—	—	77.7
13: Insalatio (Hitzschlag, coup de chaleur)	—	0.29	—	—	—	—	—	—
14: Meningitis cerebro-spinalis epidemica	—	—	0.29	—	—	—	—	1.1
15: Morbilli	1.8	0.79	0.78	0.34	—	—	—	1.9
16: Parotitis epidemica	2.4	1.1	—	—	—	—	—	2.2
17: Pneumonia crouposa sive lobaris	7.7	4.3	10.2	7.2	5.2	—	—	3.5
18: Rheumatismus articulo-rum	7.9	3.9	9.8	3.1	2.6	—	—	13.3
19: Scarlatina	1.1	—	—	—	—	—	—	—
20: Scorbatus	—	—	—	—	—	—	—	—
21: Syphilis	4.9	8.60	8.2	4.1	5.2	11.1	5	1.1
22: Trachoma	—	—	—	—	—	—	—	—
23: Tuberculosis pulmonum	4.49	2.37	3.93	5.17	5.22	—	5.0	4.4
24: Tuberculosis ceterorum organorum	—	—	—	—	—	—	—	—
25: Typhus abdominalis	0.49	1.1	0.78	0.68	1.3	—	—	2.2
26: Typhus exanthematicus	1.7	1.1	0.39	2.4	—	—	—	0.76
27: Variola	—	—	—	—	—	—	—	—
28: Morbi acrii	9.6	8.60	10.6	5.5	1.3	—	—	3.8
29: Morbi cordis	1.9	2.3	0.39	1.0	—	—	—	2.2
30: Morbi cutis (et telae cellulosee subcutaneae)	98.0	7.0	23.4	59.6	71.8	161.6	5	11.1
31: Morbi mentis	0.56	6.39	1.1	0.34	—	—	—	—
32: Morbi oculi	24.0	14.2	12.5	6.8	15.6	77.6	—	13.0
33: Morbi systemat. urin. et sexual. (exclusive Venere et Syphilis)	5.6	11.4	7.0	4.4	2.6	16	—	6.6

TABLEAU X.

Maladies principales et groupes de maladies par mois.

Maladies ou groupes de maladies du tableau nosologique international.	Janvier.	Février.	Mars.	Avril.	Mai.	Juin.	Juillet.	Août.	Septembre.	Octobre.	Novembre.	Décembre.
1: Alcoholismus acutus, inclusive Delirium tremens	1	—	—	—	—	3	—	—	—	—	—	—
2: Bronchitis acuta	96	94	323	296	178	146	29	44	28	46	43	48
3: Cholera asiaticus	—	—	—	—	—	—	—	—	—	—	—	—
4: Cholera nostrum	—	—	—	—	—	—	—	—	—	—	—	—
5: Diphtheria et Croup	—	—	3	1	—	—	—	—	—	—	—	—
6: Dysenteria	—	—	—	—	—	—	—	—	—	—	—	—
7: Erysipelas	4	4	9	20	14	4	14	3	26	22	1	2
8: Febris intermittens (Malaria)	17	12	13	22	31	43	25	25	80	52	47	43
9: Febris recurrens	—	—	—	—	—	—	—	—	—	—	—	—
10: Gonorrhoea	25	40	58	61	50	73	67	58	16	16	—	—
11: Herpes	2	2	2	1	4	10	2	3	1	1	—	—
12: Influenza	34	18	70	124	123	42	8	1	—	—	—	—
13: Insalatio (Hitzschlag, coup de chaleur)	—	—	—	—	—	—	—	—	—	—	—	—
14: Meningitis cerebro-spinalis epidemica	—	—	—	—	—	—	—	—	—	—	—	—
15: Morbilli	3	—	6	—	15	9	—	—	—	—	—	—
16: Parotitis epidemica	—	—	—	—	—	—	—	—	—	—	—	—
17: Pneumonia crouposa sive lobaris	12	10	39	46	35	3	—	—	—	—	—	—
18: Rheumatismus articulo-rum	13	5	6	16	27	30	22	16	17	6	11	—
19: Scarlatina	—	—	—	—	—	—	—	—	—	—	—	—
20: Scorbatus	—	—	—	—	—	—	—	—	—	—	—	—
21: Syphilis	21	5	16	10	10	12	11	6	10	15	8	10
22: Trachoma	—	—	—	—	—	—	—	—	—	—	—	—
23: Tuberculosis pulmonum	8	12	8	16	6	1	8	11	16	12	4	2
24: Tuberculosis ceterorum organorum	1	1	1	3	1	2	1	1	1	2	—	—
25: Typhus abdominalis	2	2	2	1	—	—	—	—	—	—	—	—
26: Typhus exanthematicus	—	—	—	—	—	—	—	—	—	—	—	—
27: Variola	19	13	11	31	26	28	20	14	9	8	9	16
28: Morbi acrii	6	5	4	6	6	4	3	—	—	—	—	—
29: Morbi cordis	97	91	187	181	314	227	212	192	116	88	2	40
30: Morbi cutis	—	—	—	—	—	—	—	—	—	—	—	—
31: Morbi mentis	—	—	—	—	—	—	—	—	—	—	—	—
32: Morbi oculi	22	21	88	80	62	42	27	33	19	13	—	—
33: Morbi systemat. urin. et sexual. (exclusive Venere et Syphilis)	14	18	24	18	18	13	13	6	9	11	9	14

TABLEAU XI.

Décès par âge et par durée de service.

Nombre des décès à la suite :		Nombre des décédés ayant moins d'un an de service.	Nombre des décédés ayant plus d'un an de service.	Âge des décédés.			
				de 15 à 20 ans.	de 20 à 25 ans.	de 25 à 30 ans.	31 ans et au dessus
de maladie	66	17	49	11	33	5	17
de suicide	3	—	3	1	1	—	1
d'accident	5	2	3	1	2	—	2
TOTAL	74	19	55	13	36	5	20



EIGHTEENTH REPORT

OF THE

BOARD OF MANAGERS

OF THE

HOSPITAL OF THE UNIVERSITY
OF PENNSYLVANIA,

FOR THE YEAR ENDING DECEMBER 31st, 1892.

TO THE CONTRIBUTORS, THE BOARD OF TRUSTEES, AND THE
MAYOR OF THE CITY OF PHILADELPHIA.

PRESENTED AT THE ANNUAL MEETING OF THE CONTRIBUTORS.

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1893.

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<i>OCTOBER.</i>	
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DR. GEORGE FALES BAKER,	
<i>NOVEMBER.</i>	
DR. GEORGE FALES BAKER,	HORACE HOWARD FURNESS,
DR. HORACE Y. EVANS,	MRS. CHARLEMAGNE TOWER, JR.
<i>DECEMBER.</i>	
DR. HORACE Y. EVANS,	DR. SAMUEL S. STRYKER,
HORACE HOWARD FURNESS,	MRS. CHARLEMAGNE TOWER, JR.

OFFICERS OF THE CONTRIBUTORS.

<i>PRESIDENT.</i>	
GEORGE FALES BAKER, M. D.	
<i>TREASURER.</i>	
RICHARD WOOD, <i>Pro tem.</i>	
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<i>COMMITTEE ON FINANCE.</i>	
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GEORGE W. BIDDLE.	
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MISS CAROLINE W. PAUL,	MRS. JOHN ASHHURST, JR.,
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	MRS. LEWIS R. FOX.

MEDICAL STAFF.

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The Professor of Surgery.
The Professor of Obstetrics and of the Diseases of Women and Children.

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WILLIAM PEPPEY, M. D., LL. D., Professor of Clinical Medicine.

WILLIAM GOODSELL, M. D., Professor of Gynecology.

JAMES TYSON, M. D., Professor of Clinical Medicine.

JOHN ASHURST, JR., M. D., Professor of Clinical Surgery.

WILLIAM F. NORRIS, M. D., Clinical Professor of Diseases of the Eye.

HORATIO C. WOOD, M. D., Clinical Professor of Nervous Diseases.

LOUIS A. DEHEING, M. D., Clinical Professor of Diseases of the Skin.

BARTON COOKE HUNT, M. D., Professor of Obstetrics.

J. WILLIAM WHITE, M. D., Professor of Clinical Surgery.

JOHN GUTERAS, M. D., Professor of General Pathology and Morbid

Anatomy.

DE FOREST WILLARD, M. D., Clinical Professor of Orthopedic Surgery.

J. P. CROZER GRIFFITH, M. D., Clinical Professor of Children's Diseases.

E. ALEXANDER RANDALL, M. D., Clinical Professor of Diseases of the Ear.

EDWARD MARTIN, M. D., Clinical Professor of Genito-Urinary Diseases.

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EDWARD MARTIN, M. D.,

R. H. HART, M. D.,

ALFRED C. WOOD, M. D.

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M. HOWARD FUSSELL, M. D.

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M. B. HARTWELL, M. D.

ASSISTANT NEUROLOGIST.

ASSISTANT GYNÆCOLOGISTS.

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WM. CONSTANTINE GOODSELL, M. D.

ASSISTANT OPHTHALMIC SURGEON.

JAMES WALLACE, M. D.

ASSISTANT AURAL SURGEON.

JAMES WALLACE, M. D.

ASSISTANT OBSTETRICIAN.

RICHARD C. NORRIS, M. D.

CLINICAL CLERK TO THE PROFESSOR OF THE THEORY AND PRACTICE
 OF MEDICINE.

ALFRED STENGEL, M. D.

DISPENSARY STAFF.

MEDICAL.

Physician, W. HOWARD FUSSELL, M. D.

Assistant Physicians.

S. W. MORTON, M. D.,

S. M. HAMILL, M. D.,

T. MELLOR TYSON, M. D.

DISEASES OF THE THROAT.

Attending Physician, J. HOWARD REEVES, M. D.

Assistant Physicians.

N. A. CASHMAN, M. D.,

CHAS. P. GRAYSON, M. D.

DISEASES OF CHILDREN.

Attending Physicians.

THOMPSON S. WESTCOTT, M. D.,

H. B. CARPENTER, M. D.,

WILLIAM H. PERCE, M. D.

SURGICAL.

Attending Surgeons.

EDWARD MARTIN, M. D.,

ALFRED C. WOOD, M. D.,

EDMUND W. HOLMES, M. D.,

DAVID B. BURNLEY, M. D.

VENEREAL.

Attending Surgeon, H. M. CHRISTIAN.

Assistant Surgeons.

CHARLES N. DAVIS, M. D.,

ROBERT G. LE CONTE, M. D.

ORTHOPÆDIC.

Attending Surgeons.

JAMES K. YOUNG, M. D.,

WILLIAM JOHNSON TAYLOR, M. D.

GYNÆCOLOGICAL.

Attending Surgeon, WM. L. TAYLOR, M. D.

Assistant Surgeons.

W. A. CAREY, M. D.,

F. N. YEAGER, M. D.

NERVOUS DISEASES.

Physician, CHARLES S. POTTS, M. D.

Assistant Physicians.

WM. EVANS, M. D.,

S. S. KNEAS, M. D.

DISEASES OF THE EYE.

Attending Surgeon, JAMES WALLACE, M. D.

Assistant Surgeons.

FRANK H. MACFARLAND, M. D.,

ALBERT N. BAGGS, M. D.,

HOWARD MELLOR, M. D.

DISEASES OF THE EAR.

Attending Surgeon, J. M. BROWN, M. D.

Assistant Surgeon, L. J. HAMMOND, M. D.

DISEASES OF THE SKIN.

Attending Physician, M. B. HARTWELL, M. D.

Assistant Physician, CHARLES N. DAVIS, M. D.

OFFICERS OF THE HOSPITAL.

Nominated by the Board of Managers and appointed by the Trustees.

DIRECTOR.

JOHN S. BILLINGS, M. D., LL. D.

Appointed by the Board of Managers.

SUPERINTENDENT.

MISS M. E. P. DAVIS.

ASSISTANT SUPERINTENDENT.

MISS JANE A. DELANO.

RESIDENT PHYSICIANS.

GEORGE D. MORTON, M. D.,	CHAS. HARRISON FRAZIER, M. D.,
LAWRENCE S. SMITH, M. D.,	JOHN HARPER GURVIN, M. D.,
JAY F. SCHAMBERG, M. D.,	H. A. BEYEA, M. D.

SURGICAL ANESTHETIZEE.

DAVID B. BIRNEY, M. D.

GYNÆCOLOGICAL ANESTHETIZEE.

JOHN RIVERA, M. D.

APOTHECARY.

JAMES P. MALLON.

REPORT.

To the Contributors, the Board of Trustees, and the Mayor of Philadelphia.

THE close of the year 1892, being the twenty-first year since the foundation of the Hospital, finds that institution in better condition and better equipped for its important work than it has ever been before, although much is still needed in the way of additional accommodations to enable it to meet the demands which are being made upon it.

During the year a room in the basement has been fitted up as an accident receiving-room, and the room on the main floor formerly used for that purpose has been put in good repair, painted, and newly furnished, and assigned as an addition to the Male Surgical Ward, which was overcrowded.

The corridors, stairways, and offices in the main building have been painted, together with a number of the private rooms. We are indebted to Ellen Waln Harrison for having the Surgical Ward re-floored and six of the best of the private rooms re-floored and entirely refurnished. The connection with the central steam-heating plant has been made, but the Hospital is still heated from its own boilers.

The needs of the Hospital for another pavilion to permit of proper accommodations for and classification of patients, and of a building to connect the two Maternity Wards already constructed, have been urged upon the State Board of Charities, and it is earnestly hoped that the Legislature will grant the

necessary funds for providing these most desirable additions to the buildings, as well as the construction of a new laundry, which is much needed.

Thirteen hundred and forty-eight patients have been under care. Of these 1140 have been residents of the State of Pennsylvania. Eighty-four hundred and six new cases have been treated in the Dispensaries.

The average number of nurses on duty during the year has been 35. The Training School for Nurses consists of 36 pupil nurses and 1 probationer. These undergo two years of instruction in the wards, and attend two courses containing 65 lectures.

The class now about to graduate from the Training School consists of 14 students.

Fifty-four nurses have already received diplomas from us. Most of these occupy themselves as private nurses. Seven are in Hospital work, 2 being in charge of wards in our own Hospital, a third in charge of our clinic, and a fourth is our Night Superintendent. One superintends a hospital at Philipsburg, Pa., another is in charge of a hospital at Sayre, and another is engaged in San Francisco.

The Orthopaedic Machine Shop has enjoyed the especial oversight and support of Dr. De F. Willard.

In all the departments of the Hospital a high grade of service has been maintained. No proper care is believed to have been spared by the Superintendent, and her assistant, by the Resident Physicians, and other officers, to preserve the comfort of and to restore to health those who have been committed to us.

The Director of the Hospital, Dr. John S. Billings, has given it much valuable oversight, and

assures your Board that in his large experience few hospitals, if any, surpass or equal it in equipment or general good condition.

It is a matter of congratulation that notwithstanding the constant and heavy demands upon the Hospital, its resources to pay current debts has increased by \$2869.29 during the past year.

The Board regret to have lost, by resignation, the disinterested and active services of its member, Dr. Arthur V. Meigs.

They acknowledge, thankfully, endowments of \$5000 each for two beds, viz., of the Clara R. Galli Bed through Dr. Arthur V. Meigs, and of the Harriet Catherine Newbold Bed by Arthur E. Newbold.

They also thank numerous friends for other donations, and desire to express gratitude to the Providence who has permitted them to take a part in this beneficent and important work.

Reports by the Treasurer, Superintendent, and medical officers in charge are appended.

By order of the Board of Managers of the Hospital of the University of Pennsylvania.

RICHARD WOOD,
President.

TREASURER'S REPORT.

HOSPITAL DEPARTMENT ACCOUNT.

Balance December 31st, 1892	\$45 67
RECEIPTS.	
Dispensary, patients' board, &c.	\$30,864 22
Income:—	
Hospital Fund	\$12,752 35
Ward Chronic Diseases Fund	5,315 08
Hahn Ward Fund	4,057 55
Mrs. G. W. Norris Fund	836 51
Bement Fund	350 00
Alumni Ward Fund	600 00
I. V. Williamson Hospital Fund	2,393 91
A. M. Powers' Bed Fund	390 00
Henry Seybert Fund	2,520 30
M. W. Elkins Bed Fund	150 00
Deformed Children Bed Fund	90 00
Recto-Gen.-Ur. Diseases Fund	670 92
	30,096 62
State of Pennsylvania, account maintenance	7,500 00
Deficiency and Repair Fund, No. 2, Dr. W. F. Norris	500 00
Hospital Three-year Fund	3,100 00
Deformed Children's Annual Bed Fund	2,600 00
Donations:—	
Louise D. Morrell	\$250 00
Ellen Wain Harrison	250 00
Women's Visiting Committee	250 00
George Stevenson	25 00
Per Dr. Billings, account nurses	500 00
Pennsylvania Railroad Company	1,000 00
	2,275 00
Interest on Deposits	107 04
Drawbacks on coal freights	768 43
Conscience money	405 67
State Pennsylvania, account betterments	7,478 73
	\$85,695 71
Current expenses	\$85,741 38
	78,186 49
Balance December 31st, 1892	\$7,504 89

*Including \$590 from Medical Department.
(12)

MAINTENANCE MATERNITY HOSPITAL ACCOUNT.

Balance December 31st, 1891 \$1,671 86

RECEIPTS.

W. H. Furness	\$100 00
C. M. Lea	100 00
C. H. Colket	100 00
Fanny Rosengarten	50 00
M. C. Lea	50 00
	400 00
Current expenses	\$2,071 86
	1,005 36
Balance December 31st, 1892	\$1,066 50

MATERNITY HOSPITAL BUILDING FUND ACCOUNT.

Balance December 31st, 1891	\$135 00
Current expenses	165 10
Balance December 31st, 1892	\$29 90

HOSPITAL BETTERMENT ACCOUNT.

Balance December 31st, 1891	\$2,262 50
State of Pennsylvania for 1892	10,000 00
	\$12,262 50
Paid on account construction Maternity Ward	\$2,283 77
" " betterments	7,478 73
	9,762 50
Balance December 31st, 1892	\$2,500 00
Aggregate balance December 31st, 1892	\$11,151 29

REPORT OF THE SUPERINTENDENT FOR THE YEAR 1892.

ANALYSIS OF PATIENTS TREATED.

Patients remaining December 31st, 1891	105	
Patients admitted during 1892	1,243	
Males	846	1,348
Females	502	
Males under 18	129	1,348
Females under 18	44	
Adults, single	515	
Adults, married	558	
Adults, widowed	102	
Patients residing in Philadelphia	628	1,348
" " Pennsylvania	512	
" " Delaware	29	
" " New Jersey	108	
" " other States	58	
" foreign	12	
" unknown	1	
Cured	647	1,348
Improved	331	
Unimproved	78	
Eloped	6	
Not treated	37	
Deaths	82	
In Hospital	109	
Obstetrical (delivered)	54	
" (not delivered)	4	
Total	1,348	

	SURGE- CAL.	MEDIC- CAL.	EYE.	MATER- NITY.	ORTHOP- EDIC.	GYN- ECOLOG.	TOTAL.
Cured	267	153	35	1	16	95	647
Improved	122	134	14		34	27	331
Unimproved	23	47	2			4	78
Eloped	5	1					6
Not treated	11	22			1	3	37
Deaths	31	29	1	2	1	18	82
In Hospital	40	32	6	8	14	9	109
Delivered				54			54
Not delivered				4			4
Total	601	398	58	69	66	156	1,348

(14)

Pay patients	835
Free patients	205
Pay and free patients	83
Recent accidents	146
Endowed beds	79
Total free patients	513

Ambulance calls	1,348
Brought to Hospital	283
Transferred and taken home	158
No result	97
Total	283

RECEIVING WARD.

Received and treated	1,430
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SUMMARY OF DISPENSARY CASES.

	CASES.	VALUE.
Nervous	502	3,856
Throat	608	8,430
Gynecological	345	1,574
Skin	546	2,894
Orthopedic	154	1,311
Children	303	598
Surgical	1,086	
Medical	1,633	4,930
Veneral	605	2,645
Ear	483	
Eye	1,516	
Total	7,801	

ANALYSIS OF EXPENDITURES BY SUPERINTENDENT FOR 1892.

Beef	\$4,903 86
Mutton	1,805 51
Pork, lard, &c.	848 88
Veal	815 45
Poultry	2,889 00
Fish and oysters	1,373 25
Provisions and groceries	5,285 74
Bread	1,166 40
House furnishings, hardware, and lumber	1,025 98
Ice	973 06
Milk	3,771 88
Fruit and vegetables	2,384 32
Gas	2,988 00
Coal and freight	5,455 31
Wages	18,109 65

Stationery and printing	\$758 70
Butter and eggs	5,606 28
Dry goods, bandages, and raw cotton	2,917 49
Stamps, car fare, and expressage	171 13
Horses and ambulance	411 44
Improvements and repairs	5,956 83
Telephone and sundries	315 94
Glass and crockery	521 13
Total maintenance	\$70,656 33
Drugs, chemicals, and bottles	\$4,613 02
Wines, brandy, &c.	478 15
Alcohol	884 55
Dressings and plasters	829 07
Surgical instruments and rubber goods	1,212 51
Total medical and surgical supply	8,017 30
Total expenses of Hospital	\$78,673 63

SUMMARY.

Charged to Hospital department	\$64,699 50
" medical and surgical departments	8,017 30
" improvements and repairs	5,956 83
Due Treasurer from 1891	\$2,654 17
Income from board of patients	28,379 81
" apothecary	2,086 75
" sundries	493 67
" nurses	852 65
Paid to Treasurer (as per receipt book)	\$50,864 22
Due Treasurer for 1892	3,662 83
Bills unpaid December 31st, 1891	\$13,343 34
Due Treasurer December 31st, 1891	2,654 17
Balance in bank December 31st, 1891	\$2,723 23
Accounts due December 31st, 1891, less cash	13,274 28
Bills unpaid December 31st, 1892	\$16,085 59
Due Treasurer December 31st, 1892	3,662 83
Balance in bank December 31st, 1892	\$2,228 90
Accounts due December 31st, 1892, less cash	17,449 52
Total number of Hospital days	40,454
Average number of patients	110 1/2
Average residence of each patient	30
Average maintenance per patient per day	\$1.81 1/2
Average expense per patient per day	\$2.02

Expenses Incurred Month by Month for Maintenance, Heat, Light, Wages, &c.

1892.	Boat.	Station.	Park.	Land.	Veal.	Poultry.	Fish.	Butter.	Milk.	Break.	Fruit.	Free.	Gas.	Coal.	Wages.	Sh.	House.
January.	\$425 42	\$69 96	\$124 89	\$21 25	\$12 00	\$10 00	\$10 00	\$425 42	\$250 47	\$90 45	\$171 35	\$500 28	\$314 85	\$625 96	\$1,204 14	\$44 06	\$188 29
February.	445 89	132 31	69 09	113 45	172 72	172 72	172 72	445 89	204 05	111 84	217 15	500 28	314 85	625 96	1,204 14	44 06	188 29
March.	445 89	132 31	69 09	113 45	172 72	172 72	172 72	445 89	204 05	111 84	217 15	500 28	314 85	625 96	1,204 14	44 06	188 29
April.	445 89	132 31	69 09	113 45	172 72	172 72	172 72	445 89	204 05	111 84	217 15	500 28	314 85	625 96	1,204 14	44 06	188 29
May.	445 89	132 31	69 09	113 45	172 72	172 72	172 72	445 89	204 05	111 84	217 15	500 28	314 85	625 96	1,204 14	44 06	188 29
June.	445 89	132 31	69 09	113 45	172 72	172 72	172 72	445 89	204 05	111 84	217 15	500 28	314 85	625 96	1,204 14	44 06	188 29
July.	445 89	132 31	69 09	113 45	172 72	172 72	172 72	445 89	204 05	111 84	217 15	500 28	314 85	625 96	1,204 14	44 06	188 29
August.	445 89	132 31	69 09	113 45	172 72	172 72	172 72	445 89	204 05	111 84	217 15	500 28	314 85	625 96	1,204 14	44 06	188 29
September.	445 89	132 31	69 09	113 45	172 72	172 72	172 72	445 89	204 05	111 84	217 15	500 28	314 85	625 96	1,204 14	44 06	188 29
October.	445 89	132 31	69 09	113 45	172 72	172 72	172 72	445 89	204 05	111 84	217 15	500 28	314 85	625 96	1,204 14	44 06	188 29
November.	445 89	132 31	69 09	113 45	172 72	172 72	172 72	445 89	204 05	111 84	217 15	500 28	314 85	625 96	1,204 14	44 06	188 29
December.	445 89	132 31	69 09	113 45	172 72	172 72	172 72	445 89	204 05	111 84	217 15	500 28	314 85	625 96	1,204 14	44 06	188 29
Total.	\$4,690 86	\$1,265 31	\$848 88	\$913 40	\$2,209 99	\$2,273 23	\$2,273 23	\$4,690 86	\$2,273 23	\$1,265 31	\$848 88	\$2,209 99	\$2,273 23	\$2,273 23	\$4,690 86	\$1,265 31	\$848 88
1891.	Boat.	Station.	Park.	Land.	Veal.	Poultry.	Fish.	Butter.	Milk.	Break.	Fruit.	Free.	Gas.	Coal.	Wages.	Sh.	House.
January.	\$200 72	\$58 45	\$17 35	\$17 35	\$17 35	\$17 35	\$17 35	\$200 72	\$113 45	\$44 06	\$171 35	\$500 28	\$314 85	\$625 96	\$1,204 14	\$44 06	\$188 29
February.	200 72	58 45	17 35	17 35	17 35	17 35	17 35	200 72	113 45	44 06	171 35	500 28	314 85	625 96	1,204 14	44 06	188 29
March.	200 72	58 45	17 35	17 35	17 35	17 35	17 35	200 72	113 45	44 06	171 35	500 28	314 85	625 96	1,204 14	44 06	188 29
April.	200 72	58 45	17 35	17 35	17 35	17 35	17 35	200 72	113 45	44 06	171 35	500 28	314 85	625 96	1,204 14	44 06	188 29
May.	200 72	58 45	17 35	17 35	17 35	17 35	17 35	200 72	113 45	44 06	171 35	500 28	314 85	625 96	1,204 14	44 06	188 29
June.	200 72	58 45	17 35	17 35	17 35	17 35	17 35	200 72	113 45	44 06	171 35	500 28	314 85	625 96	1,204 14	44 06	188 29
July.	200 72	58 45	17 35	17 35	17 35	17 35	17 35	200 72	113 45	44 06	171 35	500 28	314 85	625 96	1,204 14	44 06	188 29
August.	200 72	58 45	17 35	17 35	17 35	17 35	17 35	200 72	113 45	44 06	171 35	500 28	314 85	625 96	1,204 14	44 06	188 29
September.	200 72	58 45	17 35	17 35	17 35	17 35	17 35	200 72	113 45	44 06	171 35	500 28	314 85	625 96	1,204 14	44 06	188 29
October.	200 72	58 45	17 35	17 35	17 35	17 35	17 35	200 72	113 45	44 06	171 35	500 28	314 85	625 96	1,204 14	44 06	188 29
November.	200 72	58 45	17 35	17 35	17 35	17 35	17 35	200 72	113 45	44 06	171 35	500 28	314 85	625 96	1,204 14	44 06	188 29
December.	200 72	58 45	17 35	17 35	17 35	17 35	17 35	200 72	113 45	44 06	171 35	500 28	314 85	625 96	1,204 14	44 06	188 29
Total.	\$2,007 49	\$583 13	\$371 13	\$371 13	\$371 13	\$371 13	\$371 13	\$2,007 49	\$583 13	\$371 13	\$371 13	\$371 13	\$371 13	\$371 13	\$2,007 49	\$583 13	\$371 13

M. E. P. DAVIS, Superintendent.

DONATIONS.

- In 1891. Mrs. C. C. Harrison relaid floor in private room No. 1 and furnished same.
- 1892.
- Janv. 1. 3 pheasants, from Mr. Hammond.
- " 20. 5 cans fruit and 4 flasks wine, from Mr. R. H. Evans.
- " 26. Several copies *Home Journal* and *Churchman*.
- " 31. Cut flowers, from Mrs. Lamberton.
- Febv. 1. 18 copies *Asbury Herald*, from Asbury Church.
- " 18. From donation boxes, \$14.98.
- Mar. 21. Number of magazines.
- " 24. \$3.50, from Dr. Barvach.
- " 24. Toys, candies, and picture-books for Children's Ward, from Mary McIlvane.
- " 25. 11 novels, from Miss R. B. Taylor.
- " 28. 20 paper-covered novels, from 1927 Race Street.
- " 31. 5 magazines from C. Stuart Patterson, Jr.
- April 14. \$1, from Genevieve Ashmore.
- " 15. 4 magazines and novels, from C. Stuart Patterson, Jr.
- " 16. Box of Easter toys for Children's Ward, from Mrs. F. C. Arnold.
- " 16. Basket of toys for Children's Ward, from The Louis Kimmell Guild.
- " 17. Easter box of flowers for Children's Ward, by The Louis Kimmell Guild.
- " 18. Ice cream for Children's Ward, by The Louis Kimmell Guild.
- " 16. 1 iron cot, with mattress and pillows, from Mrs. D. Hayes Agnew.
- " 21. Quantity of papers, from Sylvan Dalsimer, 31 North Ninth St.
- " 23. 27 copies *The Nursery*, 2 *St. Nicholas* pictures, and scrap-book, other magazines for Children's Ward, from Church of the Holy Trinity Guild.
- " 24. 35 flannel sacks for Children's Ward, from Mrs. Bloomfield McIlvane's Lenten Sewing Class, 1321 Walnut Street.
- " 27. Check for \$300, from Allison Manufacturing Company.
- May 3. Bottles of wine, from Dr. William Pepper.
- " 6. Quantities of *Pucks* and *Judges*, from Mr. DeGomes.
- " 6. Magazines and papers, from Mr. MacGregor.
- " 6. One-half dozen bottles wine, from Dr. William Pepper.
- " 16. 44 juvenile books for Children's Ward, from Miss Newhall.

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- May 17. Beautiful box of flowers for Children's Ward, from Young People's Meeting, M. E. Church, of Newtons Hamilton, Penna.
- " 20. 3 bottles wine, by Dr. William Pepper.
- " 24. Quantity Sunday-school illustrated papers, from American Sunday-school Union, 1122 Chestnut Street.
- " 21. 3 books and package old linen, from Miss Paul.
- " 27. Hats, shoes, and underclothing, from a friend.
- " 30. Quantity of magazines for children, from Mrs. Geo. Ashwick, 3926 Locust Street.
- " 30. 10 night-gowns, 11 under-waists, and 48 lbs for Children's Ward, from The Louis Kimmell Guild.
- " 30. 3 night-shirts, 4 hats, 2 pairs of shoes, and 2 pairs of rubbers, from a friend.
- June 3. Box of roses, from Mrs. Crossman, 2014 De Lancey Place.
- " 3. Quantity of bottles and syringes, from Miss Wood, 1620 Locust Street.
- " 6. Quantity of cut flowers, from W. C. Timm.
- " 6. Large basket of roses, from Miss Crossman, 2014 De Lancey Place.
- " 6. Box of roses for Children's Ward, from Mrs. W. H. Conrad.
- " 6. 7 night-gowns and 3 wash-cloths, from Saturday's Club of New Jersey, through Mrs. W. H. Conrad.
- " 8. 6 night-gowns for children, from Mrs. Austin, Lansdowne.
- " 8. Quantity of magazines, donor unknown.
- " 14. Quantity of magazines and papers, donor unknown.
- " 15. Quantity of magazines, 3 robes, 3 bottles of ale, from Dr. and Mrs. William Pepper.
- " 16. \$2, from a friend, through Dr. Edward Martin.
- " 18. Box of roses, from H. H. Batties, florist.
- " 18. Lot of bandages, plaster, and splints, from Miss Kimmell.
- " 28. Quantity reading matter, from Mrs. Smalley.
- July 2. Bundle of old linen, from Mrs. Knight, 1003 Chestnut Street.
- Aug. 12. Quantity of reading matter, from Junior League, Asbury Methodist Episcopal Church.
- Sept. 3. Magazines and papers, from Mrs. J. L. Craig, 4008 Pine Street.
- " 3. 1 pair braces, Mrs. B. Flannagan, 2120 Spruce Street.
- " 5. Braces, from J. P. Simons, 2236 Carpenter Street.
- " 10. 1 walnut writing desk and a quantity of books, from Mrs. Edward Wood, Seventeenth and Locust Streets.
- Oct. 1. Quantity papers and magazines, from Miss Gordon, 4112 Spruce Street.
- " 7. 2 pairs men's shoes, 2 hats, and quantity neckties, donor unknown.
- Summer 1892. New floor laid in Men's Surgical Ward by Mrs. C. C. Harrison.
- Oct. 14. Quantity cut flowers, from Mrs. Jackson, Darby, Pa.
- " 8. 1 curtain pole and Wilton rug, from Miss Wood.

- Oct. 21. 3 bunches chrysanthemums for Children's Ward, from Mrs. Wm. C. Pond.
- " 28. Quantity of papers and magazines, donor unknown.
- " 31. Several *Graphics*, from Mrs. Clarence Clark.
- Nov. 3. Quantity of *Harper's* 1892, *Lippincott's* 1890 and 1891, and *Sunbeam* 1892, from Dr. H. C. Wood.
- " 7. Quantity of magazines, from Mrs. Barker.
- " 7. Quantity of clothing for Maternity Ward, 55 pieces needle-work, from Guild of America.
- " 22. 2 paintings, from Miss Juliana Wood, 1620 Locust Street.
- " 22. Picture for Resident's office, from Mrs. E. Wood, Seventeenth and Locust Streets.
- " 24. Quantity children's books, toys, and flannel shirts, from Dr. William Pepper.
- " 24. 1 turkey for Children's Ward, Louis Kimmell Guild.
- " 30. \$2, from John Holroyd, a patient.
- " 30. 1 glass dressing carriage, from Dr. John S. Billings, director.
- Dec. 5. Magazines and 2 night-gowns, from Miss Paul.
- " 5. Magazines, from Dr. Nicholas.
- " 12. 1 box Christmas tree decorations, from Miss Jackson, 228 South Broad Street.
- " 16. 1 Wheeler & Wilson sewing-machine, from Mrs. G. Craig Heberton.
- " 16. 1 coat, 1 pair trousers, 1 hat, 1 cane, 2 shirts, 1 pair shoes, 1 pair slippers, 1 pair hose, 1 pair knit drawers, from Henry W. Heckerman.
- " 22. Quantity papers and magazines, from Miss Gordon, 4112 Spruce Street.
- " 25. 10 quarts ice cream, 5 pounds cake for nurses, from Mrs. A. G. Hetherington, Christmas.
- " 24. Quantity of toys for the children, 4 stockings filled for children, 5 pounds candy, from Mrs. Albert G. Hetherington.
- " 30. Magazines and old muslin, from Miss Brodian, 911 South Sixteenth Street.
- " 30. For Ward B, 1 glass dressing carriage, from Mrs. C. C. Harrison.
- " 30. 2 hot-water bottles, from Dr. Hayes Agnew.
- 1 Byzantine rug for Superintendent's sitting-room, by Mrs. C. C. Harrison.
- 2 willow chairs, 1 chair re-covered, 1 lounge re-covered, by Ladies' Committee. See also Ladies' Committee report of donations from same.
- 4 wheel chairs, 5 dozen napkins for Ward D, Dr. William H. Furness.
- At Christmas a tree, dolls, toys, books, candies, &c., by Louis Kimmell Guild.
- The *Standard of the Cross*, the *London Graphic* for one year, the *Ladies' Home Magazine* for one year, the *Home Magazine* (of Mrs. Logan) for one year; "Village Photographs, Indian Tales, What I Remember, In the Golden days (2 vols.), The Cloister and the Hearth, Hypatia, Indian Summer, Lettie's Brother's Wife, Justina, Grant and his Cau-

pains, Beecher's *Life of Christ*, *The Attorney*, *The Ironmaster*, *Bryan Maurice*, *For Fifteen Years*, *Tempest and Sunshine*, *Ecce Coelum*, *The Jewish Tabernacle*, *Ecce Homo*," by Mrs. Frank Field.

NOTE.—In the purchase of these books Mrs. Field expended \$10 from the sale of old magazines and papers that had accumulated in the Hospital.

8 stained-glass windows, Miss J. Wood.

1 chamber set of furniture, bedstead, spring mattress, and pillows, wardrobe, bureau, 4 chairs, towel rack, commode, washstand, escritoire, carpet and lining, and 1 glass shelf, from the late Mrs. Rawie, through Mrs. S. Weir Mitchell.

Papering Resident's office, Mrs. C. C. Harrison.

Passes over South Street passenger street car company for the use of the Superintendent and Apothecary, from Dr. Wharton.

3 dozen cakes toilet soap, from Oliver Parker, 1095 Germantown Avenue.

8 dozen tray covers for Wards G and H, from "King's Daughters (nurses).

Large pound cake for Christmas, from George Young (baker), 3342 Market Street.

WOMEN VISITORS' REPORT.

This year has been one of uninterrupted prosperity with the Women's Visiting Committee. The Sunday services have been much enjoyed and the patients said they never had such a delightful Christmas festival. Donation day was well recognized by all the friends, and the Treasurer's report will show two new endowed beds. The Orthopedic Ward for children had many especial donations, and numbers now 16 endowed beds.

DONATIONS.

From Bible Society, 4 Bibles and 25 portions.
Dr. Furness, flowers.
A Friend, 21 jars jelly and book.
J. W., chairs and sofa.
From John Hammond and Thomas Bradley, provisions.
Finley Acker & Co., groceries.
A Friend, clothing.
Saturday Club, 500 articles clothing.
Louis Kimmell Guild, 150 articles.
From Lenten Guilds, several hundred articles.
Alice and Willy Kutz Fund, ice cream, &c.

WOMEN VISITORS.

Mrs. MacVeagh,	Miss Mary B. Wharton,
Mrs. W. A. Lamberton,	Mrs. Joshua Lippincott,
Miss Juliana Wood,	Mrs. Edw. M. Paxson,
Mrs. H. C. Gibson,	Mrs. John Ashhurst,
Miss C. W. Paul,	Mrs. J. Lindsay Craig,
Mrs. Charles F. Shoener,	Mrs. Charles C. Harrison,
Mrs. Edw. R. Wood,	Miss Charlemagne Tower, Jr.,
Mrs. Aubrey H. Smith,	Miss Cadwalader,
Mrs. Abraham Barker,	Mrs. De Forest Willard,
Mrs. G. Craig Heberton,	Miss Abby Newhall,
Miss Mary Eittle,	Mrs. Lewis R. Fox.

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REPORT OF THE WOMEN'S VISITING COMMITTEE.

GENERAL FUND. Dr.

Balance January 1st, 1892	\$22 94
Interest	26 91
Miss Juliana Wood (for Nurses' Home)	200 00
Mrs. Edward Paxson	20 00
Mr. A. J. Drexel	100 00
Mrs. Edward Paxson	10 00

Donation Day, March.

Mrs. Charlemagne Tower, Jr.	\$100 00
Mrs. C. Grant Perry	100 00
Miss Blanchard	50 00
Mrs. Joshua Lippincott	50 00
Mrs. Henry C. Gibson	25 00
Miss Cox	25 00
Mrs. Charles Platt	25 00
Mrs. S. Pepper	25 00
Mrs. Louis R. Fox	25 00
Mrs. Wayne MacVeagh	25 00
Mrs. S. C. Hoberton	20 00
Mr. James B. Leonard	20 00
Miss Hutchinson	20 00
Mrs. Henry Pepper	20 00
Miss Norris	20 00
The Misses Lewis	15 00
Mrs. Abraham Barker	10 00
Miss Caroline Paul	10 00
McCallum & McCallum	10 00
Mrs. Sydney L. Wright	10 00
Mrs. Thomas A. Scott	10 00
Miss M. J. Lamberton	5 00
"A Friend"	5 00

Total for Donation Day 625 00

Through Mrs. Charles C. Harrison.

Philadelphia Amateur Comedy Company	500 00
Mr. Lewis, for furnishing ward	500 00
Proceeds from "County Ball" towards furnishing private rooms	644 55

Towards salary of trainer of nurses	\$800 00
Towards salary of trainer of nurses, Mr. Alexander Brown	250 00
Endowment of the William Weightman, Jr., Bed	5,000 00
Total General Fund	\$8,750 40

GENERAL FUND. *Cr.*

Articles for Nurse's Home	\$258 94
Printing for Donation Day	6 10
Stamps and stationery	5 00
Annual endowment of bed in Women's Ward	250 00
Tuning melodeons in wards	3 00
Curtains, &c., for Superintendent's room	40 00
Dr. J. S. Billings, for payment of trainer of nurses	800 00
Bedsteads, mattresses, and tables for wards	401 25
Maple chairs for wards	36 00
Window shades for wards	34 44
Furniture for private rooms	243 50
Five white washstands for private rooms	54 00
Huck, muslin, &c.	27 15
Laying floors in wards	95 00
By Mr. Richard Wood, Treasurer, for endowment of the William Weightman, Jr., Bed	5,000 00
Treat for nurses at Christmas	25 00
Five washing sets	50 00
	<u>7,329 38</u>

Balance in General Fund \$1,420 02

CHRISTMAS TREAT FOR PATIENTS.

Money contributed by members of the Women's Visiting Committee	\$84 00
Christmas dinner, Children's Ward, given by Alice and Willy Kurtz, Germantown	4 00

COMFORT OF PATIENTS' FUND.

Cr.

Balance January 1st, 1892	\$109 80
"A Friend"	5 00
Fines of members	3 00
Mrs. Caroline E. Cope	5 00
Mrs. Theophilus Chandler, Jr.	5 00
Through Mrs. Charles C. Harrison	429 88
	<u>\$557 68</u>

Dr.

Christmas treat for patients beyond amount contributed	\$25 02
Fruit for patients during summer	89 64
Fans, lemon reamers, &c., for wards	6 21
Ice cream for patients during four summer months	136 62
Thanksgiving treat for patients	39 50
	<u>297 89</u>
Balance Comfort of Patients' Fund	\$259 79
Balance in treasury	<u>1,689 81</u>

ANNUAL ENDOWMENT OF BEDS IN THE SURGICAL WARD FOR DEFORMED CHILDREN.

Through Mrs. De Forest Willard.

Mrs. John W. Townsend	\$200 00
Mrs. S. William Bergner	200 00
Mrs. W. W. Porter	200 00
Mrs. C. E. Dana	200 00
Mrs. T. K. Conrad	200 00
Mrs. Samuel Dickson	200 00
Saturday Club, N. J., by Mrs. W. H. Conrad	200 00
Mrs. Wm. Lyman, by Mrs. Perot	200 00
Mrs. H. H. Collins	200 00
Mrs. S. Conrad	200 00
Mrs. J. K. Freedley	200 00
Mrs. James S. Austin	200 00
Mrs. E. W. Clark	200 00
Received	<u>\$2,000 00</u>
Paid to Mr. Richard Wood, Treasurer, for beds in Children's Ward	<u>\$2,000 00</u>

MARY McC. LAMBERTON,
Treasurer.

SIXTH ANNUAL REPORT
OF THE
TRAINING SCHOOL FOR NURSES, HOSPITAL OF
THE UNIVERSITY OF PENNSYLVANIA.

In presenting this report it may be well to review briefly the work and progress of the School since its organization.

Soon after the building of the Hospital the question of establishing a training school arose.

Committees were appointed at different times to confer with the Board of Managers upon the subject, but it was not until 1886 that any definite plans were made. Early in that year

D. HAYES AGNEW, M. D.,
WILLIAM PEPPER, M. D., and
J. WM. WHITE, M. D.,

met the following committee:—

MRS. WILLIAM PEPPER,
MRS. AUBREY H. SMITH,
MRS. EDWARD R. WOOD,
MRS. CHARLES WHARTON.

As a result of this meeting a Training School for Nurses was organized and a "Home for Nurses" was built to the memory of Mrs. Richard D. Wood by her children, furnished by the Women's Committee and their friends, and formally opened December 17th, 1886.

The school at this time numbered about 12 pupils, and in 1888 the first class was graduated.

In 1889 DR. J. S. BILLINGS was elected Director of the Hospital and Chairman of the Training School Committee. Since that time much has been accomplished.

A new wing, containing a large parlor for the nurses, a sitting-room the instructor of nurses, and 19 sleeping-rooms, has been added by the donors of the original home.

The bed-rooms have been most comfortably furnished by the committee, much new bedding provided, and six rooms in the first part newly painted. Mr. McGregor painted all the halls free of charge and tinted sitting-room in new wing.

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In addition to the above the following donations have been received:—

From Training School Committee:—

1 manikin for use in the instruction of nurses.
2 courses in sick cookery, one by Mrs. Rorer, the other at the Drexel Institute.

\$25 for the purchase of books of reference for nurses.

From Miss Juliana Wood:—

2 office desks.
1 book-case.
Furnishing of nurses' parlor.
Rugs.
1 lounge.

Pictures, books, vases, &c.

From Mr. Walter Wood:—

Harpers' and Century Magazines for the year.

COURSE OF TRAINING.

Two years are required for the instruction of nurses, and includes beside the regular ward and class instruction two courses of lectures—Junior and Senior—65 lectures, on the following subjects:—

Hygiene, Anatomy, Physiology, Medical and Surgical Nursing, Materia Medica, Toxicology, Urinalysis, Use of Splints, Bandaging, Gynecology, Obstetrics, Diseases of Children, Special Diseases, Eye, Ear, &c., Diseases of Nervous System, Rest Cure, Application of Electricity, Massage, Care of Insane, Contagion, Nutrition, and Sick Cookery.

We have received during the past year 24 applications for our graduates to fill hospital positions, many of them from distant cities—Galveston, Cincinnati, St. Paul, Albany, Brooklyn, New York, Knoxville, and others. Some of these positions we have been able to fill, and we hope each year to have a few nurses especially trained for institution work.

At the beginning of this year there were 23 applicants waiting to enter the school.

We have received during the year nearly 500 applications for our rules, either by letter or personal interview.

To 90 of the most promising blank forms of application were sent.

Eighty-eight applications have been returned, making in all 111 applicants from which to select our pupils for the year.

Thirty-one have been received for month for probation.

Eighteen accepted at end of month.

Thirteen accepted at end of month.

Three junior and 5 senior nurses have been dropped from the school for various reasons.

The average number of nurses on duty during the year has been 33 including probationers.

Ten hundred and nine days special nursing, either in the wards or private rooms, have been given to patients whom the chiefs of staff considered dangerously ill, thus providing them with the constant care of a nurse.

The time of one nurse has been devoted to the general clinic, and that of another to the accident ward.

Five hundred and four dollars and twenty cents has been paid to the Treasurer of the Hospital for special nursing of private patients in the Hospital.

At present 4 of our graduates are employed in the Hospital:—

1 as Night Superintendent;

1 in charge of Clinic;

1 in charge of private ward.

1 in charge of eye ward.

Our school consists of:—

36 pupil nurses;

1 probationer.

In closing we would thank the officers of the Hospital and the Training School Committee for their advice and support, and the many lecturers for their help in the instruction of our nurses.

Respectfully submitted,

JANE A. DELANO,
Instructor of Nurses.

GRADUATING CLASS.

Miss Sarah J. Bailey	Elkland, Pa.
Miss Clara Bethune	Knox, Pa.
Miss Elizabeth M. Brophy	Philadelphia.
Miss Katherine E. Damm	Oswego, N. Y.
Miss Emma B. Derno	Ore Hill, Pa.
Miss Mary A. Edwards	Kingston, Pa.
Miss Emma C. Fox	Point Pleasant, Pa.
Miss Laura M. Hamer	Petersburg, Pa.
Miss Ellen S. Massey	Millington, Md.
Miss M. Janet Musser	Sharpsburg, Pa.
Miss Mina M. Reed	Keene, Ohio.
Miss Carrie M. Reinecke	Nazareth, Pa.
Miss Sarah Rudden	Reading, Pa.
Miss Frederica Stock	New York City.

GRADUATES.

1888.

NAME.	OCCUPATION.	RESIDENCE.
Miss Bessie Dunn	Private Nurse	Philadelphia.
Miss Rosa Gifford	Died 1889	
Miss Adeline Hershey		
Miss Mary L. McDonald		
Miss Elvina M. Olsen	Married	
Miss Lizzie Ranken	Private Nurse	Philadelphia.
Miss Rosa Smith	Private Nurse	Philadelphia.

1889.

Miss Anna E. Brobson	Private Nurse	Philadelphia.
Miss Mary V. Clymer	Private Nurse	Philadelphia.
Miss Dora Crabtree	Married	
Miss Ellen Duddy	Private Nurse	Philadelphia.
Miss Mary A. Fisher	Supt. S. C. Hospital	Philipsburg, Pa.
Miss Maria Hinds	Private Nurse	Philadelphia.
Miss Minnie Hogan	Private Nurse	Philadelphia.
Miss Harriet S. Huck	Private Nurse	Philadelphia.
Miss Hattie J. Morand	Private Nurse	Philadelphia.
Miss Rose L. Newton	Private Nurse	Philadelphia.
Miss Mary O'Connell	Private Nurse	Philadelphia.
Mrs. Alice E. Pratt	Private Nurse	Philadelphia.
Miss Emily J. Rogers	Private Nurse	Philadelphia.
Miss Emma A. Smart	Private Nurse	Philadelphia.
Miss Elizabeth Weston	At Home	Dakota.
Miss Anna Zimmerman	Private Nurse	Philadelphia.

1890.

Miss Lizzie M. Culbertson	Private Nurse	Philadelphia.
Miss Anna P. Hunt	At home	England.
Miss Virginia Phillips	Private Nurse	Philadelphia.
Miss Carrie E. Slee	Private Nurse	Philadelphia.
Miss Adele Yost	Private Nurse	Philadelphia.

1891.

Miss A. M. Bartholomew	Private Nurse	Philadelphia.
Miss Mina M. Boyd	Private Nurse	Philadelphia.
Miss Isabella S. Bullock	Private Nurse	Philadelphia.
Miss Nellie Casey	Private Nurse	Philadelphia.

Miss Gertrude Croneberg	At home	Berlin, Germany.
Miss Belle Diack	French Hospital	San Francisco.
Miss Annie Fowler	Private Nurse	Philadelphia.
Miss Estelle L. Guss	At home	Norristown, Pa.
Miss Kate B. Hunter	Private Nurse	Philadelphia.
Mrs. Lucie C. Hutt	At home	Albany, N. Y.
Miss Katharine Keegan		
Miss Clare M. Langs	Private Nurse	Philadelphia.
Miss Mary G. Marshall	Night Superintendent, University Hospital	Philadelphia.
Miss Ida C. Mathis	Private Nurse	Philadelphia.
Miss Anna H. Messler	Private Nurse	Philadelphia.
Miss Annie M. Moore	Now Mrs. Canan	Tyrone, Pa.
Miss Eleanor McKnight	At home	Reading, Pa.
Miss Emma Thornton		
Miss Anna J. Weaver	In charge of Clinic University Hospital	Philadelphia.

1892.

Miss Laura M. Hamer	In charge of private ward University Hospital	Philadelphia.
Miss Carrie A. Hittle	In charge of hospital	Sayre, Pa.
Miss Laura B. Locke	Private Nurse	Philadelphia.
Miss Mina M. Reed	Private Nurse	Philadelphia.
Miss Carrie Reinecke	Private Nurse	Philadelphia.
Miss Frederica Stock	In charge of ward University Hospital	Philadelphia.

REPORT OF APOTHECARY.

PHILADELPHIA, January 7th, 1893.

To President and Board of Managers of the Hospital of University of Pennsylvania.

LADIES AND GENTLEMEN:—I herewith submit a report of this department for the year 1892:—

Total number of prescriptions	16,071
To Pennsylvania Railroad Company for freight	\$21 86
To Philadelphia and Reading Railroad Company for freight	7 98
To Adams Express Company	17 45
To Thomas Dillon for soda water	44 65
To drugs, sundries, and car-fare	24 65
To beer, porter, and ale	18 00
To M. E. P. Davis, Superintendent	2,086 75
To balance on hand	3 12
Receipts for year	\$9,224 46
Supplies purchased as follows:—	
Drugs and chemicals	\$3,133 46
Whiskies, wines, and brandies	515 35
Mineral waters	152 75
Ether, Squibb's	517 24
Rubber goods, bottles, and glassware	628 72
Alcohol	884 55
Surgical dressings (cotton, lint, and plasters)	901 65
Printing, paper, and sundries	114 10

\$6,847 82

Yours very respectfully,

JAMES P. MALLON,
Apothecary.

REPORT OF CASES TREATED IN THE MEDICAL WARDS.

By CHARLES HARRISON FRAZIER, M. D., Medical Resident.

	1891.	ADMITTED 1892.	CURED.	IMPROVED.	UNIMPROVED.	DIED.	REMAINED.	TOTAL.
ORGANS OF CIRCULATION.								
Angina pectoris	1	1	1	1	1	1	1	1
Arterio capillary thrombosis	1	1	1	1	1	1	1	1
Aneurysm	1	1	1	1	1	1	1	1
Dilatation of heart	1	1	1	1	1	1	1	1
Fatty degeneration of heart	1	1	1	1	1	1	1	1
Pericarditis	1	1	1	1	1	1	1	1
Valvular disease	1	21	13	3	4	1	1	22
ORGANS OF RESPIRATION.								
Asthma	5	5	5	5	5	5	5	5
Bronchitis, acute	1	1	1	1	1	1	1	1
" chronic	3	6	1	1	1	1	1	1
Bronchorrhoea	1	1	1	1	1	1	1	1
Laryngitis, acute	1	1	1	1	1	1	1	1
Tonsillitis	1	1	1	1	1	1	1	1
membranous	1	1	1	1	1	1	1	1
Clostration of larynx	1	1	1	1	1	1	1	1
LUNGS.								
Emphysema	3	1	2	1	1	1	1	3
congestive	1	1	1	1	1	1	1	1
Pneumonia	4	19	8	8	3	1	1	23
" croupous	6	3	3	3	3	1	1	6
" pleuric	1	1	1	1	1	1	1	1
PLEURA.								
Emphysema	3	2	2	2	2	1	1	3
Pleurisy, acute	2	4	4	4	4	4	4	4
" chronic	1	1	1	1	1	1	1	1
" tubercular	1	1	1	1	1	1	1	1
DIGESTIVE ORGANS.								
Cancer of pylorus	1	1	1	1	1	1	1	1
stomach	1	1	1	1	1	1	1	1
Dilatation of stomach	1	1	1	1	1	1	1	1
Dyspepsia	1	1	1	1	1	1	1	1
nervous	1	1	1	1	1	1	1	1
Gastritis	1	1	1	1	1	1	1	1
Gastritis, acute	1	1	1	1	1	1	1	1
chronic	1	1	1	1	1	1	1	1
Mesenteric tuberculosis	1	1	1	1	1	1	1	1
Nys malacia of oesophagus	1	1	1	1	1	1	1	1
Parasitis	1	1	1	1	1	1	1	1
Peritonitis, acute	1	1	1	1	1	1	1	1
" tubercular	1	1	1	1	1	1	1	1
Stricture of oesophagus	1	1	1	1	1	1	1	1
pylorus	1	1	1	1	1	1	1	1
Ulcer of stomach	1	1	1	1	1	1	1	1

CASES TREATED IN THE MEDICAL WARDS.—Continued.

	1911.	ADMITTED 1912.	CURED.	IMPROVED.	UNIMPROVED.	DIED.	REMAINING.	TOTAL.
INTESTINES.								
Cholera morbus	2	2						2
Dysentery	1	1						1
Enteritis, acute	1	1						1
" chronic catarrhal	1	1						1
" tubercular	1	1						1
Typhoid	2	2						2
Ulcer of rectum	1	1						1
" syphilitic	1	1						1
Enterocolitis	2	2						2
LIVER.								
Cancer of	1	1						1
Catarrh of	1	1						1
Cirrhosis, biliary	1	1						1
" with ascites	1	1						1
Colic, hepatic	2	2						2
Jauundice, catarrhal	1	1						1
" obstructive	1	1						1
GENITO-URINARY TRACT.								
Bright's, subacute	1	1						1
" chronic	8	8						8
Calculus (operation)	1	1						1
Cystitis	1	1						1
Dysketes interstis	2	2						2
Flaming kidney	1	1						1
Gleet	1	1						1
Spermatorrhoea	1	1						1
LOCOMOTOR APPARATUS.								
Lambs	1	1						1
Rheumatism, acute	7	7						7
" subacute	1	1						1
" chronic	1	1						1
" gonorrheal	1	1						1
" muscular	2	2						2
Rheumatoid arthritis	3	3						3
FEVERS.								
Catarrhal	5	5						5
Malarial, chronic	1	1						1
" intermittent	4	4						4
Typhoid	23	23						23
NERVOUS SYSTEM.								
Alcoholism	5	5						5
Apoplexy	2	2						2
Bulbar palsy	1	1						1
Cephalgia	2	2						2
Cerebral syphilis	3	3						3
Cerebritis	1	1						1
Constriction of lower cord	1	1						1
Clonus	2	2						2
Idiomatic tremors	2	2						2
Dementia, senile	1	1						1
" parietal	1	1						1
Encephalitis, chronic	1	1						1
Epilepsy, major	1	1						1
" minor	4	4						4
Exophthalmic goitre	1	1						1
Glossolabial palsy	1	1						1
Hemiplegia	4	4						4
Hypochondriasis	1	1						1
Hysteria	2	2						2

CASES TREATED IN THE MEDICAL WARDS.—Concluded.

	1911.	ADMITTED 1912.	CURED.	IMPROVED.	UNIMPROVED.	DIED.	REMAINING.	TOTAL.
NERVOUS SYSTEM.—Continued.								
Gumma of brain	1	1						1
Insanity, non-familial	1	1						1
Migraine	1	1						1
Melanchoia	1	1						1
Myelitis, acute	1	1						1
" chronic	1	1						1
Neuralgia	1	1						1
Neuritis	1	1						1
Neurasthenia	1	1						1
Partial paresis	1	1						1
Optic atrophy	1	1						1
Paralysis, general	1	1						1
Paraplegia, hysterical	1	1						1
" spastic	1	1						1
" traumatic	1	1						1
Paraplegia	1	1						1
Pneumofyria	2	2						2
Sclerotic disseminated	1	1						1
" posterior	1	1						1
Strokes	8	8						8
Syringomyelia	1	1						1
Tetanus	1	1						1
POISONING.								
Lead, acute	1	1						1
" subacute	2	2						2
Mercurial	1	1						1
Opium	1	1						1
Paraffine aloes	1	1						1
SKIN.								
Eczema	5	5						5
Lupus vulgaris	1	1						1
UNCLASSIFIED.								
Adenitis syphilitica	1	1						1
Chlorosis	1	1						1
Debility	4	4						4
Erysipelas	2	2						2
Endometritis, chronic	1	1						1
" sarcomatous	1	1						1
Hypertrophy of prostate	1	1						1
Incontinence of urine	1	1						1
Laceration of cervix	2	2						2
Leg ulcer	1	1						1
Lesion of nose and lip	1	1						1
Lithemia	1	1						1
Malignant abscess	1	1						1
Post typhoid dementia	1	1						1
Recurrent sarcoma of brain	1	1						1
Syphilis	1	1						1
Spastic palsy	1	1						1
Syphilis, congenital	1	1						1
Synovitis gonorrheal	1	1						1
Tendency of Fuchs' achoma	1	1						1
Vomiting of pregnancy	1	1						1
Not treated	22	22						22

REPORT OF CASES TREATED IN THE SURGICAL WARDS.

By GEORGE D. MORTON, M. D., Senior Resident Surgeon.

	Remainder from 1901.	Admitted during 1902.	Recovered.	Unimproved.	Not treated.	Dead.	Remainder Dec. 31, 1902.	Total.	Number operated upon.	REMARKS.
AFFECTIONS OF BONES AND JOINTS.										
Anchylolysis of elbow	1	1					1	1	1	Excision.
" knee	1	50					51	51	51	Excision, 2; amputation, 1; dropped, 1.
" both hips	1	1					1	1	1	Osteotomy and tenotomy.
Arthritis of wrist	1	1					1	1	1	Injection with iodine and glycerine emulsion.
" elbow	2	2					2	2	2	Excision.
" knee	2	2					2	2	2	Amputation, 2; excision, 2.
Ostitis of tibia	2	2					2	2	2	
Periostitis of clavicle	2	2					2	2	2	
Ostealgia	2	2					2	2	2	
Necrosis of skull	2	2					2	2	2	
" spine	2	2					2	2	2	
" acetabulum	2	2					2	2	2	
" elbow	2	2					2	2	2	Excision.
" humerus	2	2					2	2	2	
" inferior maxilla	2	2					2	2	2	
" femur	2	2					2	2	2	
" pelvis	2	2					2	2	2	
" shoulder	2	2					2	2	2	
" tibia	2	2					2	2	2	
" fibula	2	2					2	2	2	
Fractures, simple, astragalus	2	2					2	2	2	Removal of coccyx.
" coccyx	2	2					2	2	2	
" clavicle and ribs	2	2					2	2	2	Death from cerebral embolism.
" femur	2	2					2	2	2	
" fibula (Pott's)	2	2					2	2	2	
" humerus	2	2					2	2	2	
" superior maxillary	2	2					2	2	2	
" inferior maxillary	2	2					2	2	2	
" metatarsal	2	2					2	2	2	
" patella	2	2					2	2	2	Sutured with silk.
" radius	2	2					2	2	2	
" radius and ulna	2	2					2	2	2	
" ribs	2	2					2	2	2	
" ribs and scapula	2	2					2	2	2	
" vertebra	2	2					2	2	2	
" tibia	2	2					2	2	2	
" tibia and fibula	2	2					2	2	2	
" ulna	2	2					2	2	2	

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CASES TREATED IN THE SURGICAL WARDS.—Continued.

	Remainder from 1901.	Admitted during 1902.	Recovered.	Unimproved.	Not treated.	Dead.	Remainder Dec. 31, 1902.	Total.	Number operated upon.	REMARKS.
BONES AND JOINTS.—Continued.										
Fractures, compound, humerus	2	2					2	2	2	Shoulder joint amputation, 2.
" inferior maxillary	2	2					2	2	2	
" tibia and fibula	2	2					2	2	2	
" ulna	2	2					2	2	2	Wired.
" ununited, clavicle	2	2					2	2	2	Wired.
" patella	2	2					2	2	2	
" compound depressed skull	2	2					2	2	2	Trephined, 6.
" depressed skull	2	2					2	2	2	Trephined, 2; dropped, 1.
Dislocations, hip, congenital	2	2					2	2	2	
" humerus	2	2					2	2	2	
" clavicle	2	2					2	2	2	
" nasal septum	2	2					2	2	2	
Crush of fingers	2	2					2	2	2	Amputation, 3.
" wrist	2	2					2	2	2	Resection.
" forearm	2	2					2	2	2	
" elbow	2	2					2	2	2	
" side	2	2					2	2	2	
" both legs	2	2					2	2	2	Amputation, 4.
" foot	2	2					2	2	2	
" toes	2	2					2	2	2	
Sprain of knee	2	2					2	2	2	
" ankle	2	2					2	2	2	
DEFORMITIES (CONGENITAL).										
Ham-hip	2	2					2	2	2	
" and cleft palate	2	2					2	2	2	
Club foot	2	2					2	2	2	
DEFORMITIES (ACQUIRED).										
Contraction of trapezius muscle	2	2					2	2	2	
" of neck	2	2					2	2	2	
" wrist	2	2					2	2	2	
" knee	2	2					2	2	2	
" talipes, fr. at elbow	2	2					2	2	2	
" burn of hand	2	2					2	2	2	
" pericardial muscles from cerebral hemorrhage	2	2					2	2	2	
AFFECTIONS OF THE SOFT PARTS.										
Abscess of back	2	2					2	2	2	
" breast	2	2					2	2	2	
" alveolar	2	2					2	2	2	
" lower jaw	2	2					2	2	2	
" hand	2	2					2	2	2	
" groin	2	2					2	2	2	
" occipital	2	2					2	2	2	
" ischio-rectal	2	2					2	2	2	
" pelvis	2	2					2	2	2	
" perineum	2	2					2	2	2	
" thigh	2	2					2	2	2	
Carbuncle of hip	2	2					2	2	2	
Sinus of chest	2	2					2	2	2	

[illegible]

	Remarking from 1891.	Admitted during 1902.	Recovered.	Improved.	Unimproved.	Not treated.	Food.	Remarking Nov. 31, 1902.	Total.	Number operated upon.	REMARKS.
INJESTIVE TRACT.—Continued.											
Peritoneal abscess	1	1	1					1	1		
Peritonitis	1	1						1	1		
Impacted gall stones	1	1						1	1		
AFFECTIONS OF NERVOUS SYSTEM.											
Concussion of brain	2	2						5			Trephined, 2.
Epilepsy, traumatic	1	2						2			
Neuralgia of arm	1				1			1			plexus.
Sciatica	1	4						4	4		Stretched brachial
Sciatica of trochanter minor	1							1			Stretched sciatic nerve.
Neurasthenia	1							1			
Neuritic tenosynovitis	1							1			Trophine.
Section of median nerve	1							1	1		
Section of musculospiral nerve	1							1	1		
Peripheral nerve injury	1	1						1	1		
AFFECTIONS OF THE EAR.											
Discharge of middle ear	1	6	2	5				7	7		
Otitis with exostosis of aud. canal	1	1						1	1		
Mastoid abscess	1	1						1	1		
Furuncul of aud. meatus	1	1						1	1		
Transmural loss of aud. ear	1	1						1	1		
AFFECTIONS OF GENITO-URINARY TRACT.											
Bubo	6	5	1	1				6	9		
Celastrum	1	1	1	1				2	7		Litholapaxy, 5; lithotom., 2.
Cystitis	5	1	4					5			
Epididymitis	1	1						1			
Extravasation of urine	1	1						1	1		Pyemia.
Gonorrhea	1	1	1	1				2			
Gleet	1	1						1			
Hypodermic, single	5	5						6	6		
Idiotele	1	1						1			
Herpes genitalis	1	1						1			Circumcision.
Hypoplasia	1	4						1	3		
Scrotitis	1	1						1	1		
Orchitis	1	1						1	1		Pyemia.
Prostate, enlarged	1	1						1	1		
Cyst. rheumatism	1	1						1	1		
Urethral stricture	2	19	4	14				2	17	6	
Variocoe	1	5	1					2	10		
and urethral stricture	1	1						1	1		
Foreign body in bladder	1	1						1	1		
Abscess of bladder	1	1						1	1		Lithotomy.
Prostatitis	1	1						1	1		
Amputation of uterus	1	1						1	1		
Cyst. vag. ovaries	1	1						1	1		

CASES TREATED IN THE SURGICAL WARDS.—Continued.

	Remainder from 1901.	Admitted during 1902.	Recovered.	Unimproved.	Clung on.	Not treated.	Dead.	Remaining Dec. 31, 1902.	Total.	Number operated upon.	REMARKS.
TUMORS.											
Angioma of face	2	1	1						3		
Barrel tumor of knee	1	1							2		
Cancer of breast	2	21	19					2	23		Death from hemorrhage.
" axilla	2	2							4		
" chest	1	1							2		
" eye and nose	1	1							2		
" eyelid and temple	1	1							2		
" pelvis	1	1							2		
" inferior maxilla (see)	1	1							2		
" rectum	4	1							5		
" face	1	1							2		
" larynx	1	1							2		
Cyst of breast	1	1							2		
Cystic tumor of breast	1	1							2		
" adenoma of neck	1	1							2		
Schaefferian cyst of face	1	1							2		
Cyst of lower jaw	1	1							2		
Cyst of tibia	1	1							2		
Cleithrum of face	1	1							2		
Epithelioma of lip	6	5						1	11		
" face	7	6							13		
" and neck	1	1							2		
" palate	1	1							2		
" and temple	1	1							2		
" neck	1	1							2		
" tongue	1	1							2		
" endometrium	1	1							2		
" stump	1	1							2		
Enchondroma of finger	1	1							2		
Enchondro-sarcoma of foot	1	1							2		
Exostosis of humerus	1	1							2		
Fibroma of back	1	1							2		
" multiple	1	1							2		
Fibro-lipoma of hip	1	1							2		
" leg	1	1							2		
Fibroid tumor	1	1							2		
Hemangioma of lobe of ear	1	1							2		
Lipoma of neck	1	1							2		
" shoulder	1	1							2		
" thigh	1	1							2		
Keloid of neck	1	1							2		
Movable cartilage in knee	1	1							2		
Neuroma of hand	1	1							2		
" stump	1	1							2		
Melanotic sarcoma of shoulder	1	1							2		
" thigh	1	1							2		
Osteo-sarcoma of femur	1	1							2		Amputation.
" humerus	1	1							2		Refused operation.
" sup. maxilla	1	1							2		
Sarcoma of orbit	1	1							2		
" eye	2	2							4		
" shoulder	1	1							2		
" vulva	1	1							2		
" testicle	3	2							5		
" palate	1	1							2		
" sup. maxilla	1	1							2		

CASES TREATED IN THE SURGICAL WARDS.—Continued.

	Remainder from 1901.	Admitted during 1902.	Recovered.	Unimproved.	Clung on.	Not treated.	Dead.	Remaining Dec. 31, 1902.	Total.	Number operated upon.	REMARKS.
TUMORS.—Continued.											
Sarcoma of ribs	2	2							4		Amputation.
" abdominal wall	1	1							2		
" thigh	1	1							2		
" both thighs	1	1							2		
" kidney	1	1							2		Exploratory laparotomy.
" tonsil	1	1							2		Death from secondary hemorrhage.
" arm and thigh (see)	1	1							2		
" scrotum	1	1							2		
" axilla	1	1							2		
" knee	1	1							2		Amputation.
" Paget's disease of nipple	2	2							4		
" Nasal polyp	2	2							4		Eloped.
" Double tumor of parotid	1	1							2		
" Cyst of nostril	1	1							2		
" Tumor of palate	1	1							2		
" " neck	2	2							4		
" breast	2	2							4		
" axilla (rec.)	1	1							2		
" kidney	1	1							2		Nephrectomy.
" knee	1	1							2		
" Scar tissue from breast	1	1							2		
" Hem. from leg ulcer	1	1							2		
" Tub. adenitis	13	13							26		
" Spina lumb.	1	1							2		
" Tub. abscess of mediastinum	1	1							2		Reamputation.
" Torsion of stump	1	1							2		
" Lymphedema of leg	2	2							4		
" Thrombosed post-thrombotic artery	1	1							2		
" Abscess of popliteal artery	1	1							2		Digital compression.
" Retention of urine	4	4							8		Supra-pubic cystostomy.
" Leucostoma	1	1							2		
" Eczema rubrum	2	2							4		
" Amputation of two fingers and thumb	1	1							2		
" Empyema	4	4							8		
" Blood poisoning	2	2							4		
" Exposure to cold	1	1							2		
" Diabetes insipidus	1	1							2		
" Cat. pneumonia	1	1							2		
" and influenza	1	1							2		
" Apoplexy	1	1							2		
Totals	33	365	305	95	9	29	30	38	394	361	

REPORT OF CASES TREATED IN THE EYE WARDS.

By LAWRENCE S. SMITH, M. D., Resident Physician.

	Left from 1891.	Admitted 1892.	Referred.	Unimproved.	Not treated.	Total in 1892.	Remaining Dec. 31, 1892.	Operations.	REMARKS.
AFFECTIONS OF EYELIDS.									
Epithelioma, lower	1	1	1	1	1	5	1	2	
" upper	1	1	1	1	1	5	1	2	
Vitreal disease	1	1	1	1	1	5	1	2	
CORNEA AND SCLERA.									
Ulcer of cornea	1	1	1	1	1	5	1	2	
Staphylococci of cornea	1	1	1	1	1	5	1	2	
Staphylococci, inflamed	1	1	1	1	1	5	1	2	
Hypopyon anterior	1	1	1	1	1	5	1	2	
Scleritis with hypopyon	1	1	1	1	1	5	1	2	
IRIS, CILIARY BODY, AND CHOROIDS.									
Traumatic iritis	1	1	1	1	1	5	1	2	
Rheumatic iritis	1	1	1	1	1	5	1	2	
Traumatic irido-cyclitis	1	1	1	1	1	5	1	2	
Occlusion of pupil	1	1	1	1	1	5	1	2	
MUSCULAR AND NERVOUS.									
Convergent strabismus	1	1	1	1	1	5	1	2	
Divergent	1	1	1	1	1	5	1	2	
RETINA AND OPTIC NERVES.									
Optic neuritis	1	1	1	1	1	5	1	2	Double, 1.
Choro-retinitis	1	1	1	1	1	5	1	2	
CRYSTALLINE LENS.									
Senile cataract	2	14	15	16	17	64	16	116	With Iridectomy, 11; extraction, 16.
Traumatic cataract	1	1	1	1	1	5	1	2	Perf. wd. of cornea.
Secondary cataract	1	1	1	1	1	5	1	2	
AFFECTIONS OF EYEBALL.									
Strabismic	1	1	1	1	1	5	1	2	
Exophthalmos	1	1	1	1	1	5	1	2	
Enophthalmos	1	1	1	1	1	5	1	2	
Glaucoma, inflammatory	1	1	1	1	1	5	1	2	
" secondary	1	1	1	1	1	5	1	2	
" acute	1	1	1	1	1	5	1	2	
" chronic	1	1	1	1	1	5	1	2	
Lacerated wound	1	1	1	1	1	5	1	2	
Penetrating wound	1	1	1	1	1	5	1	2	
Vitreal opacities	1	1	1	1	1	5	1	2	
Myopia	1	1	1	1	1	5	1	2	
Total	2	35	35	35	35	142	35	423	

REPORT OF CASES TREATED IN THE GYNÆCOLOGICAL WARD.

By LAWRENCE S. SMITH, M. D., Resident Physician.

	Beginning from 1891.	Admitted during 1892.	Recovered.	Unimproved.	Not Treated.	Died.	Total for 1892.	Remaining in House—Nov. 30, 1892.	Operations.
UTERINE.									
Endometritis	21	15	8	1	1	21	1	30	
Fibromata	14	1	6	1	1	5	14	1	30
Sarcoma	1	1	1	1	1	1	1	1	2
Procidencia	1	1	1	1	1	1	1	1	1
Hypertrophic elongation of cervix	1	1	1	1	1	1	1	1	1
Epithelioma uteri	1	1	1	1	1	1	1	1	1
Angular stenosis of cervix	17	14	1	1	1	1	17	1	35
Laceration of cervix	1	1	1	1	1	1	1	1	4
Laceration of cervix and perineum	1	1	1	1	1	1	1	1	1
Uterus-Morison's duplex with leukæmia	1	1	1	1	1	1	1	1	1
Polyp	1	1	1	1	1	1	1	1	1
OVARIAN.									
Ovaritis	1	11	12	1	1	12	1	11	
Cysts	1	9	7	1	1	2	10	1	9
TUBAL.									
Salpingitis	1	6	2	1	1	2	6	1	8
Tubal gestation	1	1	1	1	1	1	1	1	1
VESICAL, &c.									
Vesico-vag. fistula	1	1	2	1	1	2	2	2	
Cystitis	1	1	1	1	1	1	1	1	
Cystocele and rectocele	1	1	1	1	1	1	1	1	
Retention of urine	1	1	1	1	1	1	1	1	
Urethral caruncle	1	1	1	1	1	1	1	1	
MISCELLANEOUS.									
Dermoid cyst	1	1	1	1	1	1	1	1	
Fluctuating kidney	1	1	1	1	1	1	1	1	
Nephritis with ascites	1	1	1	1	1	1	1	1	
Hyaline cyst of liver	1	1	1	1	1	1	1	1	
Abscess of abdominal wall	1	1	1	1	1	1	1	1	
Cystic sarcoma of kidney	1	1	1	1	1	1	1	1	
Biliary calculus	1	1	1	1	1	1	1	1	
Sarcoma of liver	1	1	1	1	1	1	1	1	
Hæmorrhoids	1	1	1	1	1	1	1	1	
Laceration of perineum	1	1	1	1	1	1	1	1	
Cancer of rectum	1	1	1	1	1	1	1	1	
Peritonitis, chronic	1	1	1	1	1	1	1	1	
Typho-malarial fever	1	1	1	1	1	1	1	1	
Neurasthenia	1	1	1	1	1	1	1	1	
Sequelæ of abortion	1	1	1	1	1	1	1	1	
Removal of ligature after oö operation	1	1	1	1	1	1	1	1	
Fistula in ano	1	1	1	1	1	1	1	1	
Pelvic abscess	1	1	1	1	1	1	1	1	
Total	8	148	95	27	4	2	18	156	9

(44)

REPORT OF THE OBSTETRICAL SERVICE.

HARRY D. BEYER, Resident Physician.

From January 1st, 1892, to January 1st, 1893.

Number of women treated	69	Presentations:—	
Number of women admitted	64	L. O. A.	32
Number of women delivered	54	R. O. P.	1
Primipara	30	R. O. A.	12
Multipara	18	L. O. P.	1
Number unrecorded	6	R. S. A.	1
Left before confinement	4	R. S. P.	1
Number remaining from 1891	5	Twins	1
Number remaining from 1892	8	Unrecorded	4
Number of women died (laparotomy)	1	Abortions	1
Number of children born	54	Miscarriage and endometritis (cured)	1
Number of children died	1	Operations:—	
Child admitted and died (cholera infantum)	1	Forceps	6
		Induced labors	5
		Laparotomy (abortion and pyosalphynx) (death)	1
		Symphysiotomy	1
		Complications:—	
		Lacerations of the perineum	5

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During the year 66 patients have received bed treatment in the Ward for Crippled Children, a large number having been refused for want of space.

During the year 66 patients have received bed treatment in the Ward for Crippled Children, a large number having been refused for want of space.

The diseases treated have been as follows:—

Operations Performed.

Talipes, multiple tenotomies and forcible straightening	21
" excision astragali	3
" open incision	2
" shortening of tendon	2
Infantile paralysis, multiple myotomies and tenotomies	4
Spastic	1
Tenotomies of hamstring tendons	5
Erasion of hip	2
Forcible straightening of joints	7
Ankylosis hip, osteotomies	2
Anterior curvatures tibia, osteotomies	4
" " femur	2

At the clinics many other cases were operated upon and sent immediately to their homes.

Expenses of apparatus shop for the year	\$1,151 17
Receipts	825 52

The deficiency, \$325.00, was met by the Clinical Professor of Orthopaedic Surgery.

The shop for the manufacture of apparatus at cost price has been continued, and there have been made :—

New apparatus	216
Old apparatus repaired	220

The records of the second year of the Ward for Crippled Children show 66 children under its care and an addition of 4 more endowed beds, making a total of 3 beds in perpetuity and 13 in annual endowment. The ward was equipped and has been maintained without expense to the Hospital at an outlay of about \$11,500 for endowment and general requirements.

The Saturday Club of New Jersey, organized in 1890 by Mrs. Walter H. Conrad, has proved a valuable auxiliary. Under its auspices an annual entertainment is given, which defrays the expense of an endowed bed. Five hundred garments have been prepared and donated by its members.

Saturday Club Bed No. 2 was endowed in February, 1892, by Mrs. C. Wm. Bergner of Philadelphia.

Beds have also been endowed during the year by Mrs. Solomon Conrad and by Mrs. James S. Austin.

The "Louis J. C. Kimmell Guild" made and contributed 136 articles of clothing and presented valuable Christmas gifts, well-filled stockings, and handsomely-trimmed trees in 1891 and 1892. Holiday dinners were also given according to the season.

The "Seashore Home for Children," at Atlantic City, most generously gave many weeks of sea air to 20 of the children.

Miss Ethel Bunting, of Roxborough, with a corps of friends gave the proceeds of a play that procured 2 rolling chairs, a great help and pleasure to the children.

Little Alice and Willie Kurtz, of Germantown, by the gifts of the contents of their mite boxes have provided ice cream every Saturday since April, 1891, and the Christmas dinner for 1892.

Ethel Davis, of Red Bank, N. J., donated a doll's house, thoroughly equipped, and also sent the *Youth's Companion* for 2 years. Richard and Robert Barrows sent books, toys, &c.

The "Little King's Daughters," of Danbury, Conn., contributed their quota in helping a boy to get a wheeled crutch. The Lenten Guild of Mrs. Bloomfield McIlvain contributed 35 sashes; that of Mrs. J. S. Cox, 18 garments; that of Mrs. McElroy, 161; Miss Colesberry's Lenten Guild brought books and toys to the children, and the Trinity Chapel Guild of Working Girls gave dolls, books, clothing, &c.

Mrs. J. M. Shrigley sent 12 garments; Mrs. J. S. Austin, 6 garments; Miss Henning, 3 garments.

Mrs. J. S. Patterson gave an anniversary dinner of special dainties, and Mrs. McClay gave toys and much appreciated time.

Miss Maude Adams, of Newton, sent from the Methodist Church flowers and text-cards. Flowers also came from Mr. Battles, Mrs. Conrad, and others.

The members of the Board of "Women Visitors" frequently donated attractive toys, &c., and the Resident Physicians are continual in their kindnesses toward the children.

The Needlework Guild of America sent 110 pieces of clothing, &c., through Mrs. Bergner, 22 through Mrs. Dickson, and 32 through Mrs. Porter.

The Apparatus Guild has collected \$293.25 to aid very poor children in paying for their indispensable appliances.

The members of the Special Committee on the Children's Ward have not only endowed beds, but have also contributed liberally to the running expenses.

The only limit to the work is the lack of accommodation. Funds are needed to erect and endow a ward thoroughly equipped with all the surgical and mechanical appliances so essential in the successful treatment of deformities, and this will be forthcoming in the D. Hayes Agnew memorial.

DE FOREST WILLARD, M. D.
Clinical Professor Orthopaedic Surgery.

1601 Walnut Street.

Contributions and donations have been received from the following persons in 1892:—

Mrs. De Forest Willard.
Mrs. William W. Porter.
Mrs. J. W. Townsend.
Mrs. W. H. Conrad.
Mrs. Solomon Conrad.
Mrs. J. K. Freedley.
Mrs. Henry H. Collins.
Mrs. C. Wm. Bergner.
Mrs. E. W. Clark.
Mrs. Samuel Dickson.
Mrs. Charles E. Dana.
Mrs. T. K. Conrad.
Mr. William Lyman.
Mrs. J. S. Austin.
Mrs. J. M. Shrigley.
Mr. Charles W. Freedley.
Mr. Joseph G. Rosengarten.
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Mrs. James S. Cox.
The Misses Willard.
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Mrs. Thomas B. Wattson.
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Miss Ethel Bunting.

Mrs. C. Tower.
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Mrs. Maxwell Sheppard.
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Mrs. Barrows.
Miss Ethel Davis.
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Mr. and Mrs. J. Hopkinson Baird.
Miss Black.
Miss Anna Black.
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Miss A. Hutchinson.
Miss Coventry.
Hon. and Mrs. Robt. Hutchinson.
Miss Landon.
Captain and Mrs. Landon.
Dr. and Mrs. McFarland.
Miss Mott.
Miss Murphy.
Mr. and Mrs. Edwin Thompson.
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Mrs. and Mrs. John Bishop.
Mr. and Mrs. Caleb Ridgway.
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Mr. and Mrs. John Hutchinson.
Miss Florence Black.

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Mr. and Mrs. Edward Black.
Rev. and Mrs. J. Roderick Cobb.
Mr. Walter H. Conrad.
Mr. and Mrs. Richard Harrison.
Mr. and Mrs. Frank Howard.
Mrs. Anthony.
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Miss Chevalier.
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Mr. F. M. Willard.
Miss Swain.
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Mr. and Mrs. William Morris.
Mr. Edward Morris.
Mrs. Charles Rosseel.
Miss Rosseel.
Miss Anthony.
Mrs. Charles Black.
Miss Edith Lawrence Black.
Miss E. Creighton Brown.
Mr. and Mrs. Hood Gilpin.
Miss Moyer.
Mr. James Black.
Mr. Frederick C. Clark.
Mr. Ernest G. Freeman.
Mr. Howard P. Converse.
Mr. Howard Aronson.
Mr. L. S. Hannum.
Mr. Charles E. Gummere.
Mrs. Frederick Tyler.
Miss Wing.
Mrs. McKnight.
Mrs. Young.
Mrs. Mott.
Mr. Richard De Con.
Mrs. William Richardson.
Miss M. Sidford.
Mrs. M. Williamson.
Miss Howard.
Miss Van Baskirk.
Mrs. John C. Hamer.
Mrs. Charles Moyer.
The Misses Scarborough.
Miss Hargous.
Miss Bell.
Major Oliphant.
Mrs. Hance.
Rev. and Mrs. J. Ernst Daw.
Philip Brakely, Jr.
Miss Brakely.
Miss May Brakely.
Children's Seashore Home of Atlantic City.

CASES TREATED AT THE DISPENSARY HOSPITAL OF THE
UNIVERSITY OF PENNSYLVANIA.

YEAR.	Medical Cases.	Surgical Cases.	Diseases of Eye.	Diseases of Ear.	Diseases of Throat.	Diseases of Nervous System.	Genital (Male) or Venereal Diseases.	Orbital Diseases.	Skin Diseases.	Diseases of Women.	Diseases of Children.
1875	2,066	827	221	282	282	349	312	438	438	438	438
1876	2,067	1,148	207	187	164	101	416	202	202	202	202
1877	2,558	1,142	307	243	415	164	416	202	202	202	202
1878	2,192	852	645	209	324	416	381	96	445	450	450
1879	2,078	928	699	339	458	346	299	66	349	486	486
1880	2,194	1,043	627	333	277	277	88	409	478	387	387
1881	1,529	854	631	319	385	231	79	27	608	451	451
1882	2,559	896	813	324	482	492	358	120	505	637	637
1883	2,077	1,068	824	394	444	287	227	127	417	657	657
1884	1,690	1,143	917	384	431	287	219	201	445	629	629
1885	1,729	1,102	909	387	408	309	279	293	390	521	521
1886	1,728	1,149	994	409	785	427	452	283	396	544	544
1887	1,628	1,119	1,113	385	734	454	465	216	515	459	459
1888	1,844	838	1,209	339	514	366	371	165	439	498	498
1889	1,909	739	1,294	368	988	449	427	242	435	459	459
1890	1,231	1,017	1,444	300	1,062	486	479	186	452	469	469
1891	1,237	696	1,491	309	759	473	558	102	471	417	417
1892	1,237	696	1,491	309	759	473	558	102	471	417	417
32,300	15,092	14,815	5,716	9,265	6,728	5,092	2,422	7,369	8,061	2,838	2,838

REPORT OF SURGICAL DISPENSARY FOR 1892.

	No. of Cases.		No. of Cases.		No. of Cases.
Abcesses	64	Fistula in ano	1	Osteo-sarcoma	1
Adenitis	20	Foreign bodies removed	8	Paralysis (traumatic)	1
Adenoma	2	Fracture, calcaneum	1	Periosteitis	1
Amputation, finger	3	Chorda	3	Peritonitis	1
Anthrax	4	Cole's	7	Phimosis	1
Arthritis	9	Humerus	5	Pneumonia	1
Bite of dog	5	Maxilla	1	Prostate, enlarged	1
Of spider	1	Metatarsal	1	Proctitis	1
Of man	1	Phalanx	1	Referred to other dis-	101
Of rat	1	Radius and ulna	1	Rheumatism	4
Bubo	11	Ribs	6	Sarcocoe	3
Burns	2	Ulna	1	Scleritis	1
Burn, crush	1	Viscous union after	2	Scleritis	7
Burns	66	Prost. life	1	Scleritis	7
Bursitis	7	Purpura	8	Sinus	2
Callos, painful	2	Ganglion	7	Spiritis	73
Cancer	1	Genu varum	2	Syphilis	9
Catarrh	14	Oligivitis	1	Tuberculosis	1
Chancroid	4	Gonorrhea	2	Tuberculosis	1
Circumcision	3	Gonorrhea	19	Tumors	10
Clavis	1	Hernia	24	Tumors	10
Contractions	3	Herpes Zoster	1	Tumors	10
Cutaneous	106	Hydrocele	21	Tumors	10
Cystitis	2	Improving nail	4	Varicose	9
Cyst, subcutaneous	8	Lordosis	1	Varicose veins	16
Cystitis	2	Lumbago	2	Warts	4
Dermatitis venenata	2	Luxation, corpus	3	Wounds, healed	65
Eczema	1	Of elbow	1	Lacerated	32
Encephalitis	1	Of shoulder	1	Pain	14
Epididymitis	1	Mucosa patches	2	Punctured	23
Epilepsia	4	Nail, evulsion of	2	Unclassified	59
Exostosis	14	Neuritis (traumatic)	4	Total New cases, 1892	1,066
Felon	14	Neuritis	4	Total No. old cases, 4157	4,157
Femur, curvature of	1	Necrosis	2	Total No.	5,223
Phlebotomy	2	Oncychia	5		
Fistula (anal)	1	Orchitis	1		

REPORT OF MEDICAL DISPENSARY. 1892.

New cases	1633	No. of Cases.	No. of Cases.
Number of visits	4930		
DISEASES OF ORGANS OF DIGESTION.			
No. of Cases.			
Dilatation of stomach	1	Aortic stenosis	7
Emphysema	1	Mitral regurgitation	6
Pharyngitis	4	Aortic stenosis and aortic regurgitation	6
Cholera morbus	2	Mitral stenosis	1
Cirrhosis of liver	3	Tricuspid regurgitation	1
Catarrhal jaundice	6	Total	198
Dyspepsia	438	DISEASES OF GENITO-URINARY ORGANS.	
Diarrhea	27	Nephritis	2
Dysentery	10	Renal colic	14
Enterocolitis	4	Swelling of prepuce	1
Constipation	11	Testis	2
Gastralgia	1	Lithiasis	1
Hemorrhoids	1	Urethritis	2
Cholera morbus	2	Cystitis	2
Appendicitis	1	Ureteritis	1
Carcinoma of stomach	4	Total	35
Total	516	DISEASES OF ORGANS OF RESPIRATION.	
DISEASES OF ORGANS OF CIRCULATION.		Asthma	25
Functional palpitation of heart	19	Bronchitis	169
Dilated right ventricle	1	Emphysema	29
Hypertrophy and dilatation	2	Laryngitis	5
Fibril heart	2	Phthisis	182
Fatty heart	1	Pneumonia	1
Atheroma	2	Pneumothorax	3
Angina pectoris	1	With effusion	7
Tubercle heart	1	Abscess of lung	1
Pericarditis	2	Total	435
With effusion	2	NERVOUS DISEASES.	
Aortic aneurism	2	Neuritis	29
Heart pain	4	Neurasthenia	9
Mitral regurgitation	28	Angio-neuritic oedema	1
Aortic regurgitation	3	Diphtheritic paralysis	2
Aortic stenosis, and mitral regurgitation	8		

REPORT OF DISPENSARY FOR DISEASES OF THROAT AND NOSE FOR THE YEAR 1892.

New patients	608	No. of Cases.	No. of Cases.
Whole number of visits	4,439		
No. of Cases.			
Rhinitis, acute-catarhal	16	Pharyngitis, chronic	54
Chronic hypertrophic	3	Syphilis	11
Atrophic	32	Tonsillitis, acute	42
Influenza	12	Chronic hypertrophic	32
Nasal septum, deviation of	31	Pharyngitis, acute	7
Exostosis of	13	Quinsy	6
Echthyma of	42	Soft palate, syphilitic	19
Perforations of	7	Diphtheritic par-	5
Autism, empyema of	14	Uvulitis	2
Naso-pharyngeal ca-	103	Uvula hypertrophied	5
tarrh	21	Ramula	2
Pharyngeal tonsil hy-	14	Glossitis	1
peritonsillitis	14	Pharynx, lumen of	2
Pharyngitis, acute	69	Laryngitis, acute	19
Chronic catarrhal	156	Tuberculosis	11
		Carcinoma of	2

[illegible]

REPORT OF THE DISPENSARY FOR DISEASES OF THE EYE, 1892.

[illegible]

ANOMALIES OF REFRACTION AND ACCOMMODATION		AFFECTIONS OF THE VITREOUS HUMOR.		secondary, dis-	
	Right Left				
	Eye. Eye.				
Hypertropia,	327	346			
Exotropia,	20	20			
Single hyper-	42	49			
" myopic astig-	19	13			
Comp. hyper-					
trophia, etc.	216	302			
" myopic astig-	44	44			
Comp. hyper-	1	1			
trophia, etc.	1	1			
Irregular astig-					
matism,	1	3			
"	1	1			
Eumetropia,	3	3			
"	3	3			
Totals,	663	663			
Presbyopia,	74	74			
Totals,	397	397			
AFFECTIONS OF THE CRYSTALLINE LENS AND CAPSULE.		AFFECTIONS OF THE VITREOUS HUMOR.		secondary, dis-	
Cataract, capsular,	1				
" congenital,	1				
" cortical,	1				
" lamellar,	1				
" postular,	1				
Totals,	5				
Sent from other dispens-		AFFECTIONS OF THE VITREOUS HUMOR.		secondary, dis-	
ophthalmic exami-					
nation					
Totals,	1546				
Total		Total		Total	

REPORT OF SKIN DISPENSARY, UNIVERSITY HOSPITAL, FOR
THE YEAR ENDING DECEMBER 31st, 1892.

[illegible]

REPORT OF ORTHOPEDIC DISPENSARY.

No. OF CASES.	No. OF CASES.	No. OF CASES.
Adherent prepone . . . 8	Knock-knee . . . 4	Torticollis . . . 3
Arthritis, knee-joint . . 2	" and anterior . . 1	Strain of extensor medius . . 1
" rhumatoid . . . 1	" bowing . . . 1	Ipsilateral hernia . . . 2
" wrist-joint, gon- . . 1	" and valgus . . 1	Unclassified . . . 3
Orthoid . . . 1		
Bow-legs . . . 10	Lateral curvature of spine . . . 15	New cases . . . 154
Burns, annular liga- . . 1	Spindle of ankle . . 2	Total number of visits, 1311
ment 1	Ostitis of tibia . . . 1	
Tallies, equine-varus . . 15	Spinal necrosis . . . 2	Machine shop, new orders . . . 214
" acquired . . . 1	Rickets 8	Repairs 178
Flat-foot 15	" and scull-bowing . . 1	Hospitals for University . . . 48
Hip joint disease . . . 13	Pott's disease . . . 21	
Infantile paralysis . . 10	Sacro-iliac disease . . 1	
Spastic paralysis . . . 5	Synovitis of elbow . . 1	
Incurvation of toes . . 1	" knee 1	
		442

REPORT OF DISPENSARY FOR GENTO-URINARY DISEASES.

No. OF CASES.	No. OF CASES.	No. OF CASES.
Bubano-posthitis . . . 21	Gonorrhoea, with bal- . . 13	Prostatitis chronic . . . 71
With phimosis . . . 21	ano-pesthitis . . . 13	Prostatitis 4
Bubo, single 29	Epididymitis . . . 18	Serolitis hypopodii . . . 1
Suppurating 3	Chancroid 6	Stricture 47
Chancroid 42	Paraphimosis . . . 2	Syphilis, secondary . . . 31
With suppurating . . 16	Phimosis 1	Tertiary 7
bubo 16	Gonorrhoeal rheuma- . . 2	Unexplained testicle . . 1
Phagocytosis 3	tion 5	
Chancra 49	Herpes 13	Urethritis, simple . . . 6
Cystitis acute 1	Berria inguinal . . . 2	Prostatic 9
Dermatitis of sheath of . . 1	Hydrocele 8	Urethra 1
penis 1	Impotence atonic . . . 1	Vegetations 8
Eczema scroti 1	Masturbation . . . 1	Varicocele 9
Epididymitis acute . . . 1	Neurasthenia sexual . . 1	Referred to Surgical . . 4
Chronic 4	Neuralgia of testis . . 2	Dispensary 4
Double 2	Nocturnal emissions, excessive 1	Total number new cases, 605
Gleet 25	Orchitis syphilitic . . 2	Number of visits paid to Dispensary . . . 2943
Gonorrhoea, acute . . . 132	Paraphimosis 2	
Chronic 3	Phimosis 1	
With suppurating . . 7	Prostate enlarged . . . 7	
bubo 7		

REPORT OF GYNÆCOLOGICAL DISPENSARY.

No. OF CASES.	No. OF CASES.	No. OF CASES.
Abscess, vulva-vaginal . . 1	Metrorrhagia, retained menses 3	Urethra, caruncle of . . . 2
Amenorrhoea 15	Sarcomatous degener- . . 1	Uterine retention of . . 1
Anus, fissure of 2	ation of endo- . . . 1	Uterus, retroflexion of . 13
Aeclis 1	metrium 1	With prolapse of . . 33
Cervix, ulceration of . . 29	Fungoid endome- . . . 6	Prolapse of partial, . . 10
Epithelioma of 4	tritis 6	Complete 2
Super-vaginal obstruc- . . 2	Ovarian cysts of . . . 4	Fibro-myomata of . . . 6
tion of 1	Infestation of . . . 15	Intra-uterine blood of . 1
Infra-vaginal obstruc- . . 1	Neuralgia of 3	Sub-peritoneal " . . . 1
tion of 1	Prolapse of 5	Sub-peritoneal " . . . 1
Coccygodynia 2	Complete 4	Vagina, inflammation of . 2
Cystitis 6	Incomplete 12	Syphilitic ulcer of . . . 5
Cystocele 4	Polyta, mucosa 2	Vulva, pruritus of . . . 2
With rectocele 6	Pregnancy, disorders of . . 9	
Dysmenorrhoea, ante- . . 7	Perimetritis 11	Total number of new patients 345
flexion and stenosis . . 5	Endometritis, chronic . . 30	Total number of visits, 1574
Endometritis, chronic . . 30	Endometritis, acute . . . 4	
Fungoid 5	Schistosoma 30	
Fistula, vulva-vaginal . . 1	Hydro-metrorrhagia . . 2	
Monopneum, discharges of . 10	Urethra, granular ex- . . 3	
Menorrhagia 7	sion of 3	

REPORT OF CHILDREN'S DISPENSARY.

No. OF CASES.	No. OF CASES.	No. OF CASES.
Abscess of thigh 1	Hematuria 1	Prolapsus of rectum . . . 2
Acte 1	Heart disease 4	Pruritus cutis 1
Acute crupous pneu- . . 1	Hernia 2	Psoriasis 1
monia 1	Hypertrophied tonsils . 7	Rachitis 1
Adenitis, cervical . . . 3	Idiocy 1	Rheumatism, acute . . . 2
Sub-maxillary 1	Isospondylitis of verte- . 6	" chronic 1
Anorexia 1	Infantile leucorrhoea . . 1	articular 1
Ashtoria 6	Lymphadenitis 1	Iliac poisoning 1
Backwardness 1	Leishman 1	Rinsworm 1
Bronchitis, acute . . . 20	Malaria 7	Sarcosia 2
" chronic 9	Marrasms 11	Schistos 1
Catarhal jaundice . . . 3	Masterbation 2	Serofoliosis 1
" pneumonitis . . . 2	Meadow 2	Stomatitis 1
Chorea 3	Myocle stomatitis . . . 3	Suppurative otitis media . 3
Constipation 8	Neo-bronchial catarrh . 2	syphilitic wart of anus . 4
Chronic nasal catarrh . 7	Neuritis 1	Tonsillitis, acute 4
Chronic pharyngitis . . 1	Neurosthenia 2	" syphilitic 1
Congestion of lungs . . 1	Night terrors 1	" follicular 2
Cutaneous of thigh . . 2	Oldema of prepuce . . . 1	" herpetic 1
" back 1	Painful contractions of . 1	Torticollis 2
Deaf note 2	hamstrings 1	Varicella 2
Dentition, painful . . . 1	Paralysis, cerebral . . . 1	Vertigo 1
Dyspepsia 6	" diptheritic 2	Worms, seat 1
Edema 1	" hemiplegia 1	" round 1
Ecthymoid eruption . . 1	" internal rectus . . . 1	" tape 1
Eczema 10	" spastic 1	Referred to other dis- . . 4
Emphysema 1	" legs 3	penaries 7
Enterocolitis 18	Pelliculosis capitis . . . 1	Unclassified 7
Epilepsy 3	Pertussis 1	
Fever, single 3	" Tubercular 1	Total No. of new cases, 303
" typhoid 2	Portitis 4	Total No. of visits . . . 598
Gastro-enteritis 3	Peritonitis 1	
Gastric catarrh 4	Petit mal 2	
Gastro-intestinal dys- . . 8	Phimosis 1	
pepsia 8	Pleurodynia 1	
	Pott's disease 1	

	MALE.		FEMALE.	
	Adult.	Child.	Adult.	Child.
Alveolus of lobule	1	1	1	1
Alveolus par-articular	2	1	1	1
Alveolus par-articular	2	1	1	1
Dermoid cyst of auricle	1	1	1	1
Eczema of auricle	1	1	1	1
Epididymitis of auricle	1	1	1	1
Phenoma of lobule	1	1	1	1
Suppurative auricle	1	1	1	1
Atrophia mastoidea	1	1	1	1
Exostosis	1	1	1	1
Foreign body	1	1	1	1
Impacted cerumen	1	1	1	1
Otitis externa chronica	1	1	1	1
" " diffusa	1	1	1	1
" " chronica	1	1	1	1
" " media catarrhal acuta	1	1	1	1
" " " sub-chronica	1	1	1	1
" " " chronica	1	1	1	1
" " " purulenta acuta	1	1	1	1
" " " with facial palsy	1	1	1	1
" " " with mastoid empyema	1	1	1	1
" " " with mastoid involvement	1	1	1	1
" " " with polyp	1	1	1	1
" " " chronica	1	1	1	1
" " " with mastoid caries	1	1	1	1
" " " with polyp	1	1	1	1
" " " with thrombosis	1	1	1	1
Results of U. N. P. C. chalk perforation	1	1	1	1
Otitis interna chronica	1	1	1	1
Otitis interna chronica	1	1	1	1
Nasal polyp	1	1	1	1
Nasal alveolus	1	1	1	1
Parodont rhinitis	1	1	1	1
Referred elsewhere	1	1	1	1
Undiagnosed	1	1	1	1
	229	71	126	59

OPERATIONS.

	MALE		FEMALE	
	Adult	Child	Adult	Child
Cyst of parasite excised			1	
Epididymus excised	1			
Extensoris removed			1	
Phemexia excised				2
Foreign body removed	1	1		1
Upharynx abscess evacuated			1	
Mastoid trephined	1	2	1	
Par-auricular abscess evacuated		1		
Nolvy removed	1			
	5	4	2	3

From the writer.



NOTES ON SOME NORMAN DETAILS
IN ROMSEY ABBEY.

BY A. M. DAVIES,
Army Medical Staff.

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NOTES ON SOME NORMAN DETAILS
IN ROMSEY ABBEY.

By A. M. DAVIES,
Army Medical Staff.

That the architectural style called Norman, or Anglo-Norman, is a variety of the Romanesque, and that, being Romanesque, it is derived from the Classic, through the Roman styles of architecture, is generally acknowledged; and it is therefore implied that the general plan of the buildings and their constructive forms were derived from the styles or fashions prevalent in Rome or Italy, rather than that they were new creations or inventions of the Northmen themselves. This is undoubtedly true, and can be readily demonstrated in regard to the two points mentioned—the plan of the buildings, and their constructive forms. With regard to the decoration the same cannot be maintained as a general principle. It is true that one of the most usual forms of ornamentation for the capital of a column is a modification of the *volute*, which, whether a "reminiscence of the Roman Corinthian order," according to Fergusson, or, as more generally supposed, a survival of the Ionic, is clearly of classic origin. With this exception, the ornamentation in the Norman style is generally characteristic, *sui generis*, and unlike anything but itself.

The situations in which the artists of this period preferred to show their powers of sculpture were chiefly,—mouldings of arches, doors and windows, capitals of columns, and, to a less extent, wall decoration. In either of these situations the decoration might be one of two kinds, or both combined.

There might be *patterns* of great variety and richness, or *figure-sculpture* of much higher development artistically, though perhaps relatively inferior in execution. The latter kind of decoration, figure sculpture, may be called archaic, but shows great wealth of imagination in the designers. The former kind, pattern sculpture, is of great but not infinite variety; and certain forms recur with very great frequency, so that, as a rule, Norman ornamental mouldings, such as the chevron, or zigzag, the billet, &c., are some of the most easily recognisable of architectural features.

There is one group of mouldings, not, as far as I know, of frequent occurrence, which does show with great distinctness a classical origin. Of this there are two instances in Romsey Abbey church.

1.—On each side of the choir arch, at the level of the triforium, is a semi-cylindrical shaft resting on a corbel, carved with a leaf pattern of evident classical origin.

FIG 1



This same pattern occurs as a moulding over the south doorway leading into the (former) cloister, as may be seen from the accompanying illustration. The leaf is not an Acanthus leaf; it is not like an Acanthus, but perhaps more resembles an exceedingly conventionalised and simplified—one might almost say degraded—form of that ornament than anything else. The leaf of *Acanthus mollis* is said to have given the idea of the Corinthian capital to Callimachus; but between the graceful and flowing curves of the leaf on the capital of a Greek column and the stiff and crude forms to be seen in some late Norman capitals, especially in the early French style, forms which were precursors of the stiff foliage of our early English capitals, there is a wide interval. There is also a great difference between the elaborate foliage forms,

applied as ornamentation to a flat surface in Greek and Roman examples, and the very rude and simple instance here found at Romsey, but between one extreme and the other numerous transitional forms can be observed, showing clearly the connection, and indicating, I think distinctly, that this particular moulding is of classic origin.

Mr. Parker states that "in the later Norman mouldings a mixture of Byzantine character is seen on the ornaments," and gives as an illustration the figure of an abacus and string at Durham,¹ which has a considerable resemblance to the Romsey moulding. The Byzantine character, as distinguished from the classical, is not however evident; and there does not seem any need to suppose that in every case the classical forms met with in Norman ornament had come through a Byzantine channel. To do this would imply either that the Normans themselves were unacquainted with Greece and Italy, or that they did not, or could not, attempt to reproduce what they had seen.

Though the simplest explanation of the presence of this ornament here seems to be that it is a rough reproduction or imitation from a classical model, it is a rather curious fact that a remarkably similar pattern occurs in the Mosque of Ibn Tulûn, at Cairo,² erected 879. This, I believe, is not a usual or characteristic Arabian design. The mosque was built by a Christian in the Byzantine Arabian manner, and this shows the influence of classic forms in the east as well as in the west, travelling in this instance, no doubt, through a Byzantine channel. Taken in connection however with the peculiar capitals at Romsey referred to below (Figs. iii and iv) it is noteworthy.

2.—Another instance of a classical moulding is to be seen over the easternmost pier arch on the south side of the nave. This is enriched with three mouldings; internally, a treble zigzag; externally, the hatched, or trowel head; and between the two, an ornament resembling the *echinus*, egg and anchor, egg and tongue, or egg and dart, which is especially found in the Ionic order.

¹ Introduction to Gothic Architecture, p. 76.

² Figured in Owen Jones's Grammar of Ornament, plate xxxi. 3.

FIG II



In the Romsey example (Fig. ii) the moulding is rude, the "egg" part of the ornament is not oval but globular, and the "dart" is very rudimentary; but the resemblance to the classical original is obvious, though the arrangement is reversed. This, though occurring in Byzantine work, is not, I believe, frequently met with in, and certainly is not characteristic of, that style.

3.—In the south choir aisle is a pillar adjoining the centre of the choir, with a capital carved with acanthus (or *quasi-acanthus*) leaves, closely resembling the Corinthian capital, but of course in a rude way. This form is not common in Anglo-Norman architecture, though the most usual form of capital in the Early French style, and of not infrequent occurrence in Norman (eleventh and twelfth century) churches in Normandy.

4.—In the same south aisle of the choir is another pillar against the south wall, having a capital in the form of an Ionic volute. This is a very common form of Norman capital, generally speaking of early date (earlier than the building of Romsey Abbey). It occurs only this once at Romsey, whilst at Christchurch it is the prevailing form of capital throughout all the Norman work.

Of these four instances of *quasi*-classical ornamentation, the last is the commonest, but not the least interesting.

We have here a form of decorative construction which can be traced back through Roman and Greek times to the early ages of the Persian empire, where it is supposed to have originated. The acanthus capital as found in Gothic architecture may have been a development and amplification of this volute, or it may have arisen independently as a

reminiscence of the Corinthian. Many forms are to be found intermediate between a simple volute and an ordinary acanthus, showing that the idea of foliage, at any rate in many cases, arose out of the volute. Parker is of this opinion in regard to the "stiff-leaf foliage" of the early English style, and Sir G. Scott traces the course of its development from Byzantium through the south of France. At the same time it must be admitted that there is a very great resemblance between the acanthus capitals of the Early French style and the typical Corinthian capital: the Romanesque origin of the former is undoubted, and the more or less rude specimens seen in Normandy, and less frequently in this country, would seem more naturally to be a degraded imitation of Roman Corinthian, rather than a development of Roman or Byzantine Ionic.

These two capitals, the volute and the acanthus, occur sufficiently often in Romanesque work to be more or less characteristic, the volute being much the earlier of the two as regards its general use. But the other ornaments above alluded to are not of common occurrence; neither can the path by which they travelled from Athens or Corinth to Romsey be clearly traced.

5.—There is another example of ornamentation at Romsey of quite a different kind, and certainly not of common occurrence in Anglo-Norman architecture.¹ In the ambulatory, or eastern aisle beyond the altar, leading from the north to the south choir aisle, are four shafts possessing capitals that distinctly recall a form of decoration used with great frequency by the Arabian mosque builders throughout the palmy period of Saracenic architecture. This is called "stalactite" work; it is not easy to describe, but the terms "honeycomb" work, or "miniature arcading" give some idea of its appearance. It is used chiefly in the "pendentives," or somewhat fan-shaped structures by which the quadrangular area of the mosque is blended with the super-imposed dome; stalactite work occurs also, but less frequently, in the position of the capital of a pier, as in the tomb mosque of Kait Bey, near Cairo.

¹ I am not aware of its occurrence in any other place.

The accompanying figures (iii and iv) show two of the



capitals in the ambulatory at Romsey, which are seen to differ slightly from each other, but give a very good imitation on a small scale of Arabian stalactite work. Similar capitals occur in the small columns ornamenting the exterior of the windows on the south side of the choir. The designer of these capitals without doubt took the idea from Arabian ornament he had seen in the East; it is not a Byzantine form, and there seems no need to invoke the aid of a Byzantine artist. It is not from any beauty of design or excellence of workmanship that these capitals are of interest, but because they indicate, I think clearly, and in an instance of by no means frequent occurrence, the influence of Eastern upon Western art. There has been much controversy about the origin of the pointed arch; the most rational explanation seems to be that it was copied by Gothic or Romanesque architects from the Saracens. No pointed arches are known in the west of earlier date than the first crusade (1100). They were used largely by the Saracens for two centuries before this; and though the Christians may have copied a Saracenic feature, it is certain that Mahomedans never copied anything Christian (Hayter Lewis).¹ I should suppose that these stalactite capitals at Romsey are an instance of the same influence. The first crusade was in 1099; the second, 1144; the third, 1187-1192. Romsey is variously dated as 1130, 1160,

¹ *Encyclopædia Britannica*; Art. "Architecture."

1180, and we may imagine that some knight or priest, returning from one or other crusade, brought this idea with him. The instances of classical ornament mentioned above may very possibly be due to the same source, without the intervention of any Byzantine designer or workman. The technical skill of the Byzantines caused them (Prof. Middleton¹) "to dominate the art of the Christian world" up to the twelfth century; but in the instances to which attention has been drawn, the decoration seems to have been derived either from a classical or a Saracenic source.

Since writing the above, I have seen a pamphlet by Mr. J. Park Harrison, on "The Pre-Norman date of the Design and some of the stonework of Oxford Cathedral" (Oxford, Clarendon Press, 1891), in which attention is drawn to the Oriental character of some of the ornaments at the Abbey Church of Bernay, in Normandy, dating probably from the early part of the eleventh century. This ornamentation is curious and unlike Norman work, but I did not find anything resembling the "stalactite" pattern above mentioned. Mr. Harrison shows that there was considerable intercourse between the East and Normandy at as early a date as even the beginning of the eleventh century, and considers that much of the Eastern and Byzantine ornament met with in English churches may be of early, rather than necessarily of late, Norman date. In the case of Romsey, however, the middle of the twelfth century seems to be the date to which the present building, as regards its Norman parts, should be referred. At Winchfield the small chancel arch, much ornamented, is Moorish or Saracenic in character; and a capital in the south doorway has a lotus leaf. This ornament is also said to occur at St. Cross. It would be a matter of interest to collect the various examples of Oriental influence on Norman architecture which doubtless exist in this county, and, if possible, trace the paths that this influence has followed.

For the sketches from which the accompanying illustrations have been produced, I am indebted to Miss Longmore. They are faithfully rendered from the originals and serve to make the descriptions more intelligible.

¹ *Ibid.* Art. "Sculpture."



Verletzungen durch Blitzschlag.



Verletzungen durch Blitzschlag.

Von Oberstabsarzt Dr. H. F. Nicolai, nebst Abbildungen und einer Bemerkung über
Photographie der Blitzfiguren von Stabsarzt Dr. Stechow.

Am 9. Juni 1891 Vormittags 8 Uhr war die 1. Kompanie des Kaiser Franz Garde-Grenadier-Regiments No. 2 bei einer Felddienstübung auf dem Schätzelberge bei Mariendorf begriffen, als ein Gewitter von Westen ziemlich schnell heraufzog. Dasselbe zog zunächst südlich Mariendorf in der Richtung nach Treptow, stiess sich jedoch dort an dem Spreestrome und kehrte nun über Berlin-Tempelhof-Mariendorf unter heftigen Entladungen zurück. Der Kompanie-Chef, Hauptmann v. Qu., war von seinem Pferde gestiegen, um die Anlage eines Schützengrabens, etwa 100 m östlich der höchsten Erhebung des Schätzelberges, persönlich zu leiten. Etwa 15 Schritt von dem Schützengraben wurde das Pferd gehalten, in dessen Nähe sich die Spielleute Tambour Br—r., Hornist B—s., der Gefreite B—n. und Grenadiere H. und P. versammelten.

Als das Gewitter, von der Spree zurückkehrend, sehr heftig wurde und es sehr stark zu regnen begann, wollte der Hauptmann sein Pferd besteigen, damit der Sattel nicht so nass werden sollte. Hiervon wurde derselbe, als er noch 10 Schritte von dem Pferde entfernt war, durch einen Vorgesetzten noch für einen Augenblick zurückgehalten. Indem fuhr ein Blitzstrahl zwischen die Gruppe beim Pferde nieder. Lieutenant v. H., welcher, etwas entfernt stehend, zufällig nach dem Hauptmann hin-

sah, bemerkte den Blitzstrahl, will aber einen Krach kaum gehört haben. Er sah das Pferd sich aufbäumen und den Gefreiten B-n. noch am Zügel ziehen, worauf beide, Pferd und Mann, sowie zugleich auch die sämtlichen in der Nähe befindlichen Leute zu Boden stürzten und liegen blieben. Der Hauptstrahl des Blitzes hatte das Pferd getroffen, welches alsbald verendete, während durch Nebenstrahlen der Hornist B-s, schwer, der Tambour Br-r. weniger schwer und durch geringere Abzweigungen des Blitzes der Gefreite B-r., welcher das Pferd gehalten hatte, und der Gefr. B-n. verletzt wurden. Eine geringe Verletzung hatte noch der Grenadier H. davongetragen, mehrere Leute, welche in der Nähe standen, wurden zu Boden geworfen. Der Kompagniechef, welcher, wie erwähnt, 10 Schritt abseits von dem Pferde stand, war von einem Nebenstrahl getroffen, umgeworfen und für kurze Zeit betäubt worden. Der Herr Hauptmann v. Qu., dessen Darstellung ich hier im Besonderen folge, giebt an, er habe den Blitz weder gesehen, noch gehört, doch habe er — wie er sich bestimmt erinnert — noch einen Gedanken gehabt, dass etwas Unheimliches mit ihm vorgehe, und dass er jetzt umfalle, er habe so den Gedanken gehabt: „Schlaganfall“ — weiter wisse er nichts.

Aus der Betäubung erholte er sich sehr schnell und obwohl schwer erschüttert, übersah er doch sofort die Lage und bemerkte, dass namentlich der Hornist B-s. regungslos dalag, während die anderen Getroffenen sich allmählig erholten. Herr Hauptmann v. Qu. rief sofort die in der Kompagnie befindlichen, als Krankenträger ausgebildeten Leute vor und befahl ihnen, bei B-s. künstliche Athmung anzustellen.

Diese Anordnung erwies sich als höchst erfolgreich, denn bald begann B-s. wieder zu athmen.

Zwei Stabsoffiziere, welche zugegen waren, ritten sofort nach dem in nächster Nähe liegenden Garnison-Lazareth, um Hülfe zu holen, welche auch sofort zur Stelle war. Zwei Aerzte, eine Anzahl Lazarethgehilfen und Lehrlinge, waren gleich mit Tragen bei der Hand und eilten zur Unfallstelle. Ich selbst traf in diesem Augenblicke zum Dienst beim Lazareth ein und eilte sofort, vom Bataillonskommandeur von dem Vorfall unterrichtet, zu den Verletzten, welche nun schleunigst nach dem Lazareth geschafft und auf die unter meiner Leitung stehende Abtheilung verbracht wurden.

Es wurden 6 Mann aufgenommen, eine Anzahl von etwa 10 bis 15 Mann fühlten mehr oder weniger Abgeschlagenheit und Zittern in den Gliedern. Nackenschmerzen, einen eigenthümlichen Geschmack auf der Zunge und

dergl. Dieselben wurden nach der Kaserne geführt und, soweit sie sich zur Behandlung stellten, im Revier einen Tag behandelt. Herr Hauptmann v. Qu. begab sich ebenfalls nach Hause und war nach drei Tagen vollständig wieder hergestellt. Ausser einigen Blitzfiguren an der linken Körperseite, hatte er keine Beschädigung erlitten. Von den 6 auf die Station aufgenommenen Mannschaften konnten 3 nach 5 Tagen (Gefr. B-n., Grenadiere H. und P.) wieder entlassen werden, Gefr. B-n. und Br-r. blieben bis 16., bezw. 20. Juni, Hornist B-s. bis 31. Juli in Lazarethbehandlung. B-n. und Br-r. kamen später vom 30. Juni, bezw. 10. Juli bis 11. Juli, bezw. 31. Juli nochmals zur Lazarethbehandlung. Gegenwärtig sind sämtliche Verletzten vollständig wieder hergestellt, bis auf Hornist B-s., welcher noch eine Muskelschwäche in den Armen — besonders im linken — zurückbehalten hat, und deshalb zu einer vierwöchentlichen Badekur, welche ihm die Frau Baronin v. Cramm-Sierstorff auf ihre Kosten in dem zu ihrem Besitz gehörenden Bade Driburg angedeihen lässt, beurlaubt ist.*)

Die einzelnen Krankengeschichten werden weiter unten eingehend geschildert werden. Ehe wir auf die Einzelheiten der Einwirkung des Blitzes auf die Verletzten eingehen, möge es mir gestattet sein, Einiges über die Oertlichkeit, an welcher sich der Unfall zutrug, zu erwähnen.

Der Schätzelberg ist eine flache Erhebung, bestehend aus Diluvialsand, welcher hier, wie am Steglitzer Weg, in den Steglitzer Fichten, an den Rauben Bergen und a. a. O. durch die Mergelschicht und den die übrige Hochfläche, den „Teltow“, bedeckenden lehmigen Sand hindurchtritt. Die höchste Kuppe dieser Erhebung ist 53,9 m über N. N. der Nordsee und liegt demnach 22,9 m über dem Oberwasser-Pegel der Spree an den Dammwäldern.

Die Oertlichkeit, an welcher der Blitz einschlug, befindet sich jedoch, wie oben bereits erwähnt, nicht auf der Höhe der Kuppe, sondern etwa 100 m östlich auf einem Stücke Umland. Das übrige Gelände ringsum war damals mit grünem halbhohen Getreide bedeckt, welches einen guten, dichten Wuchs aufwies. Die nicht mit Getreide bestandenen Erdfächen sind mit ziemlich reichlichem, dichtem Grase bewachsen, so dass das ganze Gelände mit einer üppigen zusammenhängenden Vegetationsdecke überzogen ist.

Hervorragende Gebäude sind erst in einer Entfernung von 300 bis 400 m

*) Ist kurz nach seiner Rückkehr ebenfalls als geheilt entlassen, und zwar gesund und felddienstfähig.

(eine Windmühle und eine Villa), Bäume in der Nähe gar nicht vorhanden.

Das Grundwasser steht hier sehr tief. Die Brunnen des in der Nähe liegenden Garnison-Lazareths können für die Beurtheilung der Tiefe des Grundwasserspiegels nicht verwertet werden, denn dieselben sind Tiefbrunnen, d. h. sie durchteufen die diluviale Mergelschicht, den Diluvial-Hauptsand und die darunterliegende Lettenschicht. Die Brunnensohle liegt in der Untergrundbank der Teltow-Hochfläche. Der Brunnen Spiegel hat einen mittleren Stand von etwa 27 m unter der Oberkante. Den Beweis, dass dieser Brunnen Spiegel dem Grundwasserstand der Gegend nicht entspricht, findet man an den kleinen Wasserbecken, welche dicht an der Mariendorfer Landstrasse, östlich vom Schützberg, liegen. Der Spiegel dieser kleinen Teiche dürfte demjenigen des Grundwassers in jenem Gebäude überhaupt entsprechen. Demnach dürfte an der uns näher angehenden Stelle der Grundwasserspiegel in einer Tiefe von etwa 8 bis 10 m zu vermuthen sein, eine Tiefe, welche gewiss zu gross ist, um einen Einfluss auf die Entladungen eines über dem Lande dahinziehenden Gewitters ausüben zu können. Es dürfte sogar zu erwägen sein, ob nicht die hohe Schicht lockeren Diluvialsandes, welche über dem Grundwasser liegt, eher isolirend wirken kann, so dass der Wolkenblitz eher Grund hätte, sich nach den, dem Grundwasser näheren, tiefer gelegenen Stellen zu wenden. Ein bemerkenswerther Einfluss scheint mir jedoch in dem beschriebenen dichten Pflanzenwuchs zu liegen. Dieser Pelz von stark wasserhaltigen Pflanzen mit dicht verfiltem, die Oberfläche des Geländes zu einer zusammenhängenden Decke verbindenden Wurzelwerk, kann schon ohne Regen stark Elektrizität ausstrahlend wirken; fällt jedoch starker Regen, so wird die ganze Oberfläche des Geländes in eine mit Erdelektrizität geladene Platte oder Kuppe verwandelt, und die Spannung muss um so grösser sein, je höher und steiler sich die Kuppe über die Umgegend erhebt.

Somit scheint der Hauptgrund zu der Entladung des Blitzes gerade an diesem Platze zunächst in der Höhenlage der Oertlichkeit und in der durchnässen Pflanzenwuchs- und Humusschicht des Geländes zu liegen. Dass an diesem Orte insbesondere das Pferd den Hauptstrahl aufnahm, ist daraus erklärlich, dass das ganze Thier, von Regen benetzt, mit Erdelektrizität an der nassen Oberfläche geladen war. Das Pferd steht mit 4 Eisen auf der Erde und, wenn die sonst schlecht leitenden Hufe nass und leitend werden, so muss die ganze Oberfläche desselben stark geladen sein. Aus den Verletzungen des Pferdehalters, Gefr. B. n., des Tambours Br.-r. und des Hornisten Gefr. B.-s. geht sogar hervor,

dass dieselben nicht nur von Nebenstrahlen des Hauptblitzes unmittelbar, sondern auch von Blitzstrahlen, welche von dem Pferde kamen, ereilt worden sind. Wir werden später hierauf zurückkommen.

Eine nicht geringe Anziehungskraft für den Blitz scheint auch die Ansammlung von Menschen überhaupt gebildet zu haben und, da gerade die um das Pferd versammelten Leute eine ziemlich dichte Gruppe bildeten, deren Helmspitzen und Waffen auch noch mitwirkten, so scheint der physikalische Theil des Ereignisses keine besonderen Schwierigkeiten in sich zu bergen.

Meteorologisch merkwürdig ist jedoch, dass mit dem Blitzschlage, welcher auf dem Schützberg einschlug, fast ganz gleichzeitig — nämlich so, dass ich, der ich das Gewitter von Anfang an verfolgt hatte, den Eindruck hatte, als habe überhaupt nur ein einziger Blitzschlag stattgefunden — auch in Berlin, Neu-Cölln a. W. und südlich von Mariendorf auf dem Felde ein Einschlag erfolgte. In der Stadt hatte der Blitz seinen Weg in den Hof des Hauses genommen; südlich von Mariendorf wurde das in einen Wagen gespannte Pferd eines Landmannes betäubt. Waren es nun drei verschiedene Blitze, welche aus drei Wolken zu gleicher Zeit an diesen drei in einer Linie liegenden Punkten zur Erde niederfahren, oder war es ein mächtiger Blitzstrahl, welcher, als Hauptträger des Ausgleichs der atmosphärischen Spannung aus einer über Mariendorf lagernden Gewitterwolke, nach dem Häusermeere von Berlin oder nach dem Spiegel des Spreestromes strebend, einen Seitenstrahl südlich von Mariendorf, einen zweiten Seitenstrahl auf den Schützberg und den Rest in das Haus in Neu-Cölln a. W. abgab? — Der Umstand, dass alle drei Einschläge zu gleicher Zeit erfolgten, und dass die Einschlagstellen von Süd nach Nord eine gerade Linie bilden, scheint mir für die letztere Annahme zu sprechen. —

Die Einwirkung des Blitzes auf die einzelnen Personen und auf das Pferd.

Das Pferd hatte ohne Zweifel den Hauptantheil von dem Blitze erhalten. Dasselbe bäumte sich hoch auf und fiel dann sammt dem Gefr. B. n., welcher nach Aussage des Lieutenants v. H. dasselbe hierbei am Zügel noch fest hielt, zu Boden. Das Pferd athmete noch, als Hauptmann v. Qu., nachdem er wieder zu sich gekommen war, bei der Gruppe anlangte, verendete jedoch bald.

Dasselbe hatte nach Aussage der Zeugen mit gesenktem Kopfe, diesen von den arbeitenden Soldaten abgewandt, dagestanden, Gefr. B.-n.,

welcher das Pferd zu halten hatte, hatte den rechten Arm durch den Zügel gesteckt und wandte somit seine rechte Seite der linken Seite des Pferdes zu. Zwei Schritte links vom Pferde, in der Nähe des Hintertheiles desselben, stand der Hornist B—r., neben diesem, fast dicht hinter dem Pferde, der Tambour Br—r., der Gefr. B—r. und der Grenadier H., beide mit den Gewehren in der Hand, etwas ferner stand Hornist B—r. Somit standen sämtliche Leute links vom Pferde, auch der Hauptmann, dieser etwa 10 Schritte abseits. Das Pferd wurde am Widerrist, welcher in diesem Augenblicke den höchsten Punkt darstellte, an der linken Seite getroffen.

Der Blitz nahm den Weg nach der Brust, zwischen den Vorderbeinen nach dem Bauch, um am linken Hinterbeine in die Erde zu fahren. Eine Abzweigung des Strahles hatte jedoch den Weg am linken Vorderbeine genommen, ein anderer Seitenzweig war am nassen Zügel entlang dem Gefr. B—r. auf den rechten Arm übersprungen, von wo er, eine schöne Blitzfigur hinterlassend, auf den Rumpf desselben übersprang und, einen langen, 3 cm breiten Strich an der rechten Körperseite bildend, am Bein niederlief, um auf dem Fussrücken zu verschwinden. B—r. ist kurze Zeit bewusstlos gewesen und will weder einen Blitz gesehen noch einen Schlag gehört oder empfunden haben.

Wunderbar ist, dass B—r. das Pferd noch gehalten hat, als es sich hoch aufbäumte und dann erst mit diesem zugleich umfiel und betäubt wurde.

B—r. hatte eine geringe Herabsetzung des Hautgefühls am linken Unterschenkel und Fussrücken, bis zur grossen Zehe, die Behaarung des Unterschenkels war versengt, an der Leibwäsche jedoch keine Spuren von Verbrennung.

Die Blitzfiguren und der geröthete Streifen verloren sich innerhalb 3 Tage, am 14. Juni war bereits keinerlei Störung mehr nachzuweisen, und der Mann wurde am 15. Juni als geheilt zur Truppe entlassen.

Aus dem örtlichen Befunde bei diesem Manne geht deutlich hervor, dass der Blitzstrahl, welcher ihn zum Ziele gewählt hatte, von dem Widerrist des Pferdes nach dem rechten Arme des Soldaten an dem Zügel entlang geleitet worden war. Dies war, da trockenes Leder schlecht leitet, wohl dadurch möglich, dass der Zügel nass war.

Am schwersten getroffen war der Gefr. Hornist B—r. Derselbe war bewusstlos und athmete nicht. Den Vorschriften der Krankenträgerordnung und des Unterrichtsbuches für Lazarethgehülfen entsprechend, wurde sofort künstliche Athmung gemacht, worauf er zwar wieder zu athmen anfangte

aber noch besinnungslos blieb. Ich sah den Mann etwa 15 Minuten nach dem Blitzschlage, als er bereits von Lazarethgehülfen des 2. Garnison-Lazareths auf eine Trage gelegt nach dem Lazareth getragen wurde. Er sah bleich und verfallen aus, der Puls war kaum zu fühlen, das Auge matt, das Bewusstsein soweit wiedergekehrt, dass er auf Anrufen reagierte.

Im Lazareth angekommen, war er noch stark benommen, die Gesichtsfarbe und Lippen bleich, am ganzen Leibe machte sich ein lebhaftes Zittern bemerkbar; er zeigte grosse Unruhe, warf sich hin und her und stöhnte nach Athem ringend. Dargereichter schwerer Wein und Grog wurde genommen, worauf die Unbesinnlichkeit nachliess, und die Athmung besser wurde. Er klagte über Schmerzen in der Brust und an den Armen. An der Kleidung und Ausrüstung, sowie an dem Körper war der Weg, welchen der Blitz genommen hatte, deutlich zu sehen.

Herr Stabsarzt Stechow hat die Güte gehabt, die beigelegten photographischen Aufnahmen der Blitzeinwirkungen zu machen und mich damit in die Lage versetzt, an dieser Stelle wohl die ersten authentischen Darstellungen der Einwirkungen des Blitzes auf den menschlichen Körper zu veröffentlichen. Herrn Stabsarzt Stechow bin ich hierfür zu besonderem Danke verpflichtet.

Der Strahl hatte zunächst die Helmspitze getroffen und diese in einer Länge von 2 bis 3 mm eingeschmolzen. Eine zweite Schmelzung zeigt die Stelle, wo die Hinterschiene des Helmes sich an die runde Scheibe, auf welcher die Spitze steht, anschliesst. Die Scheibe ist in einer Ausdehnung von 1 cm eingeschmolzen oder vielmehr verbrannt; ebenso die Hinterschiene. Eine dritte Schmelzstelle ist am unteren Ende der Hinterschiene, auf der Innenseite des Hinterschirmes, wo die Schiene als flaches Band umgeschlagen und mittelst einer Schraube befestigt ist. An der Stelle, wo die Hinterschiene von dem Kopftheile des Helmes auf den Hinterschirm übergeht, ist dieselbe entsprechend eingeknickt; hier hat der Blitzstrahl dicht links neben der Schiene ein rundes etwa 1,5 mm im Lichten messendes Loch gebohrt und ist auf den Hinterkopf des Mannes übersprungen. An dem Kopfe fand sich eine flache Beule an der Stirn, an der Grenze des Haarwuchses, und eine zweite an der Stelle, wo der Blitz, die Schiene verlassend, auf den Körper übersprang. Erstere ist anscheinend nur von dem starken Stosse, welchen der Helm in der Richtung nach hinten bekam, letztere jedoch augenscheinlich durch die Gewalt des schrägen Aufschlages des Blitzes entstanden. Die Beule am Hinterkopf zeigte einen 1,5 cm langen, 2,3 mm tiefen Längsriss. Dieselbe hatte die Form einer

Hälfte einer Wallnuss. Das nicht vom Helm bedeckte Kopfhaar des ganzen Hinterkopfes war glatt abgesengt, als ob es mit einer Scheermaschine kurz geschoren worden wäre; die Spitzen der Haarstümpfe trugen die bekannten Knötchen verbrannten Haars.

Genau in der Mitte des Hinterkopfes, von der kleinen Wunde abwärts, hatte der Blitz eine lederartig versengte Rinne, wie einen Scheitel, hinterlassen.

Die Haut des Nackens und Halses, soweit dieselbe nicht vom Kragen bedeckt ist, war im ersten Grade verbrannt, geröthet und wulstartig geschwollen. Während der Hauptstrahl hinten in der Mittellinie nach unten weiterging, hatte der Theil des elektrischen Stromes, welcher sich zu beiden Seiten nach vorn auf der nassen Haut verbreitet hatte, zu beiden Seiten in der Gegend des seitlichen Hals-Dreieckes je eine über das Schlüsselbein nach unten verlaufende, mehrfach verzweigte Blitzfigur hinterlassen, der Hauptsache nach jedoch vorn in der Mittellinie, wo die eisernen Kragenhaken einen Anziehungspunkt bildeten, sich wieder vereinigt, um auf dem Brustbein eine schön gezeichnete grosse, bis in die Magengrube reichende Blitzfigur zu bilden. (Vgl. Photogramm 4 und 5.) Diese Figur stellte im Ganzen ein mit der Spitze nach unten gerichtetes Dreieck dar, indem von dem Stamme der Zeichnung an dem oberen Brustbeinausschnitt ein Hauptzweig in der Mitte der Brust bis in die Mitte zwischen Schwertfortsatz und Nabel sich verzweigend verlief und von seinem Ursprunge an bis unten seitliche Aeste abgab, welche oben am stärksten waren und nach unten schwächer wurden. Diese gaben wieder Zweige zweiter und dritter Ordnung ab, so dass eine feine, baumartige Zeichnung entstand, welche am passendsten mit dichtverzweigtem Bärlappmoos zu vergleichen wäre. Von der Magengegend verlief dann ein einfacher, seitlich feine, kurze Zweige abgebender rankenartiger Streifen in der Richtung auf die rechte Hüfte und den rechten Oberschenkel, erzeugte hier eine strahlige Figur und lief dann am rechten Unterschenkel herab, um sich in der Gegend des äusseren Knöchels und auf dem rechten Fussrücken, hier noch eine Brandwunde hinterlassend, zu verlieren. Der Haarwuchs am rechten Unterschenkel war versengt.

Der Hauptstrahl, welcher im Nacken nach unten ging, hinterliess auf dem Rücken eine fächerförmige Verbrennungsfläche, welche vom rechten inneren Schulterblatttrande über das linke Schulterblatt und mit einer Spitze unterhalb der Mitte des Rückens auslaufend einen 20 cm langen, leicht nach links gekrümmten Streifen von 1 cm Breite bildete, welcher in der Mitte blau und an beiden Seiten roth war. Ein grosses flammenartiges Büschel

erstreckte sich nach der linken Seite bis in die Gegend der linken hinteren Achsellinie. Von der Fläche der Verbrennung strahlten nach allen Seiten fächerartig Strahlenbüschel aus. Die Haut auf der Brandfläche war theils in Tropfenform von Stecknadelkopf- bis Linsengrösse, theils in Flächenform lederartig verbrannt, von gelblich grauer bis braunrother Farbe.

An der Aussenseite der Kniekehle finden wir den Strahl, welcher die Verbrennung auf dem Rücken verursacht hat, wieder. Derselbe beginnt mit einem ebensolchen Streifen wie der Ausläufer der vorigen Verbrennung, verbreitet sich zu einer die ganze Aussenseite der Wade bedeckenden roth gefärbten Fläche und endet wieder als Doppelstreifen auf dem Fussrücken zwischen dem ersten und zweiten Mittelfusknöchel. (Vgl. Photogramm 4 und 5.) In der Gegend des Randes des Stiefelschafes war eine fünfmarkstückgrosse Brandblase entstanden. In der Nähe des Aussenrandes, an der linken Fusssohle fand sich eine zehnpennigstückgrosse Blutblase, welche mit den übrigen Blitzzeichnungen nicht in Verbindung zu stehen schien.

Ein Nebenstrahl hatte den rechten Ellenbogen getroffen und auf diesem eine fünfmarkstückgrosse Verbrennung zweiten Grades unter Abhebung der Haut verursacht. Rings um die Verbrennung war ein Kranz von feinen Strahlen verbreitet. Dieser Strahl dürfte, wie jener, der den Pferdehalter traf, am rechten Arm von dem Pferde auf B-s. übersprungen sein, da dieser den rechten Ellenbogen dem Pferde entgegengehalten hatte.

Die Zerstörungen an der Kleidung ergänzen das Bild. Das Mittelstück des Rockkragens (vgl. Photogramm 1), der Halsbinde und des Hemdes fehlen; sie sind in einer Breite von ziemlich 7 cm herausgerissen. Auch im Tornister ist an der anliegenden oberen Kante ein Loch gerissen.

Die Leute waren alle von dem strömenden Regen und von Schweiß vollständig durchnässt, der Blitz fand somit in der Kleidung einen ziemlich guten Leiter.

Vom Nacken ging nun der Blitz durch das Hemd, welches von der Lücke im Kragen einen sich nach links wendenden bogenförmigen Riss mit verbrannten Rändern zeigt. (Vgl. Photogramm 2.) In der Höhe des linken Ellenbogens, in der Nähe der linken Rückennaht, ist in dem Rock ein für eine Faust durchgängiges, unregelmässiges, zeretztes Loch gerissen. Hier ist der Blitzstrahl heraus- und auf das Seitengewehr übersprungen. Auf dem oberen Ende des Griffes des letzteren finden sich zwei linsengrosse, länglich flache, körnige Schmelzstellen. An der Stelle angelangt, wo die Klinge in der Messingzwinge der Scheide steckt, sind zwei einander entsprechende Schmelzstellen in dem Stahl entstanden: eine auf der

Aussenseite der Klinge, linsengross, mit Messing von der Zwinge verschmolzen; die andere an der Innenseite, von 1,2 cm Durchmesser, ohne Beschmelzung von Messing.

Beide Schmelzstellen sind vertieft und mit einem Wall umgeben, der Grund beider kommuniziert jedoch nicht. Gegenüber der inneren grösseren Schmelzstelle ist in der Zwinge ein rundes Loch von 2 mm Durchmesser gebohrt, welches von einem feinen Schmelzrande umgeben ist.

Hier ist der Blitz herausgesprungen und durch das Drillichbeinkleid und die Unterhose auf die Kniekehle übergegangen. In der ersteren ist ein rundes Loch von 5 mm Durchmesser, mit verbranntem Rande wahrnehmbar, in der Unterhose ein nicht verbranntes Loch von geringerer Grösse. Verbrennung der Unterhose ist nicht vorhanden.

Der Stiefel (vgl. Photographum 1), welcher mit Hufeisen und Sohlennägeln versehen ist, war 3 Schritte weit fortgeschleudert. An demselben sind beide Seitennähte des Schaftes aufgerissen — wahrscheinlich durch das schnelle Abstreifen des Stiefels vom Fuss, — ein langer Riss ist in der Nähe des Ueberganges vom Schaft zum Spann entstanden, und ferner ist das ganze Oberleder längs des Aussenrandes bis an die Fusspitze glatt durchgerissen. An der Aussenseite des Hufeisens ist eine runde Schmelzstelle wahrnehmbar, welche jedoch keinem etwa dorthinführenden Riss oder sonstiger Leitung entspricht. Hingegen entspricht dieselbe der Blutblase an der Fusssohle des Verletzten. Es dürfte daher nicht ausgeschlossen sein, dass diese Schmelzung von einem dem Wolken-Blitzstrahl entgegenkommenden ausgleichenden Erdblight herrührt.

Krankheitsverlauf.

Durch die anregenden Mittel, welche der Hornist Gefr. B.—s. zu sich nahm, wurden zunächst die schweren Shock-Erscheinungen behoben und namentlich die Herzthätigkeit gebessert.

Der Puls, welcher erst klein, fadenförmig und beschleunigt war, hob sich, betrug 108 Schläge in der Minute und war regelmässig.

Das Bewusstsein kehrte soweit zurück, dass der Verletzte sachgemässe Antworten, wenn auch zögernd, gab. Er war schwerhörig. Untersuchung der Ohren ergab rechts nichts Bemerkenswerthes; Hörfähigkeit mässig vermindert. Links war das Trommelfell am Rande blutunterlaufen, geröthet, im vorderen Abschnitt längs des Hammergriffes eine mit der Längsachse radiär gestellte 1/2 mm lange Oeffnung, dicht davor ein kleiner Blaterguss.

Stimmgabel, auf den Scheitel aufgesetzt, wurde links gehört, Flöstersprache auf 2 m, Uhr auf 15 cm.

Die Sehkraft war ungestört; die Augenspiegeluntersuchung (Oberstabsarzt Sellerbeck) zeigte keine Veränderung des Augenhintergrundes, ergab vielmehr gesunde Verhältnisse.

Prüfung des Hautgefühls ergab: Sohlenreflex beiderseits gleich. Am linken Unterschenkel starke Hyperästhesie. An den Oberschenkeln und Armen keine Gefühlsstörung, aber starkes Zittern und Herabsetzung der Muskelkraft. B.—s. klagt über sehr grosse Schmerzen, weiss nicht, was mit ihm geschehen ist, hat weder den Blitz gesehen, noch den Krach gehört. Die Schmerzen empfindet er am meisten in der Brust und in den Armen, besonders in der Gegend der Handgelenke und Ellenbogen; er wirft sich im Bette hin und her, kann keine Ruhe finden.

Eine Morphin-Injektion von 0,01 ist ohne jede Wirkung, weshalb er eine zweite bekommt. Auch diese verschafft ihm nur wenig Ruhe.

Am Abend ist der Puls beschleunigt, klein, ganz unregelmässig, die Herzthätigkeit stark arhythmisch und zwar sowohl in Bezug auf die Aufeinanderfolge der Herzschläge, als auch auf die der Herztöne. Er erhält Kognak, worauf sich die Herzthätigkeit wieder bessert; Nachts 1 Uhr wegen vollständiger Schlaflosigkeit noch ein Morphinpulver 0,01. Im Urin kein Eiweiss, kein Zucker. Am nächsten Tage war der Verletzte ruhiger, die Schmerzen hatten etwas nachgelassen. Die Herzthätigkeit war kräftiger, der Puls 88, mittelstark, aber aussetzend und unregelmässig. Temp. 37,8. Die Brandwunden, welche mit Sublimatwatte bedeckt waren, verursachten nur wenig Schmerzen.

Allmählig liessen die stürmischen Erscheinungen der gestörten Herzthätigkeit nach, und es blieb nur noch eine sehr blass Gesichtsfarbe, Mattigkeit in den Gliedern, Schwäche in den Armen, besonders im linken, mit Zittern der Muskeln bei Anspannung und eine deutliche Hyperästhesie des linken Beines zurück. Zu Anfang Juli fühlte sich der Verletzte vollkommen frei von Beschwerden, bis auf ein Schwächegefühl in den Unterarmen und Händen, besonders linkerseits. Zuweilen, namentlich bei Witterungswechsel traten noch dumpfe Schmerzen in den Armen, besonders auch in den Ellenbogengelenken auf. Massage und schwacher konstanter Strom wurden noch fortgesetzt angewandt, ausserdem musste der Kranke täglich in kurzen Abschnitten Hantelübungen vornehmen.

Am 4. Juli wurde von Herrn Stabsarzt Goldscheider auf meine Bitte eine spezialistische Untersuchung der Nerven- und Muskelthätigkeit des B.—s. vorgenommen, welche allerdings neue Thatsachen nicht ergab.

Der Befund war folgender: Alle Bewegungen, bei denen die Kopf- und Schultermuskulatur beteiligt ist, sind frei und normal. — Die motorische Kraft in den Armen ist herabgesetzt; beim Aufheben der Arme macht sich ein mittelstarkes Zittern bemerkbar, die Schwingungen erfolgen etwa 5 bis 6 mal in der Sekunde. — Das Zittern im dreiköpfigen (Armstreck-) und im grossen Brustmuskel ist stark ausgeprägt und tritt bei unbequemen Stellungen des Kranken besonders zu Tage. Die Bewegungen der Regenbogenhaut der Augen erfolgen in richtiger Weise. Der Puls ist klein, von gewöhnlicher Häufigkeit, Gefäss etwas eng, die Herztöne sind rein, das Herz nicht verbreitert, die Sehnenreflexe sind an den Armen nicht verstärkt, die Knieschienenreflexe sind auffallend stark. Knieschienenzittern rechts nicht vorhanden, links etwas angedeutet. Achillessehnenreflex deutlich vorhanden, kein Fusszittern. Keine Gehstörungen, keine Krampf-erscheinungen. Es besteht ein geringes Zittern der Zunge.

B—s. bemerkt, dass er nicht mehr so gut pfeifen — d. h. die Töne modulieren kann, wie früher. Die Tonleiter kann er, aber z. B. ein Lied kann er nicht richtig pfeifen. Die Prüfung der Empfindung ergibt eine Ueberempfindlichkeit der Haut am rechten Beine; schon das Aufheben einer Hautfalte macht erhebliche Schmerzen. Hautreflexe sind deutlich vorhanden. Das Allgemeinbefinden ist, bis auf zeitweilige Schmerzen in den Armen, sehr gut; Verdauung und Esslust sehr gut. Auch die Hörfähigkeit ist beiderseits normal. Unter fortgesetzter Anwendung von Massage, konstantem Strom, Hanteln, sowie von Bädern mit lauer bis kühler Brause besserte sich der Zustand allmählig, so dass Anfang August kaum noch erhebliche Störungen vorhanden waren. Am 13. August wurde der Verletzte entlassen, um die ihm angebotene Badekur in Driburg anzutreten.

Von den übrigen Betroffenen war in Bezug auf die Nachhaltigkeit der Folgen am schwersten der Tambour Br—r. verletzt worden.

Br—r. stand in der Nähe des Hintertheiles des Pferdes, etwa in Höhe der Hüfte desselben, ungefähr 2 Schritte entfernt. Er wandte dem Pferde die rechte Seite zu und hatte beide Hände in den Hosentaschen. Der Blitz traf ihn auf die Spitze des rechten Ellenbogens, erzeugte dort eine sternförmige, lebhaft gezeichnete Blitzfigur, in deren Mitte eine zehnpfennigstückgrosse, mit Brandschorf bedeckte Wunde bemerkbar war, dann glitt er an dem rechten Vorderarm entlang auf den Oberschenkel, erzeugte dort an der Streckseite wieder eine lange schön gezeichnete Figur und ging dann über den Unterleib, die Schamhaare stark versengend, auf den linken Oberschenkel über, an dessen Beugeseite ebenfalls eine grosse Blitz-

figur entstand. An der Streckseite des linken Unterschenkels wurden die Haare abgesengt. Hier, wie am Unterleib waren auf der Haut Brandspuren nicht vorhanden.

Auch dieser Blitzstrahl dürfte von dem Pferde abgespritzt sein, da ein von oben kommender Blitz doch an dem Helm einen willkommeneren Angriffspunkt gefunden hätte, als an dem Ellenbogen Br—r. war zu Boden geworfen und betäubt worden. Von dem Blitzschlage hatte er weder eine Empfindung noch sonst etwas in der Erinnerung.

Krankheitsverlauf.

Bei der Aufnahme sah Br—r. blass und verfallen aus, klagte über Mattigkeit und Frost und zitterte am ganzen Körper. Die Pulsfolge war regelmässig und nicht beschleunigt, 76 in der Minute.

Am anderen Tage waren die Erscheinungen der Nervenerschütterung geschwunden, er hatte nur noch ein mässiges Schmerzgefühl im linken Bein und im rechten Arm. Am 11. Juni war sein Befinden sehr gut, er hatte noch das Gefühl von Steifigkeit im rechten Arm und im linken Bein, die Blitzfiguren waren abgeblasst, bis auf diejenige am rechten Ellenbogen, welche noch in ihren Hauptverästelungen längere Zeit zu erkennen war.

Die Prüfung der Empfindung und Bewegung ergab Folgendes: Die Rückenbeugung des linken Fusses ist zitternd, schmerzhaft, verlangsamt, beim Rollen des Fusses wird der Kreis zwar nach unten, nicht aber nach oben beschrieben. Der Verletzte empfindet Kribbeln unter der Fusssohle. Empfindlichkeit und Reflexerregbarkeit der Fusssohle gegen Nadelstiche ist bedeutend herabgesetzt; die grosse Zehe ist erst gegen tiefere Nadelstiche empfindlich.

Im ganzen Unterschenkel, namentlich im Gebiete des n. peroneus, ist die Empfindlichkeit und im Gebiete des n. tibialis ant. auch die Bewegungsfähigkeit erheblich vermindert. Die Herabsetzung der Empfindsamkeit der Haut ist keine allgemein flächenförmige, sondern es sind einzelne empfindsame Inseln nachweisbar, so z. B. an der Sehne des flex. halus. long.

Der rechte Unterarm, an welchem der Blitz herabgefahren, ist weniger empfindsam als der linke. Insbesondere ist die Empfindsamkeit im Bereiche der Blitzfigur erheblich vermindert. Der Händedruck ist beiderseits gleich kräftig.

Am 12. Juni ist das Allgemeinbefinden vortrefflich, die Sensibilitätsstörungen bestehen fort. Acht Tage später ist nur noch im linken Unter-

schenkel ein unbedeutendes Schwächegefühl vorhanden und eine geringe Störung der Empfindung an der linken grossen Zehe nachweisbar. Schlaf und Verdauung sind gut. Die Herzthätigkeit vollkommen regelmässig.

Am 20. Juni wurde Br.-r. als geheilt entlassen, kehrte jedoch am 30. Juni nochmals in die Lazarethbehandlung zurück, da er beim Exerziren, namentlich bei kräftigem Vorstrecken und Aufsetzen des linken Beines immer noch ein Gefühl von Schwäche und Unsicherheit verspürte. Unter Anwendung von Massage und Elektrizität, sowie fleissigem Ueben des Beines (Hocke, Kniebeuge) schwanden diese Beschwerden, so dass der Mann am 31. Juli, nachdem keinerlei Störung der Bewegung und Empfindung mehr nachweisbar war, als geheilt entlassen werden konnte.

Von den weniger schwer verletzten Mannschaften ist noch der Gefr. B.-n. zu erwähnen, welcher, obwohl er mit dem Helm bekleidet war, von einem Blitzstrahl auf die linke Schulter getroffen worden ist. B.-n. hatte sein Gewehr in der linken Hand; trotzdem fuhr der Blitz nur zum kleineren Theile am linken Arme auf das Gewehr hernieder, zum weit grösseren Theile ging derselbe an der linken Brustseite bis in die Gegend des Rippenbogens, dicht oberhalb des Säbelkoppels, woselbst wohl wegen der dort anliegenden Tornisterhaken eine Brandwunde entstand, und vertheilte sich dann über beide untere Gliedmassen dergestalt, dass der Haarwuchs des rechten Oberschenkels und an der Streckseite beider Unterschenkel versengt wurde. Andere Verbrennungserscheinungen waren weder an der Haut, noch an den Kleidern des Mannes wahrnehmbar.

Auf der linken Brust war eine sternförmige Blitzfigur entstanden. (Vgl. Photogramm 6.) Bei seiner Aufnahme war B.-n. stark erschüttert, sah blass aus, zitterte am ganzen Leibe, hatte starken Frost und machte einen etwas benommenen Eindruck, der Puls war beschleunigt, 96 in d. M. Trotzdem behauptete er, den Blitzchein gesehen zu haben, auch sei er höchstens ganz vorübergehend betäubt gewesen. Später konnte er sich dieser Umstände nicht mehr genau erinnern, so dass wohl auch seine obige Behauptung nicht ganz ausser Zweifel stehen dürfte.

B.-n. klagte über Schmerzen und Steifigkeit im rechten Arm und Bein. Die Empfindsamkeit war am linken Unterarm, insbesondere im Gebiet des Speichennerven herabgesetzt, ebenso an der Hand, besonders an der Rückenseite. Die Greiffläche der Hand zeigte keine Störung. An der Innenfläche des linken Unterschenkels, dort, wo die Haare versengt worden sind, war die Empfindung herabgesetzt, ebenso am linken Fussrücken. Die Haut zeigte auch hier keine Spur von Verbrennung.

Am Tage nach der Aufnahme hatte sich die Herzthätigkeit bereits wieder

geregelt, der Puls betrug 76 l. d. M. Die Störungen der Empfindung schwanden jedoch auch hier nur sehr allmähig. B.-n. wurde am 16. Juni, ohne Störungen zurückbehalten zu haben, als geheilt entlassen, kam jedoch mit Br.-r. am 30. Juni nochmals zur Aufnahme, da auch er sich durch ein Gefühl verminderter Kraft im linken Bein noch beeinträchtigt fühlte.

Eine Prüfung der Sensibilität durch Herrn Stabsarzt Goldscheider ergab immer noch eine geringe Störung in der Hautempfindsamkeit am linken Unterschenkel; die Kraftäusserungen der Gliedmassen waren zwar beiderseits vollkommen gleich stark, links jedoch weniger nachhaltig.

Nach Anwendung von Bädern, Massage und Elektrizität schwanden auch in diesem Falle die letzten Krankheitserscheinungen sehr bald, so dass B.-n. am 11. Juli als endgiltig geheilt entlassen werden konnte.

Die beiden leichten Fälle, Grenadiere H. und P., boten ausser den Erscheinungen allgemeiner Nervenerschütterung nichts besonders Bemerkenswerthes. Dieselben wurden am dritten Tage nach dem Unfall, ohne eine Störung zurückbehalten zu haben, als geheilt entlassen.

Obwohl Fälle von Tödtungen und Verletzungen durch Blitzschlag nicht selten sind, ist doch die Litteratur über dieselben nur spärlich. Es ist dies um so bedauerlicher, als die Anschauungen über die Art und Weise der Einwirkung des Blitzstrahles auf den Menschen- oder Thierkörper durchaus noch nicht endgiltig geklärt sind. Die grossartige Macht des niederzuckenden, alles vor sich her zertrümmernden Strahles hat etwas von dem geheimnissvollen Schauer, mit welchem mächtige Naturscheinungen auf den Menschen einwirken, noch selbst bis in unsere Tage physikalischer Aufklärung und Nüchternheit herübergetragen, so dass bis auf den heutigen Tag noch immer um die Einwirkungen des Blitzstrahles auf Menschen und Thiere sich ein sagenhaftes Gewebe phantastischer Deutungsversuche spinnt. Es ist wunderbar, wie eine verschwommenen physikalischen Anschauungen entsprungene geistreiche Hypothese, wie z. B. das Märchen, dass die Figuren auf der Haut vom Blitz getroffener Menschen das photographische Bild in der Nähe des Einschlages stehender Bäume darstellen sollen, sich Jahrzehnte hindurch, selbst durch ernste wissenschaftliche Werke, fortgepflanzt, ja selbst noch immer wieder die physikalische Phantasie geistreicher Leute zur Erfindung neuer Hypothesen über Elektrophotographie reizen kann.

Wie Ansammlungen von Menschen überhaupt erfahrungsgemäss eine grosse Anziehungskraft auf den Blitz ausüben, so sind insbesondere Fälle, wo der Blitz in Truppen eingeschlagen hat, vielfach bekannt. So ist

namentlich der wegen der äusserst bemerkenswerthen Einwirkung des Blitzes auf die Haut, die Blitzfiguren, berühmt gewordene Fall, welchen der Geh. Rath Meyer (Theden's Schwiegersohn) veröffentlicht hat, heute noch in der Litteratur des Blitzschlages ständig vertreten. Der Fall ist neuerdings in Sonnenburg's Werk über Verbrennungen und Erfrierungen wieder aufgenommen, und die Abbildungen dortselbst S. 17 zu finden. *)

Am 25. Juni 1785 schlug nämlich der Blitz in die Gubener Thorwache zu Frankfurt a. O. und traf vier auf der Bank vor der Wache sitzende Soldaten, unter denen Grenadier Lüdecke und Unteroffizier Schulze diejenigen sind, welche durch die an ihnen vorgefundenen Blitzfiguren heute noch ihren Platz in der Litteratur behaupten.

Bekannt sind ferner die Fälle, wo der Blitz in französische Truppenlager eingeschlagen hat, so bei Châlons, Satory und Valbonne. (Sotomajor Goguel.)

Der grösste Unglücksfall durch Blitzschlag ist aber jener im Jahre 1864 während des amerikanischen Bürgerkrieges, wo der Blitz in das auf einem die Ebene überragenden Hügel gelagerte 18. Missouri-Regiment einschlug. Eine ungeheure Feuergarbe fuhr auf den Hügel nieder, die sämtliche Mannschaft wurde zu Boden geschlagen, fast alle Pferde getödtet, 18 Mann waren todt, die meisten übrigen mehr oder weniger verletzt. Bei zwei Gewehrpyramiden entluden sich die Gewehre und die Geschosse verursachten noch mehrere Verletzungen.

Wunderbar ist es, wie auch Sonnenburg bemerkt, dass im gewitterreichen August des Jahres 1870, wo doch so viele Tausende von Mannschaften sich auf dem Marsche und in Lagern befanden, kein einziger Fall von Blitzschlag bei den Truppen vorgekommen ist.

Die Wirkung des Blitzes auf den thierischen Körper hat Richardson auf dem Wege des physikalischen Versuches studirt. **) Dieser Forscher bediente sich des grossen Induktionsapparates des Polytechnischen Institutes, dessen primärer Draht 377 engl. Ellen lang ist, dessen sekundäre Rolle 150 engl. Meilen Umwicklung trägt und dessen Eisenkern bei 5 Fuss Länge 62 kg wiegt.

Unter Anwendung von 48 Bunsen'schen Elementen giebt der Apparat

*) Ebenso in Billroth, Allgem. chirurg. Pathologie und Therapie 3. Aufl. p. 253 und in Maschka, Hdb. d. ger. Med. I.; Oesterlen: Blitzschlag.

**) Richardson, On research with the large induction coil of the Royal Polytechnical Institution, with special reference to the cause and phenomena of death by lightning. Med. Times and gazette 1869. I. p. 511. (Maschka, Hdb. d. ger. Med. I. S. 795.)

Induktionsschläge, deren Funken 29 Zoll lang sind. An diesen Funken lassen sich zwei Theile unterscheiden, ein zentraler von intensiv blauer Farbe und ein peripherer in Form einer dicken brennenden Flamme. Durch diesen peripheren, brennenden und flammenden Theil sollen die am menschlichen Körper aufgefundenen, äusseren Verletzungen, auch die beobachteten Blendungen zu Stande gebracht werden. In Fällen, wo ausser Verbrennungen keine üblen Folgen vorliegen, soll nur der äussere Theil des Blitzstrahles eingewirkt haben. Ist der Tod plötzlich eingetreten, so hätten die Entladungsschläge auf die Zentren der unwillkürlichen Bewegung, der Athmung und Blutbewegung eingewirkt, während bei den nicht tödtlichen Blitzten eine Einwirkung auf die Zentralorgane der willkürlichen Bewegung und der Empfindsamkeit anzunehmen sei.

Richardson hält das Blut für den Hauptleiter des Blitzes im menschlichen Körper und die Veränderung, welche dasselbe durch Expansion der Blutgase und durch Verdampfung eines Theiles der thierischen Flüssigkeit erleidet, für die eigentliche Todesursache. Hierdurch würden auch in dem geschlossenen Schädelraum die Moleküle der Nervenmassen erschüttert und aus ihrer Lage gebracht.

Oesterlen*) hält diese Erklärungen der Wirkung des Blitzschlages zwar zum guten Theil für Vermuthungen, glaubt jedoch auch, dass manche Erscheinungen an den Leichen vom Blitz Erschlagener dafür sprechen, dass wir es keineswegs nur mit der Wirkung enormer Erschütterung von Hirn und Rückenmark zu thun haben. Eine in ihrem Wesen noch nicht erforschte Veränderung des Blutes, etwa wie die von Rollet nachgewiesene Veränderung kleiner Blutschichten durch starke Induktionsschläge — Aufhellung, kugelförmigwerden und Zusammenfliessen der rothen Blutkörperchen —, scheint auch ihm als nicht von der Hand zu weisen.

Die Beobachtung Richardson's, dass der Blitzstrahl aus einem zentralen Kern und einem feurigen Mantel besteht, dürfte ihre Erklärung darin finden, dass jener Kern den eigentlichen Blitzfunken darstellt, während der flammende Mantel aus den plötzlich erglühenden Luft- und Wassergasen besteht, wobei der Sauerstoff in die aktive, d. h. elektronegative Form übergeführt und der bekannte Ozongeruch erzeugt wird. Während an den Metallen überall da, wo eine Unterbrechung der Leitung oder ein Missverhältniss zwischen der Dichtigkeit des Stromes und dem Querschnitt des leitenden Metalles vorliegt, Schmelzung eintritt, waren in unseren Fällen Verbrennungen der Kleidung, der Haare oder der Haut

*) Maschka, Hdb. d. ger. Med. I. S. 768; Oesterlen, Blitzschlag.

nur an jenen Stellen zu Stande gekommen, wo der Blitzstrahl Luft oder Wasser oder beides vorfand. Indem wir eine nähere Erklärung dieser Annahme versuchen, treten wir zugleich in die Betrachtung der äusseren Einwirkungen des Blitzes auf den menschlichen Körper ein, soweit unsere Fälle eine Unterlage für die Beurtheilung desselben bieten.

Dementsprechend war bei dem Hornisten Gebr. B-s. zunächst die Helmspitze, dann die Berührungsstelle der Helmscheibe und der Hinterschiene eingeschmolzen. An der Biegung der letzteren am Hinterschirm drang der Blitz durch das Leder auf den Hinterkopf des Mannes und erzeugte dort in der Mittellinie einen Brandstreifen. Zugleich brannte das Haupthaar genau soweit ab, als dasselbe vom Helm unbedeckt war. Am Nacken angelangt, ging der Hauptstrahl geraden Wegs abwärts, ein Theil des Stromes verbreitete sich jedoch nach rechts und links um den Hals auf der nassen Haut nach vorn. Genau mit dem Rockkragen abschneidend, war die unbedeckte Haut geröthet, geschwollen und gegen die vom Kragen bedeckt gewesene, unversehrt gebliebene Haut, wie bei Rose, durch einen Wall abgegrenzt. Vom Nacken ging der Hauptstrahl auf den Rücken über und verursachte die flächenhafte Verbrennung der Haut, wie auf der Photographie ersichtlich. Nur in der Gegend des siebenten Halswirbels, wegen der Nähe der Halsbündenschmalle — welche nicht mehr aufgefunden worden ist —, war eine Verbrennung zweiten Grades mit Ablösung der Oberhaut entstanden, sonst war diese überall vorhanden und in Form kleiner und kleinster Tropfen, nach der Mitte zu mehr als zusammenhängende Fläche ohne Blasenbildung verbrannt. Die Verbrennung hatte eine auffallende Aehnlichkeit mit einer Verbrühung mit heissem Dampf. Nur die Mitte der verbrannten Fläche war tiefer geröthet, ebenso auch einige Flecke in der Nähe der linken Schulterblattgräte. Dahingegen war das Hemd in einem nach links hohlen Bogen zerrissen und zerfetzt; der Rissrand war durchweg angekohlt.

Es ist klar, dass hier eine Feuer- und eine Dampfwirkung stattgehabt hat. Dies ist kaum anders zu erklären, als dass der feuerige Ozonmantel des Blitzstrahles das Hemd versengt, und der auf dem Rücken sich verbreitende elektrische Strom den auf der Haut in Tropfenform stehenden Schweiß in heissen Wasserdampf verwandelt und so die Verbrühung in der beschriebenen Form zu Stande gebracht hat. Am äussersten Rande der Verbrennung, wo der Strom bereits weniger stark war, verlief sich derselbe nach allen Seiten in Gestalt mehr oder weniger feiner, unregelmässiger Strahlen. Ebenso verhielt sich der Zweig des Blitzstromes, welcher sich zu beiden Seiten um den Hals herum verbreitet und

unter dem Kragen auf die seitlichen Halsgegenden und auf die Brust erstreckt hatte. Hier war eine noch als Verbrennung zu bezeichnende Stelle nur in der Gegend der Kragenbaken zu bemerken, sonst waren nur die zierlichen Verästelungen vorhanden, welche wir als Blitzfiguren bezeichnen.

Diese als oberflächliche Verbrennung anzusehen, halte ich nicht für richtig, da auf den gerötheten Stellen, — sofern man von den Ausgangspunkten der Figur absieht, an welchen ja eine Verbrennung stattgehabt haben kann, — nicht einmal die feine Behaarung versengt war. Auch Abschuppung der Haut wurde an denselben nicht beobachtet. Es bleibt somit zur Erklärung der Blitzfiguren nichts anderes übrig als die Annahme, dass der elektrische Funke, auf der Hautoberfläche bis zu einer gewissen Tiefe eindringend, nach allen Seiten nach dem Gesetze der Entspannung auseinanderläuft, dies aber nicht flächenartig, sondern in Gestalt einer immer feiner werdenden Verästelung vollzieht, ebenso wie der auf eine Harz- oder Hartgummiplatte (Bezold) geleitete positive Funke in ähnlicher Weise verläuft. Trifft somit der positive Blitzstrahl auf die Haut, so kann der glühende Gasmantel zunächst eine Verbrennung geringeren oder höheren Grades erzeugen, während der elektrische Kern sich strahlenförmig auf der schlecht leitenden Oberhaut verbreitet und, in die Tiefe dringend, sich mit der negativen Erdelektrizität des Körpers verbindet. Ich glaube, dass diese Art der Erklärung der Blitzfiguren die natürlichste und den physikalischen Thatsachen am meisten entsprechende ist. Die Röthung ist dann als eine vorübergehende Lähmung der im Verlaufe der Blitzverästelungen getroffenen Hautkapillaren zu deuten. Die schon früher von verschiedenen Autoren aufgestellte Vergleichung der Blitzfiguren mit den Lichtenberg'schen Figuren würde in dieser Weise dennoch eine Begründung finden.

Die Annahme, dass die Röthung der von den Blitzverästelungen genommenen Wege auf Lähmung der Hautkapillaren beruhe, findet eine weitere Stütze in der Beobachtung, dass die Empfindsamkeit der Haut innerhalb der Verästelungen stets herabgesetzt ist, wenn dieselben eine gewisse Intensität besitzen. Es sind also auch die Hautnerven in gleicher Weise wie die Gefässe gelähmt worden.

Da die Haut ein schlechter Leiter ist und somit dem Eindringen des Blitzes in den Körper einen nicht unerheblichen Widerstand entgegensetzt, ist es nicht nöthig, dass der Blitzstrahl da, wo er Blitzfiguren auf der Haut gebildet hat, sich erschöpft, derselbe kann vielmehr in seinem Hauptstrahle weiter gehen und in dem weiteren Verlaufe die einzelnen Einwirkungsarten — Verbrennungen und Blitzfiguren — wiederholen, je nach

dem die äusseren Bedingungen gegeben sind. Dies ist namentlich an dem Falle des Tambours Br.-r. zu sehen, bei welchem der Blitz auf dem Vorderarme und auf dem rechten Oberschenkel Blitzfiguren bildete, dann, auf den linken Oberschenkel überspringend, die Behaarung am Unterleibe versengte, ohne die Haut zu verbrennen, und dann am linken Unterschenkel eine Lähmung der Empfindung und der Bewegung (n. peroneus) erzeugte.

Die Blitzfiguren verschwanden in unseren Fällen dort, wo dieselben nicht mit Verbrennungen verbunden waren, nach 1 bis 3 Tagen ohne Verfärbungen oder Abschuppungen der Haut. Verfärbungen als Zeichen von Blutaustritten wurden überhaupt nur an den beiden Beulen am Kopfe des Hornisten B.-s. und auf dem Ellenbogen des Tambours Br.-r. beobachtet. Eine gelbliche Farbe zeigte die Abschuppung einer oberflächlichen Brandstelle bei dem Gefr. B.-n.

Die Thatsache, dass die Blitzfiguren keine Blutaustritte darstellen, ist überdies von früheren Beobachtern festgestellt. Horstmann überzeugte sich hiervon durch Einschnitte in die Haut vom Blitze Erschlagener.

Sind wir hiermit am Schlusse der Betrachtung der Einwirkung des Blitzes auf die äussere Haut angelangt, so erscheint uns noch eine eigenenthümliche Erscheinung beachtenswerth, nämlich die Thatsache, dass der Stiefel in der auf dem Bilde ersichtlichen Weise zerrissen, von dem Fusse abgestreift und 3 Schritte weit weggeschleudert wurde. Bemerkenswerth ist ferner die Blutblase am äusseren Rande der Fusssohle und die Schmelzstelle am Hufeisen.

Das Aufreissen beider Seitennähte und des Leders an der Biegung des Spannes lassen uns auf die Gewalt schliessen, mit welcher der Stiefel vom Fusse abgestreift wurde, denn diese Risse sind offenbar von dem schnellen Durchtritte des Fusses durch die enge Stelle des Stiefels und nicht durch die zerreisende Kraft des Blitzes selbst erzeugt, während dieser letzteren der lange Schlitz längs des äusseren Randes des Oberleders zuzuschreiben sein dürfte, ebenso wie die Risse im Rock und Hemde. Wir haben es allem Anscheine nach mit einer Art Explosion zu thun, und eine solche lässt sich nicht anders erklären, als durch die Annahme, dass die in dem Stiefel vorhandene Luft nebst Wasserdampf durch den Blitz plötzlich auf ein Vielfaches ihres Volumens ausgedehnt, denselben vom Fusse heruntersgeschleudert hat. Gleichzeitig musste dann der Blitzstrahl, welcher am Fussrücken seine letzten Spuren in Gestalt eines doppelt konturirten Streifens hinterlassen hat, das Oberleder aufgeschlitzt haben, wozu vielleicht auch die Spannung der ausgedehnten Luft

ihr Theil beigetragen haben mag. Den Abschluss des Stiefels nach oben hat offenbar der nach oben dringende Fuss selbst dargestellt.

Die Schmelzstelle am Aussenrande des Hufeisens am Stiefelabsatze entspricht ihrer Lage nach der Blutblase unter dem Fusse, doch war zwischen dieser und dem hinter dem äusseren Knöchel herablaufenden Blitzstreifen eine Verbindung nicht vorhanden. Ich hege daher die Vermuthung, dass hier ein Erdblitz dem atmosphärischen Blitze entgegengeschlagen ist und die Schmelzstelle, wie auch die in ihrer Erscheinung den übrigen Einwirkungen auf die Haut ganz unähnliche Blutblase erzeugt hat.

Soviel scheint nach dem ganzen Bilde der Einwirkungen des Blitzes auf den Hornisten B.-s. festzustehen, dass derselbe von einem mächtigen Strahl ereilt worden ist, welcher unzweifelhaft den Tod des Mannes zur Folge gehabt hätte, wenn nicht der Metallbeschlag des Helmes den Strahl vom Kopfe ab und auf die Körperoberfläche und die Kleidung, deren Leitungsfähigkeit durch die Nässe und die hier und da eingeschalteten Metallstücke erhöht war, übergeleitet worden wäre.

Der Theil des Blitzes, welcher durch die Körperoberfläche in grössere oder geringere Tiefe des Körpers eingedrungen ist, äusserte seine Einwirkung überall und stets auf nach unten, in der Stromrichtung gelegene, meist ziemlich engbegrenzte Abschnitte. Wenn die Annahme richtig ist, dass der grösste Theil des Blitzes auf der Oberfläche des Körpers entlang nach der Erde abglitt, und nur ein geringerer Theil des elektrischen Stromes in das Körperinnere eindrang, so ist diese überall als örtlich aufzufassende Wirkung durch die plötzliche Erweiterung des Querschnittes der Strombahn und den Ausgleich des Stromes durch die vorgefundene entgegengesetzte Elektrizität zu erklären.

Der Theil des Blitzes, welcher in der Hinterhaupt- und Nackengegend in den Körper eindrang, traf die Zentren der Athmung und der Herzinnervation und bewirkte die beschriebenen Störungen der automatischen Lebensthätigkeiten; diejenigen Abzweigungen des Stromes hingegen, welche an den Gliedmaassen in die Tiefe gelangten, hatten die Lähmungserscheinungen an den die Empfindung und Bewegung vermittelnden Nerven und die Schwächung der Muskulatur zur Folge. Zur Erklärung dieser Erscheinungen eine besondere Einwirkung auf die Blutbeschaffenheit oder auf die Spannung der Blutgase heranzuziehen, scheint mir unnöthig, da man ähnliche Erscheinungen auch nach übermässigen aus Unkenntnis angewandten Induktionsströmen sehen kann. Ich habe einen Soldaten in Behandlung gehabt, welcher an ähnlichen Erscheinungen in beiden Armen

litt, nachdem er auf einer Messe sehr starke Ströme eines Apparates eines fahrenden Jahrmärktsphysikers über sich hatte ergehen lassen.

Die Einwirkung des Blitzes auf die Zentren der Athmung und der Blutbewegung, welche in unserem schweren Falle so auffällig auftraten, die Brustbeklemmungen und die zwei Tage lang andauernde schwere Störung der Herzthätigkeit, das lange Zeit andauernde allgemeine Muskelzittern und die Schwäche in den Armen, lassen sich als Folgen der Erschütterung der getroffenen Zentren und der von dem Strome durchflossenen Organe selbst erklären, ohne dass man eine Veränderung der Blutbeschaffenheit oder eine Expansion der im Blute in gelöstem oder absorbirtem Zustande vorhandenen Gase heranzieht. Deutlich ist die reine Wirkung der Erschütterung an den peripheren Nerven, welche stets nur innerhalb der vom Blitze unmittelbar berührten und durchströmten Abschnitte ihres Gebietes, sei es der Empfindung oder der Bewegungsvermittlung, gestört waren. Erscheinungen von Herzklopfen und Brustbeklemmung mit starken Schmerzen und Muskelzittern in den Armen hatte ich auch bei dem oben erwähnten, auf einer Messe durch zu starke Induktionsschläge erkrankten Soldaten beobachtet. Wenn diese Induktionsschläge auch sehr stark waren, so ist doch wohl nicht anzunehmen, dass dieselben stark genug gewesen seien, um eine Einwirkung auf die Blutgase und die Körperflüssigkeiten ausüben zu können.

Anders mag es um die Blutvertheilung im Körper nach Blitzschlag stehen. Fälle von starker Blutstauung in der Lunge bis zum Lungenödem und oftmals mit nachfolgender Bronchitis sind öfter beobachtet worden; doch lassen sich diese Erscheinungen durch die plötzliche Stockung der Lungen- und Herzthätigkeit zur Genüge erklären.

Wenn wir sonach mit Oesterlen die Annahme Richardson's, dass eine Expansion der Blutgase oder eine Veränderung der Beschaffenheit des Blutes und der Körperflüssigkeit, welche doch erst nach einer gewissen Zeit ihre Wirkung äussern könnten, in das Gebiet der Vermuthungen zurückweisen zu müssen glauben, so ist doch ein Einfluss des Blitzschlages auf die Blutbildung für die an das Ereigniss anschliessende Zeit nicht zu verkennen. Patient B-s. erholte sich nur sehr langsam und sah lange Zeit hindurch immer noch blass und angegriffen aus.

Anders als auf die im Blute enthaltenen Gase gestaltet sich jedoch die Wirkung des Blitzes auf die in Körperhöhlen eingeschlossenen freien Gase. Bei Hornist B-s. war das linke Trommelfell frisch gesprungen und vor dem Riss lag ein kleiner Bluterguss.

Diesen Vorgang kann man sich füglich nicht anders vorstellen, als

dass das Trommelfell durch die plötzlich ausgedehnte Luft der Paukenhöhle gesprengt worden ist. Das Hörvermögen war gleichzeitig stark beeinträchtigt.

Ob nicht die sehr heftigen Chokerscheinungen bei demselben Manne auch auf eine Expansion der Darmgase zu beziehen sind, lasse ich dahingestellt, halte jedoch diese Vermuthung nicht für unwahrscheinlich, da nach dem Unfälle Stuhlverhaltung eintrat, welche durch eine vorübergehende Darm lähmung erklärlich ist.

Auch bei einem Todesfall durch Blitzschlag habe ich einen Bluterguss aus dem Ohre beobachtet, welcher in gleicher Weise zu deuten wäre. Dieser Fall war insofern bemerkenswerth, als ausser diesem Bluterguss aus dem Ohre eine andere Verletzung, oder überhaupt andere Spuren des Blitzschlages an der Leiche nicht zu finden waren. Es betraf dies einen Fall, wo der Blitz zwischen eine Schaar von Feldarbeitern in der Nähe von Schwanebeck, Provinz Sachsen, einschlug und 2 Frauen tödtete und etwa 10 andere Arbeiter beiderlei Geschlechtes verletzte.

An der zweiten getödteten Frau waren äussere Spuren einer Verletzung gar nicht vorhanden. Obduktion wurde bei beiden Leichen verweigert.

Bei einem jungen Manne blieb längere Zeit eine Störung der Herzthätigkeit und eine Schwäche des linken Armes zurück. Bei mehreren Personen war eine vorübergehende Lähmung der Schlingmuskulatur zu beobachten, indem Getränke, welche ihnen dargereicht wurden, nicht heruntergeschluckt werden konnten, sondern durch die Nase zurückkamen.

Alle Verletzten klagten, wie auch die in unserem Falle nur leicht Getroffenen, über Schmerzen im Nacken und über eine eigenthümliche Geschmacksempfindung.

So mannigfaltig sich demnach, wie aus den beschriebenen Fällen hervorgeht, auch die Erscheinungen gestalten mögen, welche die Einwirkung des Blitzes auf den menschlichen Körper hervorruft, so lassen sich dieselben bei nüchterner Betrachtung doch stets auf dieselben allgemeinen einfachen Gesetze zurückführen und die Mannigfaltigkeit derselben hat ihren Grund nicht in einer qualitativ verschiedenen Einwirkung derselben Kraft, sondern nur in der Verschiedenheit der Angriffsobjekte, in der Verschiedenheit der Art des Verhaltens letzterer gegenüber der gewaltigen Einwirkung des Stromes und in der Verschiedenheit der Medien, welche die betroffenen Körpertheile umgeben.

Einfach ist das Gesetz der Natur — mannigfaltig die Erscheinung.

Ich bin Herrn Oberstabsarzt Nicolai sehr verbunden für seine bereitwillige Unterstützung, welche ein Photographiren der vom Blitz getroffenen Leute schon 24 Stunden nach der Verletzung möglich machte. Allerdings waren die äusseren Umstände nicht sehr günstig, da am 10. Juni Vormittags der Himmel vollkommen gleichmässig grau bedeckt und daher das Licht für die im Zimmer zu bewerkstelligenden Aufnahmen wenig vorthellhaft war. Es wurde ein Voigtländer'sches Euryoskop VI No. 3 A von 53mm Oeffnung und haltbare Eosin Silberplatten von Perutz bei verhältnissmässig langer Exposition benutzt.

Trotzdem nur 24 Stunden seit dem Unfall verlossen waren, zeigten sich doch nur noch bei zwei Leuten die Blitzspuren so deutlich, dass eine photographische Aufnahme lohnend erschien. Sehr sorgsam musste verfahren werden, um bei dem am schwersten verletzten Hornisten B. ein befriedigendes Bild zu erhalten. Da der Mann noch immer etwas unbesinnlich war und leicht schwankte, wurden die Aufnahmen bei ihm auf die Verletzungen am eigenen Körper beschränkt (No. 3, 4, 5). Um aber auch die Zerstörungen an seinen Kleidungs- und Ausrüstungsstücken in situ zur Ansicht zu bringen, wurden dieselben dem sich ganz wohl fühlenden Gefreiten Bn. angezogen und auf diesem photographirt. Aus diesem Grunde fehlt auf Bild 1 und 2 die Brandwunde der Haut.

Stechow.



Verletzung auf dem Körper des Hornisten B—s.

Zu: Deutsche Militärärztliche Zeitschrift 1892.



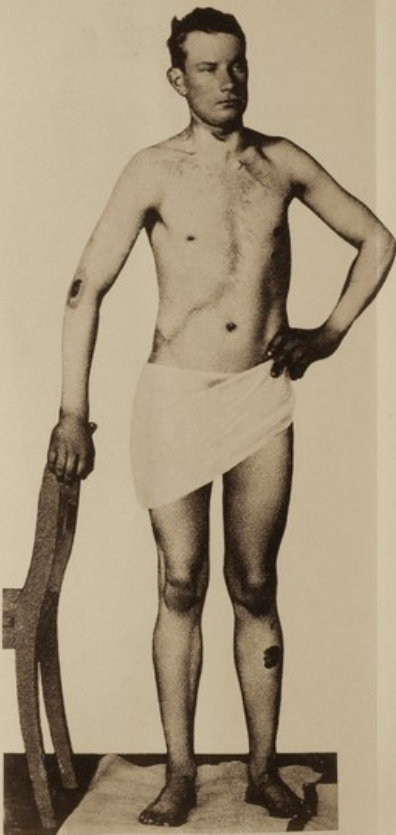
Kleidungsstücke des Hornisten B—s.

Blitzwirkung auf dem Körper des Hornisten B—s.

Blitzschlag bei Mariendorf am 9. Juni 1891.

Nach einer photographischen Aufnahme des Stabsarztes Dr. Stechow.

Lichtdruck von A. Frisch, Berlin.

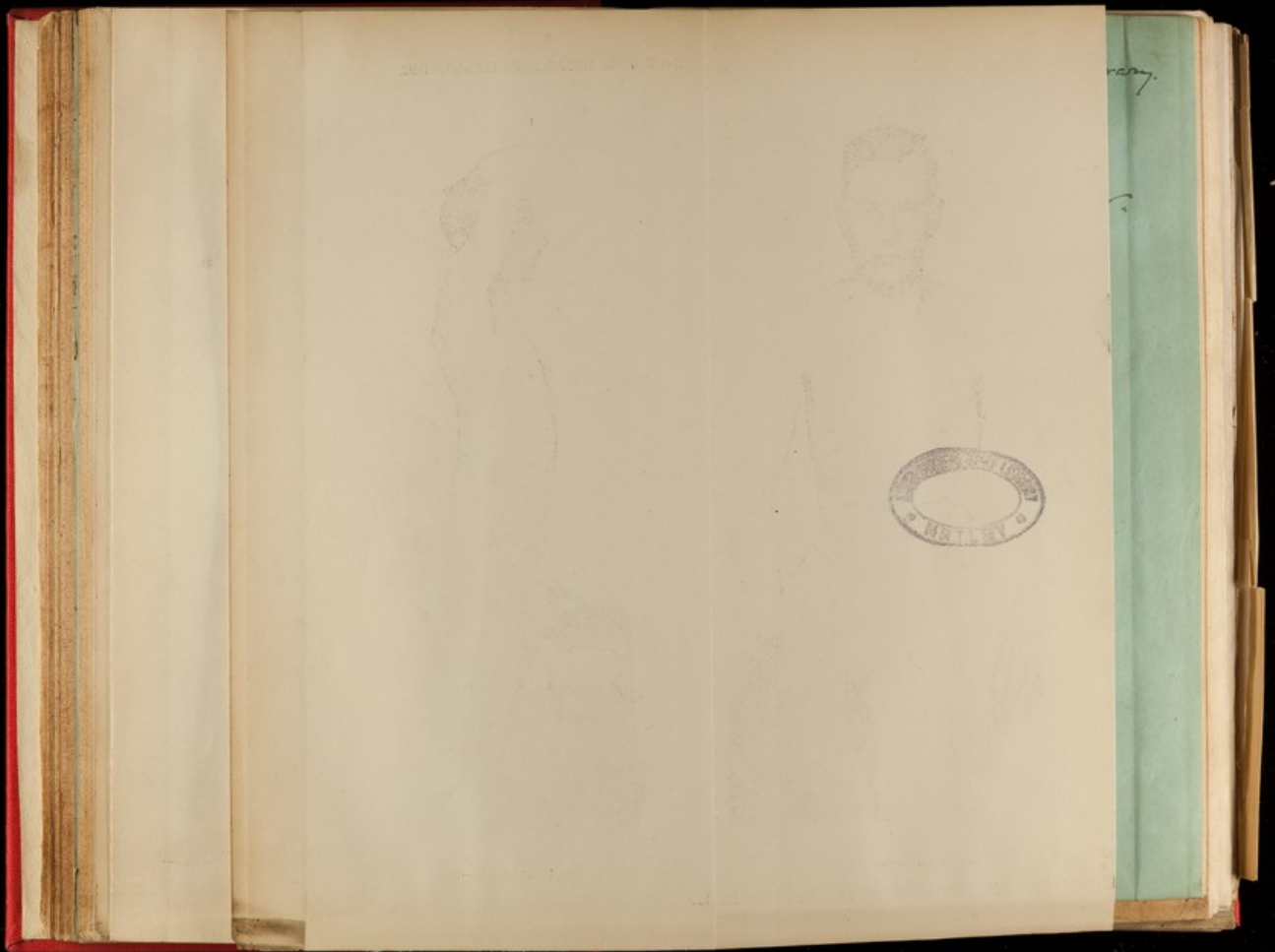


Blitzfiguren auf dem Körper des Hornisten B—s,
Blitzschlag bei Mariendorf am 9. Juni 1891.

des Gefreiten B—n.



des Gefreiten B.—n.



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THE DIETETIC AND THERAPEUTIC VALUE OF THE
KOLA NUT.

BY SURGEON R. H. FIRTH.

Medical Staff.

THE following observations were made at the Mian Mir Camp of Exercise during January 1889, under instructions from the Surgeon-General, H. M. Forbes, contained in his letter ⁴²⁶⁵ of November 6, 1888, and in continuation of a similar series conducted by me at Umballa during January 1888.

The value of Kola nut, as a dietetic and therapeutic agent, was originally brought to the notice of the Government of India by Captain F. N. Maude, R.E., in August 1887, and my two sets of observations were directed to test the practical value of the nut, if issued to soldiers as recommended by him.

Kola nuts are the seeds of *Sterculia acuminata*, a tree resembling the chestnut and growing wild on the west coast of Africa. These nuts have been known to pharmacologists about eight years, and full details concerning their botanical position and pharmaceutical chemistry have from time to time been published, more especially in the *Pharmaceutical Journal* (vi. 457) and in Christy's *New Commercial Plants and Drugs* (No. 8).

From these sources the composition of Kola nuts is found to be as follows: water 11.9, proteids 6.7, caffeine 2.4, theobromine .02, starch 33.7, sugar 2.8, fats .68, tannin 1.6, colouring matter 3.7, cellulose 30, ash 6.5. That is to say, these nuts are allied to cocoa, coffee, and tea, but differing from them in the relatively large amount of caffeine which they contain. The original series of experiments, made by me in Umballa early in 1888, were not satisfactory, mainly owing to the Kola nuts having been supplied in the form of a powder as prepared by Heyman and Phillips, of Hatton Garden, London, and that, too, in an insufficient quantity for any extended observations. For the

purposes of the experiments at the Mian Mir Camp of Exercise, I received, through the Deputy Surgeon-General, Lahore District, 10 lbs of Kola nuts. These I found to be of irregular form and size, of a reddish brown colour, and presenting a faintly aromatic odour. In weight, the nuts varied from $\frac{1}{4}$ to 1 ounce, the smallest being 80 grains and the largest 500 grains. In texture, they were very close and hard; when placed in the mouth the nuts were faintly bitter, leaving a harsh aromatic flavour on the palate. The shape of the nuts was variable, most presented a convex outer surface, having on the inner side one or two facets.

The properties of the Kola nut are stated to be those of a strong tonic and stimulant to the nervous system, counteracting and removing the sense of exhaustion after fast and fatigue: an appetiser and astringent: that of an antagonist to the effects of alcohol: and also a purifier of water.

1. The chief value claimed for Kola nut is that it enables a man to undergo fasting and fatigue without experiencing the sense of exhaustion usual to any length of abstinence concurrent with physical exertions. As this alleged property is of the chiefest value so far as concerns the practical use of the nut by soldiers, my first observations were directed to a determination of the influences which the Kola nut exercises over the body metabolism. To this end two men, both patients in hospital for venereal disease, were placed under observation; their diet was uniformly the same (without alcohol) and their daily output estimated. The nitrogen escaping by the feces was not estimated. Their mean physiological state for seven days was as follows:—

Name of man.	Body weight, lbs.	Pulse rate.	Respirations.	CONDITION AND ANALYSIS OF THE URINE.									
				Total urine, c. c. m.	Specific gravity.	Total solids, grammes.	Reaction.	Urea, grammes.	Uric acid, grammes.	Phosphoric acid, grammes.	Chlorides, grammes.	Sulphates, grammes.	Extractives, grammes.
Morris ...	144	76	18	1,400	1,023	65.9	Faintly acid.	31	8	2.1	6.1	1.6	5
Bofton ...	140	74	18	1,360	1,021	61.8	Faintly acid.	29	8	1.9	5	1	3.1

Having in this way and so far obtained an equilibrium of their excretion and general daily state, both men were given daily 100 grammes (about 3½ oz.) of powdered Kola nut made into a hot infusion with boiling water and then strained. The Kola was given in four doses daily, each of 25 grammes, at 8 A.M., noon, 4 P.M. and 8 P.M. The urine was examined twice daily. The dietary was precisely the same as during the previous week, no alcohol allowed. Their physiological condition was, for this period, found to have the following daily mean:—

Name of man.	Body weight, lbs.	Pulse rate.	Respirations.	CONDITION AND ANALYSIS OF THE URINE.									
				Total urine, c. c. m.	Specific gravity.	Total solids, grammes.	Reaction.	Urea, grammes.	Uric acid, grammes.	Phosphoric acid, grammes.	Chlorides, grammes.	Sulphates, grammes.	Extractives, grammes.
Morris ...	143.5	76	18	1,570	1,022	44	Acid.	30.1	7	2	5.8	1.4	4
Bofton ...	141	75	18	1,480	1,021	42	Acid.	30	8	2.2	5.2	1.5	2.5

The inferences drawn from this series of observations is that, as regards these two men, while their weight, pulse and respiratory capacities have remained the same when taking Kola as when without, yet while receiving this drug their mean daily total excretion of urine has increased in its watery elements, but that the total urinary solids in both cases became lessened—notably the *x*, *y*, *z*'s or unknown or extractive bodies of the solids. The chemical operations required to isolate these different complex products being beyond the means at my disposal, the extractives were estimated by first calculating the total urine solids from the density, correction being made for temperature, and then deducting the quantity of solids as obtained by exact analysis from that, and taking the difference to be the *x*, *y*, *z*'s or unknown extractive bodies, such as xanthin, leucin, tyrosin, &c., &c. Both the men described themselves as feeling in no way exhilarated, nor did they think they had better appetites or were stronger when taking the Kola. Their nitrogenous equilibrium appeared to be in no way affected by the nut

powder infused. As a check experiment, the same two men were kept under precisely the same conditions of food and drink and given 100 grammes of Kola nut in dry form, and analyses made of their urine as before. The results were practically the same, except that both men considered they had less appetites and felt less the want of food. This possibly may have been due partly to the physiological action of the nut powder and partly to the stomach being occupied by a certain bulk of nut matter.

2. To test the value of the Kola nut as an adjuvant in sustaining the body during exertion and without food, three sets of observations were made, namely by myself, by Serjeant-Major Bailey of M.-3 R. A., and by Gunner Kirby of M.-3 R. A. We all three went without food for sixty hours: only taking during that period each 200 grammes, or about seven and half ounces of Kola powder, made up into an infusion with milk and sugar. The work done during this period was for two of us ordinary daily duties, including parades, and for myself a ten mile walk daily. The interpretation of our respective feelings during this time is difficult to give. Both Bailey and Kirby admitted some marked abatement in their desire for food, but were unwilling to admit that they could either have done very hard work on it, or that their desire for food was removed. A fallacy exists in this class of observation, in that owing to the result of custom and the habit of the stomach being filled at certain intervals with food, a sense of emptiness arises within one, if this habit is interfered with, which is of itself disagreeable and suggestive of a need for food when probably none such really exists. Again, both Bailey and Kirby are very large meat-eaters, and from the nature of their education perhaps not well able to explain their subjective feelings. Reviewing my own experiences during the sixty hours I depended upon Kola nut infusion, after making due allowance for the interruption of daily habits, &c., I think the sense of hunger and exhaustion, though both prominent, were much less than when on another occasion I underwent a similar fast but without even Kola. I was unable to obtain any one willing to carry out a similar check experiment, so have only to speak of my own experiences. The result of these series of observations

points to much the same conclusion in regard to Kola nut when taken as an infusion, as I arrived at after my Umballa observations, namely, that administered as such it would have little practical value for troops.

3. Having the nuts as nuts and recognising the fact that much of the repute which Kola has, of being a sustainer of the body in times of fasting and fatigue, is derived from statements of African natives who chew the nut (mastication); I organised an extensive trial of the Kola nut, given as a nut. For this purpose such nuts as were obviously too large to be placed in the mouth with comfort, I had broken up: and thereby obtained numbers of pieces of the size of a filbert. These I issued to twenty-five men of the West Yorkshire Regiment and to twenty-five men of the Devonshire Regiment, explaining to them their action and the object intended by their use. The men were not picked men, but a large number were reliable fellows; and as they were all taking part in Brigade or Divisional manoeuvres daily, entailing rather more than the average of physical exertion, their experiences may be taken as a fair test. These men were directed to have their usual breakfast on Monday (14th) and told to throughout the day keep a piece of Kola nut in the mouth, chewing it and swallowing the saliva. Each was given enough to chew constantly for three days. Each man was requested to abstain from food or drink other than water till the following Wednesday at six P.M. From the nature of the circumstances I was unable to absolutely prove that they would not or had not partaken of food or drink during that period, but I was able to satisfy myself by my knowledge of certain men and the testimony of reliable non-commissioned officers that at least half of the fifty men did conform to my programme. At six P.M. on Wednesday the experiment terminated, and they were permitted to have their dinners. An analysis of their experiences and feelings showed that eleven men undoubtedly had not adhered to my rules, but had probably eaten food. Of the remainder thirteen were unable to give any very satisfactory or lucid account either of their experiences, sensations, or opinion; much of this was due to inherent educational defects in the men. Of the other twenty-six men, fifteen belonged to the Devonshire

Regiment. Twenty men spoke distinctly in favour of the nut, while the others concurring in the main with the opinion were perhaps a little more guarded. The general opinion of the twenty-six men was that during the first sixteen hours of fast, they felt hungry and empty. Though they had had a long day in the field, yet they were not specially tired nor were they thirsty. They had kept the nuts constantly in their mouths, swallowing the saliva; and when one piece of nut had become chewed away, began at a fresh piece. During the latter part of the fast, though again out for a brigade field day both on Tuesday and Wednesday, the men were unanimous in admitting that they were neither hungry nor tired. When pressed for a candid opinion as to the merits of the nut for use on marches and forced marches and forced exertion, these men considered that if no food was to be had then chewing the Kola nut would make the want less apparent. When I examined the party medically at the termination of the experiment, I considered six men to be distinctly exhausted, while the others appeared to be none the worse. Personal experience with the nut constantly in the mouth chewed during several fasting periods of fifty-six hours, inclines me to the belief that taken so it does have some stimulating effect, or rather it keeps in abeyance the sense of both mental and physical depression peculiar to such circumstances. Though the nut is hard and not easily bitten, yet it gradually breaks down under the action of the saliva and teeth; it is undoubtedly more efficacious taken in that way than as an infusion, though an occasional cup of this is acceptable. A subsequent trial by ten other men yielded similar opinions and experiences. All the men who took Kola during a period of actual fasting mentioned the fact that on the termination of the experiment they had a great desire for butter and fat; this desire I can confirm from personal experience; it indicates that Kola is in no way a force producer, but that Nature has had during the fasting period to make calls upon the reserves of body fat for force production and seeks recuperation. The physiological action of the Kola nut, in the absence of food, is purely that of an artificial stimulant to the nervous system.

4. Kola nut is claimed to be a stomachic and appetiser; none of my observations or experience point to any such action.

5. Similarly it is claimed for Kola that it will check the action of alcohol, being sufficiently powerful to restore a man muddled with liquor to practical sobriety. Eight observations, directed to clear up this point, indicate that it has no such action whatever, either in powder or as infusion. The most that could be demonstrated was that a hot infusion of Kola, taken as coffee, partially relieved the head of the sense of heaviness peculiar to alcoholic excess the previous night. In this respect its action did not seem superior to that of either strong coffee or tea.

6. As regards its therapeutic value as a remedial agent in stimulating those recovering from lengthened sickness, I was unable to make many observations. Two men suffering from the debility consequent on malaria were given the Kola infusion for a month, each receiving one hundred grammes daily. Neither could be said to have in any way benefited by its administration.

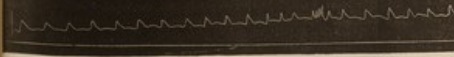
In several cases of diarrhoea due to chill catarrh, I found Kola infusion of benefit as a marked astringent. Moreover, when taking the Kola as a dietetic substitute, evidence was offered as to its astringent action. It also acts, as judged on and by myself, beneficially in removing the sense of heaviness due to hepatic engorgement and torpidity, probably acting in such cases as a nervine stimulant and as an oxidiser of digestive bye-products.

7. Some observations were made as to whether Kola nut exercised any influence over the heart and blood-pressure. The

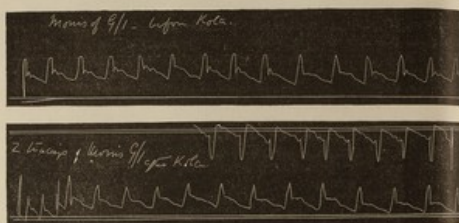
Range of W.P.R. before Kola



Range of W.P.R. after Kola



annexed sphygmograms show the pulse of a man with not only an irregular but a very weak pulse and with low tension. The action of Kola is well shown in the second tracing, which indicates not only an improvement in the regularity but also a



strengthening of the impulse and increase of tension. The two following from a man called Morris indicate similar influences.

The action of Kola over the vascular system appears to last only a short time, needing a repetition of it to be made if effects are to be continued.

8. From certain impressions received when observing the action of the Kola nuts both on myself and others, doubts were raised whether all the nuts supplied to me were of equal therapeutic value. To decide this, I made some efforts to examine the seeds chemically. Twelve seeds or nuts were taken at random, each of equal size, and successively operated upon by exhaustion of their powder with chloroform and alcohol. After percolation and evaporation silky needles of caffeine were obtained from eight of the seeds, but none from the other four. These facts lead to the consideration whether all Kola nuts now in the market are true Kola nuts. It is known there are two kinds, one the so-called "female" or true Kola; and the other the bitter or "male" Kola; this latter not having the same properties as the female nut. The distinction between the two is, I believe, not easily made in the dry state except by an expert. This fact of a want of uniformity in the nuts may explain some of the discrepancies as to their value otherwise inexplicable.

9. With respect to the assertion of the clarifying power of Kola powder on water, an experiment made by me upon a bad and dirty water showed that it did not satisfactorily clear the water of suspended matters, that it gave a reddish brown tint and faint bitter taste to the water, that it had no effect upon the amount of nitrous acid, ammonia, or oxidisable organic matter. What little action it had was probably but that due to the formation of a mucilaginous coagulum, which on falling in great part cleared the water of the suspended particles, while not affecting its chemical constitution.

The conclusions I would formulate as the result of this series of observations with and upon Kola nuts are—

(1) That Kola nut is in no sense a food; it is to be regarded purely as a drug.

(2) That its physiological action upon the human economy is to increase the total urinary water, with a slight reduction of its total solids and a marked reduction of the extractives eliminated by the urine. Such action is probably due to its contained caffeine, which favours increased oxidation of the tissues. It in no way affects the nitrogen output of the body.

(3) That Kola nut, when pure and not too old, has a peculiar stimulant action on the nervous system, temporarily strengthens the heart-beat, and increases the arterial tension. Taken continuously during times of exertion and fasting, it possesses some power of warding off the sense of mental and physical depression or exhaustion peculiar to that condition; this power is not, however, so marked as some observers have reported.

(4) That it might be employed on service as an issue to troops in the form of broken-up nuts, the same being issued with instructions that a piece be constantly kept in the mouth and chewed, and the saliva swallowed. The facts being made clear to the men that, though not in themselves a food, yet, from certain qualities inherent in them, the nuts guard against exhaustion, and moreover have a salutary action upon the lining membrane of the mouth, stomach, and intestines, rendering them less susceptible to the action of indifferent food and water. Owing to the uncertainty of the action of Kola nuts, and the great difficulties to be overcome in combating the prejudices of soldiers

towards any new and unfamiliar article such as these nuts are, any issue of Kola nuts to troops by Government should at first be upon only a limited scale, as neither our present knowledge regarding them nor the results of their trial justify any large outlay.

(5) That as an infusion with milk and sugar Kola powder is an efficient substitute for tea or coffee, being especially for those affected with diarrhoea superior to either owing to its astringent action.

(6) That as a therapeutic agent in the convalescence from long sickness its value is not apparent.

(7) That its alleged antagonistic action to alcoholic sequelæ is not capable of proof.

(8) That as a purifier of water its action is purely mechanical, and not superior to that of the *Strychnos petulorum* or other mucilaginous seeds.

(9) That any consignment of Kola nuts bought for Government for issue to troops needs most reliable supervision, in order that none but the seeds of the true or "female Kola" are issued, and that spurious seeds, such as those of *Garcinia Kola* or "male Kola," and *Sterculia cordifolia*, species which contain no caffeine, are not issued in mistake for the true nut.

(10) That while the nut powdered and made into an infusion with boiling water is an agreeable way of taking Kola; yet the nut should be always freshly ground, and this method is inferior to continual mastication of the solid nut for dietetic emergencies. Those chewing the nut must do so continuously, keeping it in the mouth all day and swallowing the saliva if any satisfactory effects are to be attained.

von
Verlasser.



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Ueber die Aetiologie und die Diagnose der bösartigen Geschwülste, insbesondere der- jenigen der Zunge und der Lippen.

Von

Friedrich von Esmarch.¹⁾

(Hierzu Tafel IV, V, VI, VII und Holzschnitte.)

Auf dem VI. Congress der Deutschen Gesellschaft für Chirurgie, es sind jetzt 12 Jahre her, stellte ich den Antrag, dass für das nächste Jahr eine Besprechung über bösartige Neubildungen auf die Tagesordnung gesetzt werde, nachdem ich in einem Vortrag, den ich als „Aphorismen über Krebs“ bezeichnet, kurz angedeutet hatte, über welche Fragen bei einer solchen Besprechung etwa verhandelt werden könnte.^{1*)}

Das Schicksal dieses Antrages ist Ihnen bekannt.

Im folgenden Jahre wurde beschlossen, zunächst ein Schema für die Besprechung aufzustellen und die Ausarbeitung desselben einer Commission zu übertragen, welche bestand aus von Langenbeck, Thiersch, Luecke, von Volkmann und mir.²⁾

Das von dieser Commission ausgearbeitete Schema wurde im Jahre 1879 der Gesellschaft vorgelegt und von unserem Präsidenten der Antrag gestellt, dass man sich über die Art der Berathung entscheiden möge.³⁾

In einem längeren Vortrage erklärte mein sehr lieber Freund Billroth, dass er eine solche Besprechung für äusserst

¹⁾ Vortrag, gehalten in der 1. Sitzung des XVIII. Congresses der Deutschen Gesellschaft für Chirurgie zu Berlin, 24. April 1889.

²⁾ Diese hochstehenden Ziffern beziehen sich auf das hinten angefügte Literaturverzeichnis.

schwierig halte und glaube, dass Nichts dabei herauskommen werde. Er schlug vor, dass man sich auf ein kleineres Gebiet beschränken möge, z. B. auf die Geschwülste der Brustdrüse, wenn er auch nicht verschwiege, dass eine statistische Behandlung solcher Fragen wenig Befriedigendes habe und dass trotz enormer Mühe und kolossalem Zeitaufwands nicht viel dabei herauskomme.

„Neues erfahren wir nur dann“, so schloss er, „wenn Jemandem ein neuer Gedanke, eine neue Methode, ein neuer Gesichtspunkt einfällt. Ich bin nicht im Stande, solche neue Gesichtspunkte aufzustellen.“

In Folge dieser Aeusserungen wurde dann die Berathung des Schemas abgelehnt, und nachdem auch die Aufstellung neuer Schemata von Billroth und Küster über die Geschwülste der Brustdrüse keine Ergebnisse geliefert hatte, ist die ganze Angelegenheit in Vergessenheit gerathen.⁴

Ganz ohne Erfolg ist indessen diese Anregung nicht geblieben.

Es sind, vielleicht in Folge derselben, und in der That unter Aufwand von ausserordentlicher Mühe und Fleiss, zahlreiche statistische Arbeiten über Geschwülste entstanden, welche werthvolle Aufschlüsse über gewisse Fragen gegeben haben.

Von den meisten chirurgischen Kliniken und grösseren Krankenhäusern sind solche Arbeiten geliefert worden und auch ich habe eine Reihe derselben veranlasst und, mit Hülfe meiner Assistenten und Schüler, zumeist in Doctor-Dissertationen veröffentlicht.

Dabei ist mir aber Das nur noch klarer geworden, was Billroth betonte, dass bei solchen Arbeiten nicht allzu viel herauskommt, und dass die Schlüsse, die wir daraus ziehen, nicht viel werth sind. Denn fragen wir, welche Antwort diese Statistiken auf die gestellten Fragen geliefert haben, so müssen wir bekennen, dass wohl Viele von uns auch schon vorher, aus klinischer Erfahrung, dieselben richtig beantwortet hatten, wenn wir auch das Resultat unserer Erfahrungen nicht in Procenten auszudrücken vermochten.

Was wir z. B. aus den Statistiken über Brustkrebs erschlossen haben, ist Folgendes:

1) Es giebt Fälle, in denen der Brustkrebs durch die Exstirpation zu heilen ist, wenigstens auf viele Jahre hinaus.

2) Die Wahrscheinlichkeit, dass die Heilung eine dauernde sein wird, ist um so grösser, je früher eine Geschwulst der Brustdrüse operirt wird und je gründlicher die Operation vorgenommen wird.

3) Die Gefahr der Operation ist seit Einführung der antiseptischen Wundbehandlung wesentlich geringer geworden.

4) Auch die Aussicht auf dauernde Heilung ist durch die antiseptische Wundbehandlung gewachsen, weil der Chirurg unter dem Schutze derselben seinen Operationen eine viel grössere Ausdehnung zu geben vermag, als vor Einführung der Antiseptik.

Was für die Brustkrebs gilt, das gilt im Allgemeinen auch für die bösartigen Geschwülste anderer Körpertheile.

Ich will nun gewiss nicht leugnen, dass es sehr angenehm ist, diese Fragen durch Procentzahlen beantworten und mit Hülfe derselben eine Vergleichung anstellen zu können zwischen den verschiedenen Methoden der Operationen und der Wundbehandlung, wenn ich auch noch einmal hervorheben will, dass die Ergebnisse dieser mühevollen Arbeiten durchaus mit den durch klinische Erfahrung gewonnenen Anschauungen der meisten neueren Chirurgen übereinstimmen.

Dass Statistiken, welche bloss „Geschwülste“ oder „Neubildungen“ betreffen, und von den verschiedensten Aerzten zusammengetragen worden sind, gar keinen Werth haben, versteht sich von selbst, weil hier die verschiedenartigsten Krankheiten zusammengeworfen werden.

Aber auch die mit der grössten Gewissenhaftigkeit zusammengestellten Statistiken, welche nur eine Art von Geschwülsten behandeln, sind nicht frei von Irrthümern.

Ich habe versucht, mit Hülfe mehrerer Schüler eine genauere Statistik über alle von mir seit Anfang meiner klinischen Thätigkeit beobachteten und behandelten Geschwülste zusammenzustellen und so gleichsam einen Rückblick zu werfen auf 40 Jahre chirurgischer Thätigkeit. Wir haben mehr als 1000 Fälle von Geschwülsten, welche während dieser Zeit in meiner Klinik behandelt worden sind, gesammelt, aber dabei ist es mir erst recht klar geworden, wie richtig Billroth's Ausspruch gewesen ist.

Es giebt auch viel wichtigere Fragen, als die oben genannten, welche sich aus den bisherigen Statistiken nicht beantworten lassen.

Ueber die Entstehung der Geschwülste z. B. geben solche Statistiken nur geringen Aufschluss, denn dass in manchen Fällen eine Verletzung, eine entzündliche Reizung, eine Narbe die Veranlassung zur Entstehung von Neubildungen gegeben, während in den meisten Fällen eine solche nicht nachzuweisen ist, das wussten wir längst.

Ebenso wenig erhalten wir Aufschlüsse über die so wichtige Frage der Erblichkeit und über den Zusammenhang mit anderen Krankheiten und noch weniger über die Diagnose der Geschwülste und die Mittel und Wege, von vorn herein die bösartigen von den gutartigen Geschwülsten zu unterscheiden, alles Fragen, die für unsere Kranken von noch grösserer Wichtigkeit sind als für uns.

Was aber den statistischen Arbeiten, so gewissenhaft sie auch gemacht sein mögen, einen grossen Theil ihres Werthes nimmt, das sind die Fehlerquellen, welche von einer oft nicht zu vermeidenden mangelhaften Diagnose abhängen.

M. H.! Ich habe mehr als einmal die Erfahrung gemacht, dass, wenn man neue Gesichtspunkte aufstellt, aus denen hervorgeht, dass frühere Anschauungen über gewisse Dinge unrichtig waren und dass in Folge dessen manche Fälle unrichtig beurtheilt und verkehrt behandelt worden sind, dass dies eine gewisse Verstimmung⁵ hervorrief bei Kollegen, welche sich erinnerten, auch solche Fälle unter Händen gehabt zu haben. Ich bitte solche Empfindungen nicht aufkommen zu lassen, da mir nichts ferner liegt, als Anschuldigung von Kollegen und es mir nur um die Erforschung der Wahrheit zu thun ist.

Ich werde mir Mühe geben, mich so sachlich als möglich zu halten und hauptsächlich nur von den Fehlerquellen sprechen, die sich bei meinen eigenen statistischen Arbeiten gefunden, und die mir den Werth derselben so fraglich gemacht haben, darf aber wohl die Bitte hinzufügen, dass meine Herren Kollegen meinem Beispiele und dem Beispiele Nussbaum's folgen und mit demselben Freimuth wie letzterer in seinen „Unglücken in

der Chirurgie“ auch die ihnen vorgekommenen und oft unvermeidlichen Irrthümer der Diagnose bekennen mögen.

Diese Irrthümer hängen nur zum Theil ab von den oft sehr unvollkommenen Krankengeschichten, die bei Weitem nicht immer mit gleicher Gewissenhaftigkeit geführt worden sind, zum grösseren Theil aber davon, dass in den nahezu 40 Jahren, über die sich meine Beobachtungen erstrecken, die Anschauungen über die Natur der Geschwülste sich wesentlich geändert haben, und dass seitdem Geschwulstarten entdeckt worden sind, welche man früher nicht kannte, obwohl sie immer vorgekommen sein müssen, die deshalb nothwendiger Weise früher mit anderen Geschwülsten verwechselt, also falsch diagnosticirt wurden.

Dass wir aber noch heut zu Tage keineswegs vor solchen Verwechselungen geschützt sind, das kann ich aus meinen eigenen Erfahrungen wie aus den Mittheilungen Anderer erweisen.

M. H.! Die Zeiten sind vorüber, in denen der Kliniker glaubte seinen Schülern durch seine Unfehlbarkeit imponiren zu müssen. Jetzt wird kein Kliniker sich scheuen, vor seinen Zuhörern zu erklären, dass er nicht wisse, welche Erkrankung in einem vorgestellten Falle vorhanden sei.

Indem er seine Zweifel offen bekennt und über die Mittel spricht, zu einer sicheren Diagnose zu gelangen, nützt er seinen Schülern viel mehr, als wenn er von vorn herein eine ganz bestimmte Diagnose stellt und dieselbe mit allen Mitteln, die ihm zu Gebote stehen, zu begründen sucht.

Sehr lehrreich sind in dieser Beziehung die Verhandlungen über die Diagnose von Geschwüren der Zunge und des Rachens, welche zu Anfang dieses Jahres in der Gesellschaft Wiener Aerzte stattgefunden haben.⁶

Mir gab eigentlich die Veranlassung, eine Berathung über die bösartigen Geschwülste hier wieder anzuregen, ein Gespräch, welches ich im vorigen Jahre kurz vor Beginn des Congresses mit einem sehr erfahrenen Kollegen über einen Fall von Lippenkrebs führte.

Der College that nämlich, als ich meinen Zweifel aussprach, dass das Geschwür wirklich ein krebsiges sei, die Aeusserung, ein erfahrener Kliniker müsse doch aus dem blossen Aus-

sehen und dem Verlaufe eines solchen Geschwürs erkennen können, ob es ein Krebs sei oder nicht.

Ich konnte ihm darin nicht beistimmen, und um meine Zweifel zu begründen, erzählte ich ihm einen Fall, den ich vor einigen Jahren beobachtete, und der mir schon damals viel zu denken gab.

Es war ein Steuermann, den mir mein Assistent als einen Fall von rasch recidivirendem Lippenkrebs vorstellte. Dem Manne war vor 4 Wochen, auf einer anderen chirurgischen Klinik, von einem jetzt verstorbenen hochberühmten und in histologischen Untersuchungen wohl bewanderten Kollegen ein Lippenkrebs mit dem Keilschnitt extirpiert worden. Die Wunde war per primam geheilt, der Mann entlassen, und als sich bald nachher an den Rändern der Narbe knotige Verdickungen gebildet hatten, die ein anderer Arzt für ein Recidiv erklärte, so kam er mit der Bitte zu mir, die Operation rasch noch einmal zu machen, weil er sich für eine längere Fahrt nach Ost-Indien bereits verdingen hätte.

Da mir ein so rasches Recidiv nach einer gewiss gründlich vorgenommenen Exzision verdächtig vorkam, so fragte ich den Mann, ob er früher syphilitisch gewesen sei, was er auch sofort bejahte, und da sich auch andere Zeichen dieser Krankheit ergaben, so wurde er zunächst einer anti-syphilitischen Kur unterworfen, und in der Zeit von 4 Wochen waren die knotigen Verhärtungen spurlos verschwunden.

Dieser Fall hat mir, wie gesagt, viel zu denken gegeben, denn ich fragte mich, was wäre aus dem Manne geworden, wenn ich noch einmal die Exstirpation der verhärteten Narbe vorgenommen hätte. Ohne Zweifel wäre der Mann auf die Reise gegangen, es hätten sich bald neue Recidive, vermuthlich auch Drüsen-Anschwellungen eingestellt, und dann wäre eine Verschwärung der syphilitischen Knoten erfolgt. In irgend einem Hafenplatze hätte vielleicht ein Chirurg noch einmal eine Exstirpation vorgenommen, der wahrscheinlich rasch wieder ein Recidiv gefolgt wäre, und schliesslich wäre er in irgend einem Hospital an einem „unheilbaren Krebsrecidiv“ jämmerlich gestorben.

Dass derartige Fälle in der That nicht allzuseiten vorkommen, konnte ich dem Kollegen durch meine Abbildungen beweisen. Ich zeigte ihm diese Bilder (Taf. IV, Fig. 2, 3, 4) von ulcerirten Syphilomen der Lippe und der Zunge, welche sämmtlich als Krebse diagnosticirt und mir zur Operation zugesandt waren, deren Natur ich nur durch wiederholte mikroskopische

Untersuchungen vor der fast schon in Aussicht genommenen Operation erkannte, und die dann durch antisiphilitische Kuren meist rasch zur Heilung gebracht wurden.

Ich zeigte ihm dies Bild (Taf. IV, Fig. 1) von einem unglücklichen Manne, dem nach und nach wegen „Krebs“ erst die Glans, dann der Penis, dann die Hoden mit dem Scrotum weggeschnitten worden waren, und den ich durch eine Quecksilberkur rasch von seinen Hautgeschwüren befreite, welche nach jeder Operation immer wieder aufgetreten waren. (Einen ähnlichen Fall erzählt Ricord).¹

Es ist mir nicht zweifelhaft, dass ich in früheren Jahren, ehe ich auf das häufige Vorkommen von ulcerirenden Syphilomen der Lippe und Zunge aufmerksam geworden, auch derartige Geschwülste als Krebs extirpiert habe. In neuerer Zeit glaube ich das sicher nicht mehr gethan zu haben.

Dass aber viele ähnliche Irrthümer auch anderen Kollegen vorgekommen sind, lässt sich aus der Literatur mit Sicherheit nachweisen.

Denn als ich die neueren und älteren statistischen Arbeiten über bösartige Geschwülste genauer durchsah, habe ich die Ueberzeugung gewonnen, dass in einer erheblich grossen Zahl von Fällen die Diagnose nicht richtig gewesen sein kann, und dass man häufig Operationen vorgenommen hat, welche nach unserer jetzigen Anschauung mindestens unnöthig gewesen sind.

Wenn ich über einen Theil derselben hier berichte, so werde ich dabei keine Namen nennen, in dem gedruckten Vortrage aber genaue Angaben machen über die Stellen, an welchen die betreffenden Fälle zu finden sind.

Am häufigsten haben zu Verwechslungen Anlass gegeben die syphilitischen Geschwülste, welche man gewöhnlich mit dem Namen der gummösen, der Gummata, bezeichnet.

Ich möchte den Vorschlag machen, diesen veralteten Namen aufzugeben, weil er wirklich für die Beschaffenheit dieser Geschwülste sehr wenig bezeichnend ist, und an die Stelle desselben den seit Wagner viel gebrauchten Namen: „Syphilome“ zu setzen.²

Diese Geschwülste zeigen in der Mehrzahl der Fälle nicht einen Bau, welcher an eine Gummilösung erinnert, sondern

sie ähneln vielmehr, wie das schon von Virchow⁹ nachgewiesen ist, den gewöhnlichen Sarkomen und Fibromen, und ich habe die Ueberzeugung gewonnen, dass ein grosser Theil der Sarkome und Fibrome in der That zu den Syphilomen zu rechnen sind.

Dahin gehören vor Allem die Sarkome des Muskelgewebes und höchst wahrscheinlich alle die Spindelzellen-Sarkome, welche, bald vom Bindegewebe, bald von den Nerven oder grossen Gefässen ausgehend, dafür berüchtigt sind, dass sie nach ihrer Exstirpation in längerer oder kürzerer Zeit wiederkehren und deshalb von Paget als „recurring fibroid tumors“ beschrieben wurden.¹⁰

Dahin gehören wahrscheinlich zum Theil auch die oft so bösartigen Narbenkeloide und jedenfalls ein Theil der malignen Lymphome.

Ich habe schon im Jahre 1872 von einem meiner Schüler eine Arbeit über die Aetiologie und Therapie des Sarkoms liefern lassen, in welcher ich meiner Ansicht über die luëtische Natur vieler Sarkome Ausdruck gab.¹¹ In meinen „Aphorismen“ erzählte ich Fälle von solchen Sarkomen, deren Heilung nach häufigen Recidiven unter dem Gebrauche grosser Mengen von Jodkali mir die Ueberzeugung aufdrängte, dass es sich um Producte der Luës gehandelt habe,¹² und so bin ich allmählig immer aufmerksamer geworden auf diejenigen Geschwülste, welche sich durch ihre schnelle Wiederkehr nach der Operation als besonders bösartig erweisen.

Im vorigen Jahre hat einer meiner Assistenten¹³ die Fälle von Muskel-Sarkomen, welche auf luëtischem Boden gewachsen waren, zusammengestellt, und es geht aus dieser Arbeit hervor, dass unter den in den letzten Jahren in meiner Klinik beobachteten Sarkomen mehr als die Hälfte zu den Syphilomen zu rechnen waren und durch antiluëtische Behandlung geheilt werden konnten.

Da nun ohne Zweifel diese Syphilome auch in früheren Jahren nicht selten vorgekommen sind, aber als solche nicht erkannt wurden, so geht daraus hervor, dass die frühere Statistik über Sarkome nicht wohl zu gebrauchen ist.

Ich habe auch in der statistischen Literatur zahlreiche

Fälle gefunden von luëtischen Geschwülsten der Zunge, der Lippe, der Mamma, des Penis, der Hoden, des Kehlkopfes, der Muskeln, der Nerven, der Lymphdrüsen und der Haut, welche für Sarkome oder Carcinome gehalten, zu oft sehr bedeutenden und lebensgefährlichen oder doch verstümmelnden Operationen die Veranlassung gegeben hatten.¹⁴

Weniger häufig sind andere Geschwulstarten mit Sarkomen oder Carcinomen verwechselt worden. Dahin gehören zunächst die Tuberkelgeschwülste.

Erst in neuerer Zeit hat man nachgewiesen, dass in der Zunge, in den Lippen, im Kehlkopf und in den weiblichen Brustdrüsen Geschwülste vorkommen, welche ganz aus Conglomeraten von echten Tuberkeln bestehen und welche ohne aufzubrechen zu einer beträchtlichen Grösse heranwachsen können.¹⁵ In den meisten Fällen litten die Patienten freilich an tuberculöser Erkrankung anderer Organe, namentlich der Lunge. Doch war dies nicht immer der Fall. Bisweilen trat die Tuberkulose hier primär auf, wie so oft in den Gelenken, und erst nach der Exstirpation der Geschwülste wurde die Natur derselben durch die mikroskopische Untersuchung erkannt. Ich möchte für dieselben den Namen: Tubercuolum vorschlagen und zeige Ihnen diese beiden Abbildungen von Fällen, welche mich zuerst auf die Natur dieser Geschwülste aufmerksam machten (Taf. V, Fig. 5, 6, 7).

Im Jahre 1866 kam in meine Klinik ein Mann, der seit einem Jahre an einer ulcerirenden Geschwulst der Zungenspitze litt. Ich hielt dieselbe nach dem Aussehen für ein Carcinom und schnitt sie mit einem beträchtlichen Theil der gesunden Umgebung weg. Die mikroskopische Untersuchung wurde damals von mir und Herrn Prof. Colberg vorgenommen. Er war der Meinung, dass es sich um ein Adenom der Zungendrüsen handelte. Die Wunde heilte per primam und ich habe von dem Manne später nichts mehr gehört.

Der College Colberg ist seitdem gestorben und hat seine Absicht, diesen Fall als einen sehr interessanten Befund zu veröffentlichen, leider nicht ausgeführt. Zum Glück hatte ich eine vortreffliche Zeichnung von dem Aussehen des Geschwürs machen lassen, und als nun vor 2 Jahren ein ganz ähnlicher Fall mir mit der Diagnose Krebs der Zunge in die Klinik geschickt wurde, erkannte ich aus dem ganz gleichen Aussehen der Geschwürsfläche sofort, dass es sich um einen ähnlichen Fall handle und stellte

die Diagnose: Adenom der Zungendrüsen. Ich excidirte die Geschwulst, und die Wunde heilte per primam. Die mikroskopische Untersuchung aber ergab, dass es sich um ein Conglomerat von Tuberkeln handle und die Untersuchung der Lunge wies auch schon verdächtige Zeichen der Lungenschwindsucht nach.

Ich habe von jeher grossen Werth auf die Anfertigung guter farbiger Abbildungen von klinischen Fällen gelegt, und diese Bilder zeigen wohl die Wichtigkeit derselben für die Diagnose und den klinischen Unterricht.

Ähnliche Geschwülste hat man in neuerer Zeit an den Lippen und im Kehlkopf beobachtet, aber die Natur derselben ist oft erst nach der Exstirpation erkannt worden.

Auch in der weiblichen Brustdrüse kommen Geschwülste tuberculöser Natur vor, welche zur Exstirpation der ganzen Mamma mit Ausräumung der Achselhöhle die Veranlassung gegeben haben und erst nach der Exstirpation als tuberculös erkannt worden sind.

Dass die Aktinomykose¹⁶ in früheren Zeiten sehr häufig mit bösartigen Neubildungen verwechselt worden sein muss, ist selbstverständlich, da wir diese Krankheit ja erst seit 10 Jahren kennen gelernt haben. Aber auch in der Statistik der neuesten Zeit finden sich noch Fälle, in denen aktinomykotische Geschwülste in der Zunge als Zungenkrebs, in der Bauchwandung und im Gesicht als Sarkome diagnostiziert und extirpiert worden sind.

Dass Cysten der Kiefer oder der weiblichen Brustdrüsen für Sarkome und Carcinome gehalten worden sind und zu unnötigen Operationen Veranlassung gegeben haben, weil man nicht vorher die richtige Diagnose gestellt hatte, ist wohl allgemein bekannt.¹⁷

Ganz besonders verhängnissvoll ist aber die Fehldiagnose in den Fällen von entzündlicher Spontanfractur am oberen Ende des Femur, von denen uns hier im Jahre 1879 ein lehrreiches Beispiel vorgeführt wurde.¹⁸ Diese Fälle, deren Entstehung noch in einiges Dunkel gehüllt ist, kommen offenbar nicht ganz selten vor und werden in der Regel für Osteosarkome gehalten, wenn nicht eine vorübergehende wiederholte anatomische Untersuchung das Gegentheil beweist. In einem Fall wurde die Exarticulation des Oberschenkels gemacht, in mehreren anderen

war dieselbe in Aussicht genommen und wurde nur aus zufälligen Gründen verschoben, bis der günstige Verlauf der Erkrankung die Diagnose aufklärte. Da ich selbst 3 Fälle dieser Art beobachtet habe und nur die mikroskopische Untersuchung von wiederholt aus der Tiefe geholten Stücken mich vor der Verwechslung mit Sarkomen schützte, so habe ich einen meiner Schüler veranlasst, diese Fälle zusammen zu stellen, und die Forschungen in der Literatur haben dabei ergeben, dass dieselben gar nicht so selten vorkommen.¹⁹

Die traurige Folge der Fehldiagnosen ist nun nicht bloss die Unbrauchbarkeit der bisherigen Statistik. Viel trauriger ist es ja für die Kranken, an denen man in Folge derselben unnötige operative Eingriffe unternommen hat.

Für jeden Chirurgen gelten wohl für die Behandlung der bösartigen Geschwülste jetzt dieselben Grundsätze. Wir operiren möglichst früh in möglichst grosser Ausdehnung, im Gesunden, und nehmen, wenigstens beim Krebs, alle benachbarten Drüsen mit fort, auch wenn dieselben nicht als vergrössert zu fühlen sind. Wir entfernen womöglich das ganze Organ, in welchem die bösartige Geschwulst ihren Sitz aufgeschlagen hat.

Und so hat man denn, in Befolgung dieser Grundsätze, nicht selten die ganze Zunge, die Lippe, die ganze Mamma, den Kehlkopf, den Uterus, die äusseren Genitalien weggeschnitten in Fällen, wo man durch innere Behandlung oder durch viel weniger eingreifende Operationen die Heilung hätte herbeiführen können. Aus demselben Grunde sind Amputationen, Exarticulationen und Resectionen vorgenommen worden, und was das Schlimmste ist, wenn die Natur der Krankheit nicht nachher noch erkannt wurde, dann folgten der Operation mehr oder weniger rasch Recidive, welche zu neuen Operationen und schliesslich zu einem traurigen Tode führten. Ich betone hier nochmals meine Beobachtung, dass nach Exstirpation von Geschwülsten, welche mit erworbener oder erblicher Luës zusammenhängen, in der Regel bald Recidive auftreten, sodass diese Geschwülste als besonders bösartig erscheinen müssen, während eine energische innere Behandlung die Heilung herbeiführen kann.

Andere Geschwülste hätten durch viel geringere operative Eingriffe geheilt werden können, z. B. Cysten durch Punction und Injection von reizenden Substanzen oder durch Resection ihrer Wandungen; andere durch Ausschabung mit nachfolgender Cauterisation, wie z. B. die tuberculösen und actinomykotischen Geschwülste, noch andere, wie die entzündlichen Spontanfracturen durch Ruhe, Abwarten und Streckverbände.

Es fragt sich nun, ob und auf welche Weise wir uns vor solchen Irrthümern der Diagnose schützen können. Offenbar rühren die meisten Irrthümer daher, dass man zu wenig bemüht gewesen ist, schon vor der Operation die richtige Diagnose zu stellen. Was hilft es, dass nach der Exstirpation einer Geschwulst von dem Chirurgen oder dem pathologischen Anatomen festgestellt wird, um welche Art von Geschwülsten es sich gehandelt hat, wenn schon die Zunge weggeschnitten oder das Bein amputirt worden ist.

Virchow hat schon vor vielen Jahren und neuerdings²⁹ wieder es betont, dass man sich mit der klinischen Diagnose nicht begnügen dürfe, sondern dass in allen Fällen die anatomische Diagnose, d. h. die histologische Untersuchung der Geschwulst hinzukommen müsse. Ob die anatomische Diagnose vom Chirurgen selbst oder vom Anatomen gestellt wird, ist gleichgiltig. Vom Chirurgen muss verlangt werden, dass er im Stande ist, auch die anatomische Diagnose zu stellen.

Dass aber dieselbe in vielen Fällen ihre grossen Schwierigkeiten hat, ist bekannt genug und namentlich auch von Virchow wiederholt hervorgehoben worden.

Oft ist es allerdings ausreichend, ein kleines Fragment von der Oberfläche einer ulcerirenden Geschwulst behufs der Untersuchung wegzunehmen, und ein Blick ins Mikroskop genügt, die krebssige Natur der Geschwulst festzustellen.

Wenn aber eine solche Untersuchung ein negatives oder zweifelhaftes Resultat giebt, wenn wir z. B. nur Granulationsgewebe finden, dann dürfen wir nicht die Hände in den Schooss legen, sondern die Untersuchung muss solange wiederholt werden, bis wir entscheidende Bilder bekommen.

Ich selbst habe mir von jeher grosse Mühe gegeben, in allen Fällen, wo es sich um grosse und verstümmelnde Operationen

handelte, die Diagnose vor denselben festzustellen. Ich habe seit vielen Jahren schon die von Middeldorpf³¹ eingeführte Akidopeirastik zu verwerthen mich bemüht und in manchen Fällen sehr wichtige Aufschlüsse dadurch erhalten.

Schon im Jahre 1853 gelang es mir auf diese Weise ein Cholesteatom des Stirnbeins³² zu diagnosticiren und mich und meinen Lehrer Stromeyer davor zu schützen, die Exarticulation des Oberschenkels wegen des oben erwähnten Falles von Spontanfractur vorzunehmen.

Ich habe seitdem die Methode weiter auszubilden gesucht und eine Reihe von Instrumenten machen lassen (s. S. 14), mit Hülfe deren es leicht gelingt, aus grösserer Tiefe grössere Gewebstücke hervorzuholen.

Dies giebt bisweilen sicheren Aufschluss über die Natur der Geschwülste. Aber in manchen Fällen lässt uns auch diese Untersuchungsmethode im Stich, und in solchen habe ich in den letzten Jahren, unter dem Schutze der Antiseptik und der künstlichen Blutleere nicht gezögert tief in die Geschwülste einzuschneiden und grössere Scheiben behufs der mikroskopischen Untersuchung herauszunehmen (Probeschnitt).

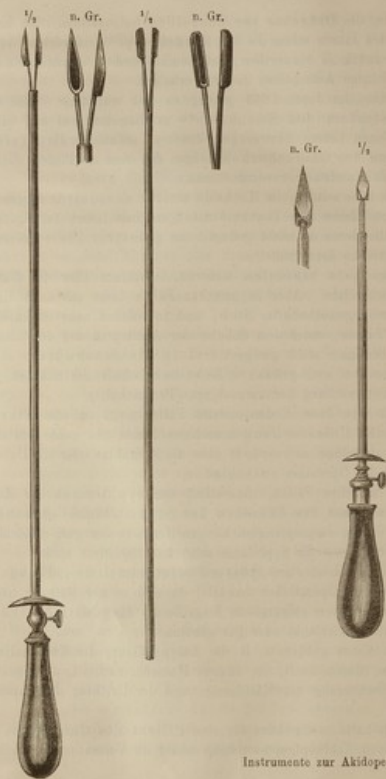
Ich habe dann in den meisten Fällen sogleich die mikroskopische Untersuchung vornehmen lassen und nach dem Ergebniss derselben mich sofort über die Vornahme oder die Unterlassung der Operation entschieden.

In manchen Fällen, namentlich von Syphilomen der Maskeln, ist schon das Aussehen der Schnittfläche entscheidend, da die eingesprengten käsigen Herde in der gelb-röthlichen Geschwulstmasse für Syphilome sehr charakteristisch sind.

Wo es sich aber um grössere verstümmelnde und lebensgefährliche Operationen handelt, da sind meiner Meinung nach auch viel grössere chirurgische Eingriffe als diagnostische Voroperationen erlaubt oder gar geboten.

Zu diesen gehören z. B. die Laryngofissur, die Trepanation, der hohe Blasenschnitt, der äussere Harnröhrenschnitt, die gewaltsame Erweiterung des Mastdarmes und der Urethra, die Laparotomie.

Ich halte es durchaus für eine Pflicht des Chirurgen, in Fällen von Kehlkopfgeschwülsten, sobald die Vermuthung gerecht-



Instrumente zur Akridopeirastratik.

fertigt erscheint, dass es sich um Krebs handeln könne, welcher nicht mehr vom Munde aus gründlich und in kurzer Zeit extirpiert werden kann, sofort den Kehlkopf zu spalten, um sich Gewissheit über die Natur des Uebels zu verschaffen. Und die Eröffnung der Unterleibshöhle wird ja in jetziger Zeit von allen Chirurgen ohne Bedenken vorgenommen in Fällen, wo es sich um die Diagnose einer lebensgefährlichen Erkrankung handelt.

In solchen Fällen nun, wo die wiederholte anatomische Untersuchung ein negatives Resultat ergibt (z. B. nur Granulationsgewebe), da ist die Vermuthung, dass es sich um eine löstische Erkrankung handle, gerechtfertigt, und in solchen kann eine anti-syphilitische Kur die Diagnose feststellen.

Da dieselbe aber keineswegs immer, wie vielfach angenommen wird, in wenigen Tagen sich wirksam erweist, sondern bisweilen erst nach Monaten und nach Anwendung verschiedener Mittel, so muss eine solche Kur mit Beharrlichkeit und Entschiedenheit fortgesetzt werden. In manchen Fällen, in denen man Jodkali allein ohne Erfolg angewandt hatte, bewirkten noch Quecksilberkuren, in anderen aber Holztränke (Zittmann) und Arsenikkuren vollständige Heilung.

Ich habe unter solcher Behandlung viele Fälle von Muskelsarkom verschwinden sehen und eben daraus die Ueberzeugung gewonnen, dass es sich in den meisten, vielleicht in allen Fällen von Muskelsarkom nur um Syphilome handelte, und ähnliche Erfahrungen über die Wirkung dieser Mittel haben mich in der früher ausgesprochenen Vermuthung bestärkt, dass auch viele der sogenannten recidivirenden Sarkome und Fibrosarkome, sowie die malignen Neurome löstischer Natur sind.²⁴

Durch die Untersuchung des Körpers nach dem Tode ist man bisweilen, aber bei Weitem nicht immer im Stande, den Zusammenhang derartiger Neubildungen mit erworbener oder erbter Luës nachzuweisen, weil nicht immer die inneren Organe in charakteristischer Weise erkrankt sind, und bekanntlich die pathologische Anatomie der Syphilis noch keineswegs als abgeschlossen betrachtet werden kann.²⁵

Als verdächtig müssen, ausser den gummösen Entzün-

dungsherden²⁶ (in Leber, Lunge, Darmkanal u. s. w.) und Geschwüren, vor Allem die Erkrankungen der Gefässwände und des Herzens, sowie die amyloide Entartung²⁷ angesehen werden. (Taf. V, Fig. 8.)

Die Syphilidologen haben über das Vorkommen und die Häufigkeit der syphilitischen Geschwülste meist nur geringe Erfahrung, weil solche Fälle in der Regel nur dem Chirurgen unter die Hände kommen. Dieser aber vermag bisweilen die Natur des Uebels zu erkennen, wenn er sich mit dem Familienarzt in Verbindung setzt und scheinbar geringe Symptome zu entdecken und zu verwerthen versteht.

Bekannt ist, dass Syphilome bisweilen erst viele Jahre nach der Infection auftreten, ohne dass inzwischen andere Erscheinungen von Syphilis vorhanden gewesen sind. Auch können dieselben Jahre lang als Geschwülste bestehen, ohne zu ulceriren.²⁸

Da nun die Zunge vorzugsweise aus Muskelgewebe besteht, so kommen auch in derselben häufig Syphilome vor, und dasselbe gilt für die Lippen.²⁹ Ich habe mir deshalb für die Behandlung der Zungen- und Lippengeschwülste folgendes zur Regel gemacht:

Wenn die mikroskopische Untersuchung eines abgeschabten oder aus der Tiefe hervorgeholten Stückes den sicheren Beweis liefert, dass die Geschwulst ein Epithelkrebs ist (atypisches Durcheinanderwachsen zweier Gewebsarten, Epithelzapfen und -Perlen), dann nehme ich sofort die gründliche Exstirpation der Neubildung, am Liebsten die Exstirpation der ganzen Zunge sammt den ergriffenen Drüsen vor (Taf. V, Fig. 9a, b).

Finden sich Tuberkelknoten, Riesenzellen und Tuberkelbacillen, so schabe ich mit dem scharfen Löffel das meist weiche Gewebe aus und brenne den Grund der entstandenen Höhlung nachdrücklich mit dem Thermokauter.

Finden sich Strahlenpilze, dann werden nur die Granulationen ausgeschabt und die entstandenen Lücken mit Sublimatmull oder mit Borsäurepulver ausgefüllt.

Finde ich aber nur Granulationsgewebe (Spindelzellen, junges Bindegewebe und kleine Zellen), dann denke ich zunächst an Syphilom, auch wenn die genaueste Untersuchung des ganzen

Körpers und das Examen der Kranken keine Anhaltspunkte dafür giebt, und leite demnach eine energische und consequente antisiphilitische Behandlung ein. Oft heilen die Geschwüre dabei sehr rasch, aber bisweilen muss man diese Kur lange Zeit fortsetzen, auch wenn das Geschwür sich anfangs dabei verschlimmert. Es tritt dann bisweilen plötzlich ein Umschwung zum Besseren ein.

Während dieser Behandlung muss aber die anatomische Untersuchung an Stücken der Geschwulst von Zeit zu Zeit wiederholt werden, da es ja recht oft vorkommt, dass nach langem Bestehen eines ulcerirenden Syphiloms eine krebsige Umwandlung desselben eintritt.

Exstirpirt man aber Syphilome, weil man sie für Krebs hält, so folgen in der Regel, wenn auch nicht immer, sehr bald Recidive, Drüsenschwellungen und allgemeiner Marasmus, kurz alle Erscheinungen der Bösartigkeit, unter denen der Kranke schliesslich zu Grunde geht.

Ueberhaupt deckt sich ja der Begriff der Bösartigkeit³⁰ keineswegs mit der anatomischen Structur der Krebse und Sarkome, und die Eintheilung der Geschwülste nach Gut- und Bösartigkeit hat, wie Virchow sagt, keinen höheren wissenschaftlichen Werth, als ein botanisches System, welches die Pflanzen in giftige und ungiftige eintheilt.

Als Kennzeichen der Bösartigkeit galten bisher:

Die Neigung zu raschem und unbeschränktem Wachsthum, zur Verschwärung und zur Wiederkehr nach der Operation; ferner die Miterkrankung der Lymphdrüsen und zuletzt des ganzen Körpers durch Metastasen. Endlich die Unheilbarkeit durch Anwendung innerer Mittel.

Aus dem anatomischen Befund lässt sich zwar bisweilen, aber bei Weitem nicht immer ein Schluss ziehen auf die Bösartigkeit einer Neubildung.

Es giebt verschiedene Stufen der Bösartigkeit bei den verschiedenen Geschwulstarten. Wie gross ist nicht der Unterschied in der Bösartigkeit des Verlaufes zwischen Hornkrebsen, weichen und melanotischen Krebsen, zwischen Riesenzellsarkomen, periostalen, melanotischen Sarkomen und Markschwämmen.

Nicht minder verschiedenartig ist der Verlauf bei den verschiedenen Formen der Tuberkulose. Manche bestehen während des ganzen Lebens, ohne andere als oberflächliche Zerstörungen hervorzubringen. Andere z. B. gewisse Zellgewebstuberkulosen befallen gleichzeitig verschiedene Körperstellen, bringen rasch grosse Zerstörungen hervor und kehren mit grosser Hartnäckigkeit wieder, auch nach der gründlichsten Ausrottung. Die ausgebreitetste Bauchfelltuberkulose heilt bisweilen nach der blossen Besichtigung durch die explorative Laparotomie.

Aber auch die Syphilome zeigen ähnliche Unterschiede. Bisweilen bleiben diese Geschwülste viele Jahre lang indolent, vergrössern sich langsam, ohne aufzubrechen, während ein anderes Mal dieselben rasch in Verschwärung übergehen und grosse Zerstörungen anrichten.

Ueberhaupt finden sich alle die Kennzeichen der Bösartigkeit, wie sie eben aufgezählt sind, auch bei den Syphilomen, mit Ausnahme des letzten, denn sie sind oft durch innere Mittel heilbar, heilen auch bisweilen von selbst (Spontanheilung) oder nach Einwirkung gewisser äusserer Reize (Erysipelas, Eiterung).

Ja auch bei den Tuberkulomen und selbst bei den Pilzgeschwülsten (Aktinomykose) finden sich bisweilen alle die genannten Kennzeichen der Bösartigkeit.

Dies Alles beweist zur Genüge, dass man die Bösartigkeit durchaus nicht als Eintheilungsgrund für die Neubildungen verwerthen kann. Ueber die Ursachen der Bösartigkeit aber wissen wir bisher so gut wie gar nichts. Vielleicht ergeben sich aus der Aetiologie der Geschwülste einige Anhaltspunkte.

Für die Aetiologie haben auch die bisherigen statistischen und klinischen Untersuchungen nur geringen Werth. Viel werthvoller sind bisweilen gründliche Beobachtungen von alten Haus- und Familienärzten. Bisweilen giebt auch ein einzelner gut beobachteter Fall einem jungen Anfänger die Gelegenheit, Licht über schwierige Punkte der Aetiologie zu verbreiten.

Die Statistik lehrt auch hier wieder nicht viel mehr, als was wir schon aus längerer Erfahrung wussten. Sie zeigt uns in

Betreff der Gelegenheitsursachen³¹ z. B., dass viele bösartige Geschwülste entstehen:

- 1) nach Verletzungen (Traumen verschiedener Art),
- 2) nach Reizungen verschiedenster Art, einmaligen sowohl als dauernden (Fremdkörper, scharfe Zähne, Gallensteine, Verbrennungen, Tabaks-, Russ- und Paraffinkrebse),
- 3) aus Narben aller Art (nach Verbrennung, Lupus, Decubitus, Exstirpation, in Amputationsstümpfen),
- 4) aus Geschwüren (alten Beingeschwüren, Lupusgeschwüren, syphilitischen, Magen-, Oesophagus-Geschwüren),
- 5) aus gutartigen Geschwülsten (Atheromen, Papillomen, Syphilomen, Warzen, Pachydermie),
- 6) aus chronischen Reizungszuständen der Haut und der Schleimhaut (Xeroderma pigmentosum, Seborrhoea senilis, Psoriasis, Leukoplakie, Ekzem).

Ueber die Häufigkeit solcher Gelegenheitsursachen gehen die Ansichten der verschiedenen Forscher ebenso weit auseinander, wie die Ergebnisse der statistischen Zusammenstellungen.

Aber die Statistik lehrt auch nicht, wie viele Menschen sich ähnlichen Reizungen aussetzen, ohne dass bösartige Geschwülste entstehen, und weshalb bei einem unter so vielen Tausenden die gereizte Stelle eine bösartige Beschaffenheit annimmt.

Wir erfahren aus der Statistik nichts über die Ursache, welche dem Bösartigwerden der gereizten Stelle zu Grunde liegt. Es muss eben noch etwas Anderes hinzukommen, ein tieferer Grund für die Bösartigkeit, und nach diesem hat man bisher vergebens gesucht.

Die alte Lehre von den Dyskrasien und Krasen wurde schon vor langer Zeit von Virchow gründlich widerlegt, welcher an die Stelle derselben die Praedisposition³² setzte, eine Anlage, welche in einer gewissen Schwäche der Gewebe bestehen soll.

Die Hypothese Cohnheim's³³ von der Entstehung der bösartigen Geschwülste aus zurückgebliebenen embryonalen Keimen hat sich für die Mehrzahl der Fälle als unhaltbar erwiesen.

Dass der Krebs eine Infektionskrankheit sei, durch Mikro-

organismen hervorgebracht, ist bisher nicht erwiesen, auch nicht sehr wahrscheinlich.²⁴

Auch die anderen Hypothesen über die Entstehung der Geschwülste (von Thiersch, Waldeyer, Boll u. s. w.²⁵) erklären nicht, weshalb auf dieselben Reize in unzähligen Fällen sich nicht ein Krebs entwickelt.

Alle Forschungen über die letzte Ursache der Geschwulstbildung kamen bisher immer auf die Annahme Virchow's zurück, dass es sich dabei um eine Schwäche, eine Herabsetzung der physiologischen Widerstandsfähigkeit gewisser Gewebe handle.

Da sich aber für die Entstehung solcher Schwäche in den meisten Fällen eine Ursache nicht nachweisen liess, so blieb nichts Anderes übrig, als eine erbliche Prädisposition anzunehmen, ohne dass man jedoch in vielen Fällen eine solche nachweisen konnte.

Die bisherige Statistik giebt auch über diese Frage wenig Aufschlüsse.

Winiwarter konnte in seiner gründlichen statistischen Arbeit nur in 6 pCt. der Fälle Erblichkeit des Krebses nachweisen, Lebert in 10 pCt. Paget²⁶ giebt an, dass er mit zunehmender Erfahrung zu der Annahme gekommen sei, dass in mehr als einem Drittel aller Fälle ein „ererbtes constitutionelles Element“ vorliege.

Im Ganzen finden sich in der Literatur doch nicht ganz wenige Beobachtungen, aus denen zweifellos hervorgeht, dass in gewissen Familien der Krebs erblich²⁷ und bei vielen Gliedern verschiedener Generationen zum Vorschein gekommen sei.

Aber derartige Beobachtungen werden meist nur von Familienärzten gemacht, können auch vielleicht aus gut geführten Familienchroniken entnommen werden.

Bei der Ermittlung der Anamnese, wie sie in den Kliniken üblich ist, erfährt man höchstens, ob der Vater oder die Mutter an ähnlichen Erkrankungen gelitten, und auch hier in vielen Fällen nur ganz Ungenügendes.

Ob aber in weiter zurückliegenden Generationen derartige Erkrankungen vorgekommen sind, darüber wissen die Kranken selbst meist gar nichts auszusagen. Ich bin aber der Mei-

nung, dass wir in unseren Forschungen weiter zurückgehen müssen, wenn wir über die Erblichkeit dieser Erkrankungen uns ein Urtheil bilden wollen.

Es ist ja allgemein bekannt, dass gewisse Eigenthümlichkeiten sich in den Familien oft durch viele Generationen hindurch vererben.

Auffallende Aehnlichkeiten der Gesichtszüge vererben sich nicht nur häufig vom Vater auf den Sohn, sondern kommen oft erst nach Ueberschlagung mehrerer Generationen wieder zum Vorschein.

Es vererben sich Muttermaler und Missbildungen aller Art oft auf viele Geschlechter.

Es vererbt sich die Anlage zu gewissen Krankheiten, zu Gicht, Rachitis, Diabetes, Hämophilie, Cataract, zu Hautkrankheiten (Eczema, Ichthyosis, Xeroderma), vor Allem aber, wie allgemein bekannt, zu nervösen und psychischen Erkrankungen, durch viele Generationen und oft, nachdem Zwischenglieder vollkommen frei geblieben waren (Atavismus). Die Lehre Darwin's beruht ja auf solchen Thatsachen.

Ich bin nun durch meine Beobachtungen zu der Vermuthung gekommen, die ich hier als Hypothese aufstellen will, dass in vielen Fällen die Entstehung von Geschwülsten, namentlich von Sarkomen, zusammenhänge mit einer von syphilitischen Vorfahren herrührenden Prädisposition, und denke ich mir den Zusammenhang folgender Massen:

Wenn es erwiesen ist, dass die Luës eine Neigung zu Wucherungen aus der Gruppe des Bindegewebes erzeugt und nicht selten noch nach langer Latenz sarkomatöse Geschwülste hervorbringt, und wenn es feststeht, dass Krankheitsanlagen sich durch viele Generationen auch mit Ueberschlagung einzelner Forterben können, dann kann man auch in solchen Fällen, in denen weder eine Infection des Kranken, noch eine Ererbung von Seiten der Eltern sich nachweisen lässt, auf frühere Generationen zurückgehen, um die Disposition zur Entstehung sarkomatöser Geschwülste zu erklären.

Nun ist es allgemein bekannt, dass seit undenklichen Zeiten in den verschiedensten Weltgegenden die Syphilis als Volkskrankheit geherrscht und die grössten Verheerungen angerichtet

hat.²⁵ Erst zu Anfang dieses Jahrhunderts wurden alle diese unter den verschiedensten Namen beschriebenen Krankheiten als Syphiloide, d. h. als theils erworbene und durch Ansteckung fortgeplante, theils aber ererbte Syphilis erkannt (Radesygo, Morbus Dithmarsicus, Pommerisches Uebel, jütändisches, lithauisches, curländisches, hessisches, kanadisches Syphiloid, Spirokolon (Griechenland), Krimskaja Bolesna (Krim), Yaws, Babas, Pians (Afrika), Sibbens (Schottland), Button Scurvy (Irland), Scherlievo (in Croatien), Mal di Fiume, Mal di Ragusa, Mal di Breno (adriat. Küste), Frenga (Serbien), Falcadina (Venedig), Boala (Siebenbürgen), Morbus Bruno-Gallicus (Brünn) u. s. w.)

Diese Krankheiten zeichnen sich aus durch fressende Geschwüre, welche aus Bindegewebs-Wucherungen der Haut (Knoten) entstehen.

Nachdem man diese Krankheiten zweckmässiger als früher mit antisiphilitischen Mitteln behandelte, verlor sich der endemische Character an den meisten Orten.

Da nun nicht anzunehmen ist, dass alle diejenigen Familien, in denen damals die Krankheit zum Ausbruch gekommen war, ausgestorben sind, so ist es nicht unwahrscheinlich, dass bei vielen Nachkommen derselben eine Anlage zur Entstehung von Bindegewebswucherung (Prädisposition zur Geschwulstbildung) zurückgeblieben ist, auch wenn dieselben scheinbar ganz gesund und kräftig sind.

Ich selbst habe mehrere Fälle von bösartigen Geschwülsten gesehen, in denen mir berichtet wurde, dass nicht die Eltern, wohl aber die Grosseltern an Geschwülsten gelitten hatten und daran gestorben waren.

Dass auch in unserer Zeit, namentlich in grossen volkreichen Städten, aber auch auf dem Lande, die Syphilis in allen Formen noch sehr verbreitet ist, sehr oft verkannt und unzweckmässig oder gar nicht behandelt wird und sich dann auf die folgenden Generationen vererben kann, bedarf kaum der Erwähnung.

Ob auch die Anlage zur Wucherung des Epithelgewebes (zu Carcinomen) in ähnlicher Weise zu erklären sein wird, muss weiteren Forschungen überlassen bleiben.

Bekannt ist, dass auch die Syphilis zu Wucherungen der

Epidermisgebilde Veranlassung geben kann (Condylome, Plaques, Psoriasis, Leukoplakie) und dass Wucherungen der oberflächlichen Epidermisschichten in hohem Grade erblich sind (Xeroderma, Psoriasis, Ichthyosis, Eczema).

Höchst merkwürdig sind in dieser Beziehung die Fälle von Xeroderma pigmentosum, von denen ich Ihnen hier einige Abbildungen zeige. (Taf. VI, VII).

Bei dieser Krankheit bilden sich an den Stellen der Haut, welche dem Reize des Lichtes ausgesetzt sind, zunächst Pigmentflecke, welche sich allmählig in weissglänzende Narben verwandeln. Im weiteren Verlaufe aber entstehen in diesen Narben Geschwülste, bald Krebse, bald Sarkome, welche ulceriren und grosse Zerstörungen anrichten, wenn sie nicht frühzeitig extirpiert werden. Die Krankheit ist entschieden erblich, kommt meist bei Kindern derselben Familien vor, und in manchen Fällen liess sich nachweisen, dass in früheren Generationen Syphilis oder Neubildungen vorhanden gewesen waren.²⁶

Näher auf die Behandlung des Krebses hier einzugehen, halte ich nicht für zweckmässig.

Die Oeffentlichkeit unserer Besprechungen hat das Missliche, dass im Publikum sich leicht Missverständnisse bilden, welche schwer wieder auszurotten sind.

Als ich vor 12 Jahren hier meine Bemerkungen über die Behandlung von bösartigen und durch das Messer nicht mehr operirbaren Geschwülsten gemacht hatte, habe ich nachher zahlreiche Vorfragen von Nichtärzten über meine Behandlung des Krebses erhalten. Ich habe immer nur geantwortet, was ich damals schon auf das Entschiedenste betonte:

Der Krebs ist heilbar, wenn er früh genug und gründlich genug mit dem Messer ausgerottet wird. Jedes Zögern ist für den Kranken verderblich.

Nur, wenn es zu spät geworden ist für die Operation, dann darf der Versuch gemacht werden, durch innere Mittel die Heilung herbeizuführen.

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Erklärung der Abbildungen auf Tafel IV, V, VI, VII.

Tafel IV.

Fig. 1. Syphilitische Geschwüre bei einem 42jährigen Manne, welche nach einem Trauma (Hammerschlag) entstanden sein sollten und, da jede Infection geleugnet wurde, für Krebs gehalten wurden.

Man hatte zuerst den Penis, und da sich rasch Recidive einstellten, nach einander das Scrotum sammt den Hoden und grosse Stücke der Bauchhaut extirpiert.

Vom Penis war nur noch ein kleiner Zipfel mit dem Rest der Harnröhre vorhanden, als er in die chirurgische Klinik aufgenommen wurde, die ganze Umgegend der Genitalien aber mit Narben und Geschwüren bedeckt.

Nach einer Schmierkur, bei welcher 415 Grm. grauer Quecksilbermilch verbraucht wurden, und Verbrauch von 400 Grm. Jodkali innerlich waren in Zeit von 3 Monaten sämtliche Geschwüre vernarbt.

Fig. 2. Ulcerirtes Syphilom der Zunge bei einem 76jährigen Manne, welcher in seinem 20. Lebensjahre (also vor 56 Jahren) durch einen Knecht seines Vaters syphilitisch inficirt gewesen war, während er selbst niemals sexuell sich inficirt haben, auch keine secundären Erscheinungen gehabt haben wollte.

Vor einem Vierteljahr war ihm ein Fremdkörper in den Kehlkopf gedrungen und hatte ihm beim Aushusten die Zunge verletzt. An dieser Stelle hatte sich bald eine Anschwellung gebildet, welche seit einiger Zeit ulcerirt war. Lymphdrüsen unter dem Unterkiefer waren geschwollen. Patient wurde mit der Diagnose Krebs in die Klinik geschickt.

Da wiederholte Untersuchung von Stücken der Geschwulst, auch von solchen, die aus grösserer Tiefe entnommen waren, keine krebssige Structur, sondern immer nur kleinzelliges Granulationsgewebe zeigte, so wurde die Geschwulst nur mit dem scharfen Löffel ausgeschabt und dann eine energische antisyphilitische Behandlung (Schmierkur und Jodkali innerlich) angewendet, bei welcher in Zeit von 4 Wochen das Geschwür vollständig vernarbt. Auch ist später kein Recidiv eingetreten.

Fig. 3. Ulcerirtes Syphilom der Unterlippe bei einem 58jährigen Manne, welches seit 3 Jahren bestanden, nachdem er sich vor 4 Jahren inficirt hatte. Pat. wurde zur Operation des „Krebses“ in die Klinik geschickt. Auch ich zweifelte Anfangs nicht daran, ein Krebsgeschwür vor mir zu haben. Da jedoch die mikroskopische Untersuchung keine krebssige Structur, sondern immer nur Granulationsgewebe ergab, so wurde zunächst nur Jodkali in grossen Dosen gegeben. Nach 4 Wochen war das Geschwür vernarbt, die Schwellung fast ganz verschwunden.

Nach einem Jahre kam er wieder in die Klinik mit einem ganz charakteristischen ulcerösen Syphilid am Rücken und an den Armen, von welchem er durch eine energische Schmierkur geheilt wurde.

Fig. 4. Syphilom bei einer 42jährigen Frau, seit einem halben Jahre ulcerirt, für Krebs gehalten. Syphilis gelüftet. Mikroskopische Untersuchung ergiebt nur Granulationsgewebe. Heilung in 4 Wochen durch Jod und Schmierkur. Später wurde in Erfahrung gebracht, dass der Mann an Syphilis gelitten.

Darauf kam die 13jähr. Tochter mit einer syphilitischen Caries des Ellenbogengelenkes in die Klinik. Dieselbe war bereits anderswo erfolglos reseziert. Das Recidiv der Caries wurde durch eine Jodkalikur geheilt.

Tafel V.

Fig. 5. Wucherndes tuberculöses Geschwür der Zunge bei einem 56jährigen phthisischen Manne, seit 6 Wochen entstanden. Nach Ausschabung mit nachfolgender Thermokauterisation geheilt entlassen.

Fig. 6. Tuberkulom der Zungenspitze bei einem 78jährigen Manne, seit 7 Wochen ulcerirt in Folge Reizung durch einen scharfen Eckzahn. Extirpation der halben Zunge, geheilt entlassen nach 14 Tagen. (Für Adenom der Zungenschleimdrüsen gehalten.)

Fig. 7. Tuberkulom der Zungenspitze bei einem 71jährigen, sonst ganz gesunden Manne, seit 10 Wochen ulcerirt. Kellerektion der Zunge. Nach 10 Tagen geheilt entlassen.

Fig. 8. Grosses Krebsgeschwür, aus einem Syphilom entstanden bei einem 52jährigen Manne, der nach der operativen Entfernung an Pericarditis starb. Bei der Section fanden sich zahlreiche Spuren

alter Syphilis: Lebernarben, Exostosen, amyloide Degeneration der Unterleibsorgane.

Fig. 9a und b. Epithelkrebs der Zunge. Recidiv nach einer früheren unvollständigen Excision. Exstirpation der ganzen Zunge bis an die Epiglottis. Pat. lebte noch 10 Jahre ohne Recidiv und starb dann an Apoplexie.

Tafel VI.

Fig. 10. Xeroderma pigmentosum bei einem 11jährigen Knaben, im 2. Lebensjahre entstanden. Epithelkrebs des Ohres, der Nasenspitze und der Lippen, Granulationswucherungen an den Augenlidern, geheilt durch Excision.

Tafel VII.

Fig. 11. Xeroderma pigmentosum bei dem 12jährigen Bruder des Vorigen. Epithelkrebs der Wangen geheilt durch Excision.

Fig. 4

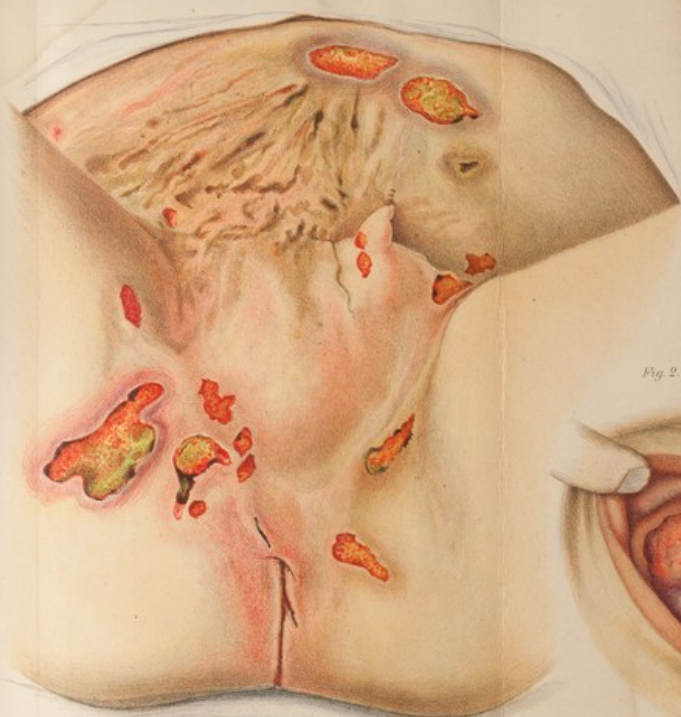
Taf. IV



Fig. 3

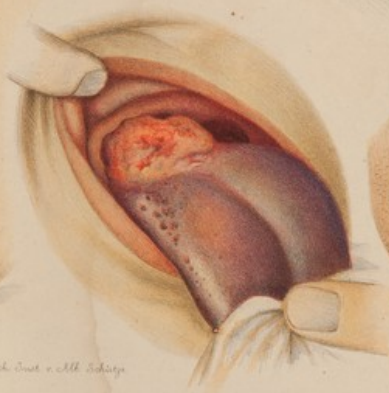


Fig. 1



v. Langenbeck's Archiv Bd. XXX.

Fig. 2.



Chirurgisch. Inst. v. Hb. Schütz.

Fig. 4



Taf. IV



Fig. 3



Fig. 8

Taf. V.



Fig. 5.

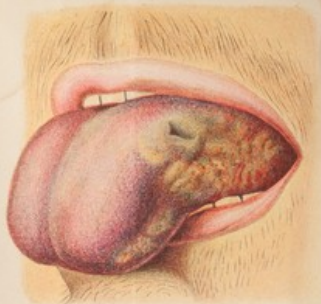


Fig. 7.



Fig. 6.



Fig. 9a.

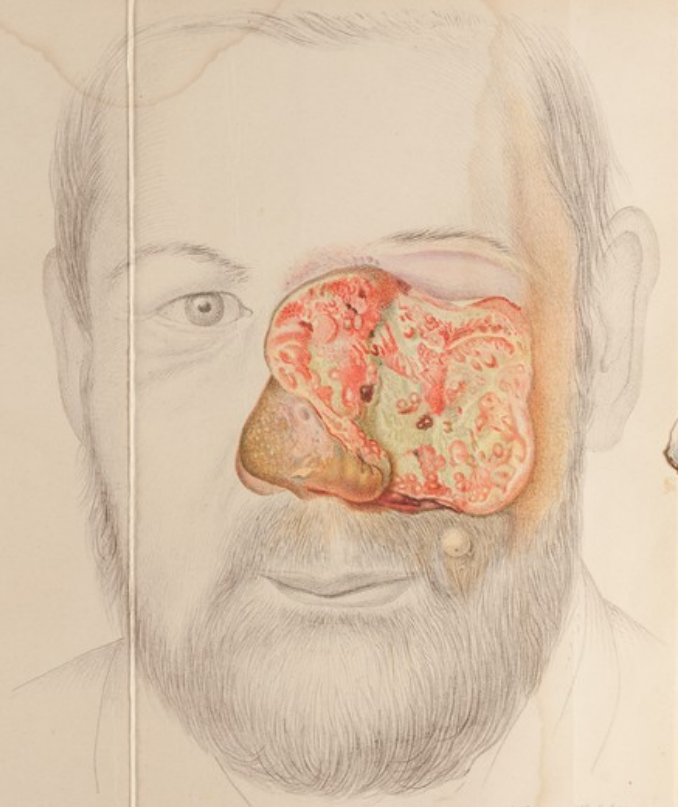


Fig. 9b.



Fig. 8.

Taf. V.







Library. Table

NOTES ET IMPRESSIONS

DE LA

GUERRE TURCO-GRECQUE

EN 1897

PAR

HANS DAAE

MÉDECIN-MAJOR DE 1^{ère} CLASSE
DE L'ARMÉE NORVÉGIENNE,
CHRISTIANIA

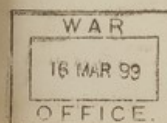
*Received
14th March*



CHRISTIANIA

IMPRIMERIE CENTRALE

1899



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Si les chrétiens tâchaient d'observer le commandement le plus important de leur religion, toute guerre disparaîtrait de la terre. Elle ne pourrait plus éclater, car sa cause fondamentale: la haine, n'existerait plus; à sa place on verrait l'amour du prochain. La guerre abolie, il n'y aurait plus ni privations, ni tourments. Tous les pauvres qui soupirent sous le joug des impôts excessifs en seraient libérés, les progrès qu'empêchent des armements continuels, auraient leur libre cours, toutes les forces vives gaspillées par l'éducation militaire, seraient utilisées pour le bonheur de l'humanité.

Malheureusement, la paix éternelle n'est encore qu'une belle chimère; elle n'appartient pas à la vie réelle, car le principe de la vie réelle, c'est le combat: le combat de la vie et le combat de la mort. Celui qui n'aura pas vaincu son ennemi sera écrasé. Tous vont en avant, les hommes demandent toujours davantage. Toute victoire entraîne une perte et le succès est inséparable du malheur; le combat s'acharnera toujours davantage, et le nombre des malheureux, de ceux qui perdent, augmentera de jour en jour. Voilà le principe de la vie!

Il y en a beaucoup qui raisonnent ainsi: la vie d'un homme est une lutte continuelle du berceau jusqu'au tombeau, une lutte où il gagne et où il perd au hasard de la fortune; de même, la guerre est-elle nécessaire au développement des nations, des races et des différents ordres religieux? La vie de l'individu est une miniature de la société entière.

Si ce raisonnement est juste, la paix éternelle ne sera jamais réalisée. Mais il y a heureusement bien des pronostics qui nous prédisent que ce temps-là n'est déjà pas si loin. Nous apercevons les premiers rayons de l'aurore annonçant le jour brillant qui répandra le bonheur et les bienfaits de la paix parmi les hommes.

Nous avons vu de nos jours fonder une association internationale dont le but est de secourir les soldats blessés, en renforçant autant que possible l'élément humain de la guerre. Tous les pays civilisés ont convenu de faire valoir, dans la mesure du possible, l'amour du prochain à la guerre. Mais cette prophétie de la paix éternelle ne

s'accomplira certes pas de si tôt. L'humanité subira bien des malheurs avant que les champions de la paix perpétuelle l'aient emporté. Mais quand tous les chrétiens essaieront d'obéir au premier commandement de la religion, à l'évangile de l'amour, la paix sera certaine. Et ils le voudront, tous, sans exception. Tous veulent la paix, la paix pour tout ce qui existe au monde. Le plus puissant et le plus humble en sont d'accord, les assemblées nationales et les princes régnants ne se lassent pas de nous assurer que la paix entre les peuples est leur but unique. Espérons qu'ils atteindront ce but plus facilement qu'ils ne semblent pouvoir le faire à présent. Nous espérons que les efforts désintéressés de tous les braves gens qui travaillent pour ce grand but, s'uniront, et que le résultat en sera une force irrésistible qui consacra la paix.

A l'avenir de nous montrer si cette force dérive de la crainte d'être vaincu ou de nobles sentiments. A présent c'est malheureusement la crainte de la puissance du voisin et la conscience de leur propre faiblesse qui semblent être les éléments prépondérants parmi les nations. On considère généralement les efforts de ceux qui sont enthousiasmés pour la paix comme de vaines aspirations d'idéalistes et de visionnaires; ces deux tendances qui recherchent une paix constante seront, espérons-le, couronnées de succès.

Avant que ce but soit atteint, c'est le devoir de tous les hommes d'adoucir les terreurs de la guerre. C'est notre devoir de porter secours lorsque le malheur frappe notre prochain dans la lutte pour l'existence, à plus forte raison devons-nous le faire quand le combat des peuples, la guerre, fait tomber son avalanche de malheurs sur les hommes. C'est ce sentiment de responsabilité qui dans tout le monde civilisé a créé, pour chaque métier qui peut amener des accidents, des sociétés organisées qui tendent vers le même but: celui d'empêcher les accidents de se produire et de remédier aux accidents autant que possible. Ainsi, afin de réduire les calamités de la guerre, surtout en ce qui concerne les blessés et les prisonniers, les puissances civilisées sont-elles tombées d'accord sur les statuts de la convention de Genève et la plupart des hommes civilisés se sont réunis sous l'enseigne de la Croix-Rouge. Il n'y a pas eu, en ce siècle, de plus grand bienfait envers le prochain que la création de la Croix-Rouge; aucun dévouement affectueux pour les malheureux ne peut égaler son activité toujours croissante. Personne n'a su à un plus haut degré que Henri Dunant éveiller ce qu'il y a de bon dans les hommes. Sans lui les terreurs de la guerre eussent été encore plus grandes, et sans lui la paix éternelle

serait encore plus éloignée. Le commandement qui nous enseigne l'amour du prochain est devenu une réalité par son labeur.

Henri Dunant écrivit en 1859 un petit livre intitulé: «Un souvenir de Solferino». Il communique dans ce livre quelques impressions et observations personnelles de la bataille de Solferino. Il nous décrit l'état lamentable des soldats d'une manière si éloquente que la cruauté des hommes nous fait frémir et la lecture des différentes parties du livre nous pose irrésistiblement la question: «Comment empêchera-t-on ces crimes terribles envers les fils blessés de la patrie?» et quand Dunant, à la fin du livre, exhorte à la fondation de sociétés privées pour porter, avec l'assistance volontaire, le secours que l'Etat n'est pas à même de donner, il ne fait que formuler la pensée que soulève la lecture du livre. Son livre fut un mot d'ordre pour ses contemporains. Par son travail infatigable pour l'oeuvre (j'y reviendrai peut-être plus tard), il réussit à faire convoquer à Genève, sa ville natale, un congrès auquel la plupart des pays européens envoyèrent des délégués. Le congrès eut lieu les 26-29 octobre 1863. Le 8 août 1864 fut fondée la Convention de Genève. Elle stipule: Tous ceux qui soignent et traitent les blessés et les malades à la guerre, la maison où se trouvent les blessés et enfin les blessés eux-mêmes sont comme des êtres sans défense, sous la loi de la miséricorde. Il est défendu de tirer sur ceux qui sont neutres. Et le service de santé de n'importe quelle armée est tenu de soigner l'ennemi comme son ami. La convention vient aussi en aide aux prisonniers de guerre. La marque commune des services de santé de tous les pays est la croix rouge sur fond blanc; pour la Turquie c'est un croissant rouge sur fond blanc. Ces résolutions humaines sont maintenant adoptées de tous les Etats européens, des Etats-Unis, de l'Amérique du Nord, du Japon etc. La Norvège a adopté la convention de Genève en 1863. Le roi Oscar II a toujours encouragé le travail de Henri Dunant et les résultats qu'il a donnés. Avant son avènement, alors duc d'Ostrogothie, il a, un des premiers, protégé Henri Dunant, quand parut son livre, avant la création de la convention de Genève. Dunant est le père et le fondateur de «la croix rouge»; c'est lui qui en travaillant le plus pour sa création est le promoteur de la convention de Genève. La Croix-Rouge est une association dont le but est de secourir les soldats blessés par l'assistance volontaire. Elle a des sections dans tous les pays civilisés, chacune avec sa propre administration et chaque section a voix au comité central de Genève. L'enseigne de l'association est une croix rouge sur

fond blanc et sa devise est: *inter arma caritas*. La Croix-Rouge est internationale. La convention de Genève n'a pas de rapport direct avec la Croix-Rouge; elle contient simplement une série de règlements dont le but est de remédier aux malheurs de la guerre et qui ont été adoptés par les gouvernements des pays civilisés. Mais l'enseigne, la croix rouge sur fond blanc, et le but de l'oeuvre sont les mêmes pour l'Association de la Croix-Rouge et pour les armées des pays qui ont adopté la convention de Genève.

On serait porté à croire qu'une association telle que «la Croix-Rouge», qui embrasse tous les hommes civilisés du monde entier, fût capable de tout, lorsqu'il s'agit de venir en aide aux blessés à la guerre. On serait porté à croire qu'une association qui compte tant d'adhérents distingués pût porter secours à tous les blessés, soit en encourageant, par son propre exemple glorieux ou par ses appels directs, tous les pays civilisés à trouver les moyens d'adoucir les fléaux de la guerre, soit en suppléant par ses propres ressources à ce que le soin des blessés laisserait à désirer de la part de l'Etat.

Les pays qui ont adopté la convention de Genève, jouissent de ce fait des droits qu'elle accorde, mais ils assument en même temps la responsabilité de prendre soin des blessés. On devrait donc croire que ces pays ont un service de santé bien organisé, qu'ils ont veillé et à l'armée et à «la Croix-Rouge». Et si le service de santé militaire et la section de la Croix-Rouge d'un pays étaient insuffisants pour porter secours aux blessés, on devrait pouvoir compter que les soldats blessés seraient soignés quand-même; car la Croix-Rouge est internationale.

Aussi vrai que l'amour du prochain, la compassion dans le malheur, le besoin de venir en aide aux souffrants sont des qualités humaines et aussi vrai que ces qualités constituent la base de la Croix-Rouge, aussi vrai la Croix-Rouge cherchera-t-elle à aider tous ceux qui souffrent. Religion, race, nation, peu importe; ce n'est pas la religion, la race, la nation qu'on veut aider, c'est l'homme — c'est le moi vivant dont on veut apaiser les souffrances.

C'est ainsi que je raisonnais quand je me suis embarqué, l'été dernier, pour le théâtre de la guerre turco-grecque. Je voyageais aux frais de l'état novégien; mes compagnons étaient M. von Munthe af Morgenstjerne, capitaine d'état-major général, et M. Thaulow, médecin-major de la marine. Nous fumes toujours ensemble et partageâmes la bonne et la mauvaise fortune.

J'étais persuadé que je verrais de la misère: c'est là la guerre; mais je croyais aussi que la chirurgie moderne, le matériel nouveau de transport et des médecins capables seraient à même d'y porter remède. Avant mon départ j'avais vu dans les journaux que M. Edhem Pacha avait bien mérité de l'organisation du service de santé et de l'intendance de l'armée turque; c'est pourquoi je me décidai à aller en Turquie. Je savais que l'armée turque avait été modernisée par des officiers allemands, ou du moins, sous l'influence prépondérante de la Prusse, de sorte qu'il y avait lieu de croire que le service de santé turc avait également été organisé sur le pied allemand. J'espérais voir un service de santé moderne comme celui des allemands, fonctionnant dans un terrain qui ressemblait au sol de la Norvège, et j'espérais faire des expériences dont pût profiter le service de santé de notre pays. Celui-ci repose sur le système allemand et je pensais qu'il ne serait pas difficile de se mettre au courant du fonctionnement du service turc.

Je fus, par irade impériale, attaché à l'état-major d'Edhem Pacha, qui devait se trouver à Larisse; j'espérais que j'aurais là la meilleure occasion d'étudier de près l'organisation et le mécanisme du service de santé turc. M. le Dr. Thaulow et moi étions, je crois, les seuls médecins militaires étrangers qui prenaient part à la guerre du côté turc. Il est inutile de faire remarquer que toute sympathie ou antipathie pour l'un ou l'autre des pays belligérants, était écartée de ma pensée. Mon seul but était d'apprendre le plus possible. Partout où j'allais on me faisait la réception la plus amicale. Ce bon caractère, ces qualités excellentes qu'à ma grande surprise j'ai trouvés chez les Turcs, sont des particularités nationales de ce peuple; j'en ai fait l'expérience personnelle pendant mon long voyage à travers la Turquie et ma bonne opinion a été corroborée par les conversations avec les Turcs que j'ai vus sur ma longue route de Constantinople par Nisch à Salonique. De là j'ai pris le chemin de fer à Sorovitsch et puis je suis allé en voiture à Dhomokos.

Il arrive rarement que l'espoir de toute la grande Europe soit déçu en si peu de temps que lors de la dernière guerre, que la sympathie se soit refroidie et que l'antipathie ait disparu si vite. Au commencement de la guerre — c'était vers le 15 avril — la sympathie de l'Europe entière, dans tous le cas de la Norvège, était du côté de la Grèce. Quelques-uns qui professaient, ici ou dans d'autres pays, un peu d'amitié pour les Turcs, étaient considérés comme des hérétiques. Mais au milieu de Mai les sentiments étaient

tout autres. Les Grecs avaient laissé voir leurs mauvaises qualités et les Turcs avaient démontré que, bien qu'ils fussent musulmans, ils étaient de braves gens. Personne ne doutait, même avant la déclaration de la guerre, que les Turcs ne fussent les meilleurs guerriers. Ils en ont fait preuve souvent et c'est un fait incontestable qu'on ne trouve nulle part de meilleurs soldats. Mais cette férocité qu'on imputait aux Turcs et l'anxiété pour le sort de ce petit peuple chrétien, qui était là comme l'avant-garde de la civilisation, et qui osait braver «les barbares», ces sentiments là évoquaient la sympathie pour la Grèce et la prévention contre les Turcs.

On savait bien d'avance qu'il y avait beaucoup de choses véreuses en Grèce, que la discipline militaire était presque inconnue, que les rapports entre les officiers eux-mêmes étaient mauvais et que les finances du pays étaient en désordre; mais on croyait pourtant que l'inertie des Turcs, leur déplorable situation financière et leur organisation militaire inconnue, et par là jugée désordonnée, mettraient les Turcs dans une position qui serait aussi défavorable que celle des Grecs.

La guerre est finie et nous savons comment il en a été. Nous savons que la Turquie a surpris le monde par sa mobilisation moderne, par l'ordre qui régnait dans les rangs des troupes, par leur excellente organisation militaire — et par toute une longue série de victoires. Ils avançaient lentement, mais sûrement de Melune par Larisse et Pharsalos à Dhomokos, de là par Velestinos à Halmyros. Quant aux Grecs c'était tout le contraire. A l'heure qu'il est l'Europe est remplie d'admiration et de sympathie pour l'armée turque qui, par cette guerre, a prouvé son droit d'existence, ce dont on doutait auparavant. Les sentiments à l'égard de la Grèce se sont refroidis; il faut espérer que les Grecs feront revivre les sympathies.

C'était la «férocité» des Turcs qui avait suscité l'antipathie contre eux. Les rapports sur la guerre russo-turque avaient montré que les Turcs torturaient leurs ennemis blessés et profanaient leurs corps de la manière la plus révoltante. On savait qu'ils venaient de massacrer des milliers d'Arméniens inoffensifs, qu'ils avaient torturé et violé leurs femmes et leurs filles. Rien de plus naturel qu'on craignît de pareilles horreurs dans la guerre qui s'engageait. On était certain que les Grecs ne feraient rien de semblable. On savait aussi que les Grecs avaient songé d'avance à leurs blessés, que leur armée était pourvue d'un service de santé organisé, et on présumait que rien de cela n'existait chez les Turcs.

Tout le monde connaît que la Turquie possède une grande armée, bien équipée. L'empire est divisé en 6 ordus, de 4 corps d'armée chacun, soit 24 corps d'armée. Lobell (1896) suppose que la Turquie, en cas de guerre générale défensive, pourrait en 2 ou 3 mois mobiliser 400,000 hommes et qu'elle pourrait, si la campagne se prolongeait, mettre sur pied 400,000 autres.

Leurs armes sont assez bonnes. L'infanterie est pourvue de fusils de 11.5 mm, 9.5 mm et 7.65 mm, en tout un million de fusils avec de grands arsenaux pourvus de munitions. L'artillerie possède des canons Krupp, 9 cm, pour l'artillerie de montagne, 8 cm pour l'artillerie à cheval et 7 cm pour l'artillerie à pied. La cavalerie a le sabre et la carabine, quelques régiments ont la lance de modèle allemand.

Si le service de santé se trouvait sur le même pied d'égalité que les corps combattants, il devrait être très considérable et si son matériel était proportionné de même, la qualité devrait en être excellente.

En avançant vers le front de bataille j'avais le temps de méditer au fonctionnement du service de santé turc; quel était son matériel? Quelle sorte d'opérations pratiquait-il, quels pansements employait-il? etc. Je me réjouissais d'avance de trouver la solution de tant de questions sur les effets des armes à feu modernes. J'espérais que ma position d'attaché à l'état-major d'Edhem Pacha me permettrait d'accompagner partout le médecin en chef de l'état-major, que je pourrais inspecter tout et étudier personnellement les tactiques diverses du service de santé. Je trouvais si naturel que tout blessé fût soigneusement pansé et traité que je n'avais pas le moindre doute à cet égard, car bien que je fusse en Turquie, j'étais dans un pays ayant adopté la convention de Genève, il y a environ 30 ans, et dans un pays où il existait une section de la Croix-Rouge.

En avançant par Melune et Tyrnovo à Larisse je m'imaginai l'activité du service de santé dans ses différentes phases. Je fis à Melune la connaissance d'un colonel turc qui m'expliqua toutes les phases des derniers combats à partir du moment où les Turcs s'étaient trouvés dans la plaine au nord de Melune jusqu'à celui où ils avaient gagné la crête et chassé les Grecs. Il me raconta à grands traits comment les Turcs avaient avancé et quelle résistance ils avaient rencontrée. De la crête de Melune jusqu'à Tyrnovo on pouvait facilement se figurer comment les Grecs avaient arrangé les formations du service de santé pendant la retraite successive de

Melune à Tyrnovo et ensuite à Larisse. On pouvait se forger une idée des forces des Grecs dans leurs différentes positions et une idée de la manière dont une division de la santé, correspondante aux forces des Grecs, s'était établie sous des conditions ordinaires. Dans les champs on avait creusé des tranchées considérables et sur toutes les hauteurs on avait construit de longs murs de pierre, très bas, pour protéger l'infanterie.

Maintenant la paix et la tranquillité régnaient partout; il n'y avait que les tranchées et les murs qui indiquaient que la guerre avait passé par là, tandis que les longues colonnes du train des équipages prouvaient que le pays au sud était ravagé par la guerre.

Tyrnovo était abandonné, les maisons étaient détruites; quelques chats constituaient ses seuls êtres vivants. Une compagnie d'infanterie turque était de garde dans la ville.

Nulle part je n'avais encore aperçu le moindre signe d'un service de santé, ni parmi les régiments que je rencontrais, ni dans les villes que je traversais. Nulle part, je n'avais vu de moyens de transport pour les blessés et nulle part le croissant rouge. Il y avait bien à Elassona et à Servia de grands hôpitaux, mais ils étaient stationnaires et ne pouvaient par conséquent appartenir au service de santé de l'armée combattante. Ces deux hôpitaux étaient construits sur le même plan: Un long bâtiment de deux étages avec deux ailes flanquant une cour ouverte et carrée; très petites fenêtres, surtout dans les ailes.

Je n'avais non plus vu de transport de blessés. C'était peut-être de ma faute, n'ayant pas poussé mes recherches assez loin, ou peut-être par un pur hasard, n'en ayant rencontré aucun sur ma route. Le médecin en chef à Sorovitch m'avait bien dit qu'il attendait un transport de malades le jour suivant et je pris le seul chemin par lequel un tel transport pût arriver, mais je ne vis ni malade, ni blessé.

C'est en vain que je cherchais un endroit où la Croix-Rouge aurait pu établir une station, où les blessés auraient pu être soignés sur leur route pénible vers leur pays.

A quelque chose malheur est bon. Et je me faisais la réflexion que si je ne voyais pas un seul transport de malades, j'évitais au moins d'être spectateur des souffrances que devaient éprouver les malheureux sur ces routes lamentables. Car ce que nous nommons un mauvais chemin passe en Turquie pour un chemin excellent. Les Turcs construisent leurs routes, non pas pour la commodité du transport et avec le moins de pentes possibles, mais en droite

ligne sans se soucier du terrain. En outre elles sont escarpées, remplies de grandes pierres et creusées de trous, de sorte que c'est très désagréable, même pour un homme qui se porte bien, de s'y promener en voiture suspendue. Combien ne devraient pas souffrir des blessés par un transport dans des voitures, qui certainement étaient aussi primitives que celles des anciens Grecs. Elles sont basses et à deux roues. Les roues ne sont que des disques de bois à peu près ronds et, comme la graisse est chose inconnue, on entendait le fracas d'une telle voiture à longue distance. Elles étaient généralement attelées de boeufs qui marchaient très, très lentement. Était-il possible de transporter des blessés dans de telles voitures? Pour vous donner une idée de l'état des routes, je raconterai un petit incident de mon voyage. Ma voiture était un vieux landau ordinaire, attelé de trois chevaux et malgré les efforts des bêtes il était presque impossible de monter la pente au nord de Melune. Il fallait des coups de fouet, des cris et l'assistance de plusieurs hommes pour avancer. La route était couverte de si gros blocs de pierre que la voiture faillait verser à chaque instant. En même temps une voiture, attelée de boeufs essayait de se frayer un passage. C'était pitoyable de voir les efforts pénibles des pauvres bêtes.

Du côté grec de Melune les routes présentaient un aspect tout différent. Elles étaient commodes et unies comme celles d'Europe. D'où il était permis de conclure que les blessés grecs souffraient moins que les blessés turcs.

Avant d'arriver à Larisse, je rencontraï à la fin un transport de malades. Ceux-ci étaient placés 4 par 4 dans d'assez bons landaus, attelés de deux chevaux. Ils n'étaient que légèrement blessés et venaient d'être évacués de Larisse pour rentrer dans leur pays. Il n'était certainement pas très agréable d'être serré dans une voiture avec trois camarades, le bras blessé, ou de tenir en l'air une jambe fracassée pour faire place aux autres, mais c'était tout de même une surprise de voir des voitures suspendues et je faisais la remarque à mes compagnons de route que les moyens de transport n'étaient peut-être pas si mauvais que nous l'avions cru. Je fus pourtant bien vite désillusionné. Car ce que j'ai vu le lendemain défie toute description. Ma plume se refuse de faire le récit du terrible transport que nous avons rencontré et dont les horreurs ne s'effaceront jamais de ma mémoire. Je suis convaincu que tout le monde civilisé se récrierait d'indignation à une description détaillée de ces horreurs, qu'on demanderait à hauts cris de venir

en aide à ces pauvres Turcs mutilés, et que nous serions nous-mêmes rongés de remords, parce que nous n'avons pas fait de notre mieux pour les secourir quand il le fallait.

Dans une charrette à ridelles étaient entassés les blessés pêle-mêle. Ils étaient jetés dans la voiture, tels qu'ils avaient été trouvés sur le champ de bataille, sans pansement sur les blessures, sans bandage autour des membres fracassés. Il leur fallait rester dans les positions où ils étaient tombés dans la voiture. L'épuisement, les douleurs, la soif les avaient rendus apatiques. Les malheureux qui étaient couchés dans le fond de la charrette, avaient à supporter le poids des corps jetés au dessus d'eux. A travers les ridelles on voyait une main ou une figure, indiquant qu'il y avait des hommes couchés en bas.

Un cheval pouvait de la sorte transporter quantités de blessés. L'une après l'autre les voitures, ainsi chargées, passaient sur la route de Dhomokos à Pharsalos, une distance d'environ 25 km., par un soleil brûlant et une chaleur épouvantable. Mais la vie avait été bien dure pour ces malheureux pendant les dernières 24 heures, et ils supportaient le transport sans se plaindre.

Le sort des malheureux qui ne trouvaient pas de place dans les voitures et qu'on hissait sur des chevaux, n'était guère meilleur. Ils se cramponnaient là, pâles, penchés en avant, épuisés, plus morts que vivants. Un combattant conduisait le cheval, tandis qu'un autre de chaque côté essayait de relever le blessé quand il glissait en bas. C'est ainsi que furent transportés des quantités de blessés, la plupart peut-être des fantassins qui n'avaient jamais monté sur un cheval, même des soldats blessés de coups de feu à l'abdomen ou le fémur fracassé.

Ce n'est qu'une seule fois que j'ai vu employer un brancard. C'était à Dhomokos. Un officier supérieur, grièvement blessé, était couché sur un brancard, porté par ses fidèles soldats. Ils ne voulaient pas qu'il souffrît autant que les soldats et, afin de lui témoigner leur attachement, et leur respect, ils le portaient, eux-mêmes, jusqu'à Pharsalos. Ils étaient quatre, placés aux quatre côtés du brancard. Ils le portaient sur leurs épaules et marchaient au pas ordinaire, n'ayant pas appris la marche d'ambulance qui empêche le balancement désagréable du brancard, et ce mode de transport était certainement aussi pénible pour l'officier qu'un transport en voiture.

On n'entendait aucune plainte. Leur conduite était celle du soldat, du soldat turc. Il supporte la faim et le froid, il se bat et il tombe pour sa patrie, enthousiasmé de sa religion. Il n'est

pas accoutumé à recevoir des soins affectueux et supporte ses douleurs terribles sans gémir. C'est ainsi que souffre un homme. Mais les Turcs sont des hommes comme nous et s'ils supportent les souffrances et les privations mieux que nous, ce n'est pas une excuse pour ne pas les aider. Pourquoi ne les avons-nous pas aidés? Pourquoi n'y voyait-on pas la Croix Rouge? Il y avait bien là une section de l'expédition que la Banque Ottomane avait envoyée et qui était munie du croissant rouge. Elle travaillait on ne peut plus énergiquement sous les ordres de Mr. le Dr. Lardy, mais c'était tout-à-fait insuffisant pour la tâche énorme, de rassembler et de soigner tous ces blessés sur le champ de bataille. Cette section faisait les efforts les plus héroïques, aidée d'un petit détachement du service de santé turc. Mais combien restait à faire encore malgré tous leurs efforts! Et les pauvres blessés sur la plaine de Thessalie se seraient certainement montrés reconnaissants des soins affectueux qu'on aurait pu leur donner. Dans la section allemande de la Croix-Rouge à Yildis Kiosk, les pauvres Turcs ont fait preuve de leur caractère excellent. Il fallait voir l'amour enfantin et touchant qu'ils témoignaient aux gardes malades et la reconnaissance profonde avec laquelle ils recevaient chaque marque de pitié. Sur le champ de bataille ils ne recevaient pourtant aucun secours et ils mouraient comme des héros.

Mais quel aurait été le sort des blessés turcs, si les Turcs n'avaient pas été vainqueurs et si les Grecs n'avaient pas abandonné tout leur matériel en fuyant? Toutes les voitures qu'on employait étaient grecques; il n'y avait guère une seule voiture turque.

J'arrivai à Pharsalos le 18 mai, au matin. Au bout de la rue qui monte toute droite de la plaine et où se trouve la gare du chemin de fer, jusqu'à la ville, distante de 3 ou 4 kilomètres, nous aperçûmes une maison en briques blanches d'un étage. Elle n'est pas très grande mais elle impose par sa position dominante et elle est intacte, tandis que toutes les autres maisons sont brûlées ou détruites. Les fenêtres même sont en bon état. Le regard s'arrête à ce seul débris d'une ville qui avait dû être fort jolie, il y a quelques jours. A en juger d'après les photographies, Pharsalos avait dû être ravissante avec ses maisonnettes blanches, ses églises et ses minarets, parmi les arbres qui poussent sur la pente. Aujourd'hui cette maison captive l'intérêt plus que d'habitude. Car sur le toit flotte le drapeau turc et sur l'esplanade devant la maison fourmillent des hommes, des chevaux et des voitures. Notre première pensée fut que M. Edhem Pacha y avait fixé son quartier

général et nous étions bien contents d'être si près du but de notre voyage.

Mais en approchant, nous apprîmes que c'était un hôpital militaire. La foule devant la maison, c'étaient des blessés; les voitures, la maison, étaient remplies de blessés, et sur le toit, à côté du drapeau turc flottait le croissant rouge des Turcs, c'est-à-dire la croix rouge. En arrivant sur la place, devant la maison, nous rencontrâmes le directeur de l'hôpital qui était en même temps inspecteur général de tous les hôpitaux turcs. C'était un homme imposant et jovial, il parlait très bien le français. L'opérateur était le médecin de service à l'hôpital; il avait travaillé 24 heures de suite sans manger ni boire, et pendant ce temps là il avait traité 150 blessés. Quand nous arrivâmes, il se donnait un peu de repos et prenait une tasse de café avec une cigarette. Il était pour ainsi dire le seul médecin de l'hôpital; il faisait les opérations à lui seul, les deux autres médecins l'assistaient. Il était surmené de travail. Mais il ne fallait pas relâcher car il y avait encore des centaines de blessés qui attendaient leur tour. Nous entrâmes avec lui dans l'hôpital qui était à quelques pas de là. Devant la maison nous vîmes un spectacle écœurant. Des masses de blessés, vieux et jeunes, blancs et noirs, hommes de toutes les nuances entre le blanc et le noir étaient là, couchés par terre ou assis, attendant leur tour. Quelques uns s'étaient trainés à l'ombre de la maison, beaucoup gisaient dans la position où on les avait couchés en les déchargeant de la voiture dans laquelle ils avaient été entassés dans le transport du champ de bataille de Dhomokos jusqu'à Pharsalos; d'autres avaient grimpé sur le perron de la maison, pour être soignés plus vite. Devant la maison et dans les escaliers il y avait une telle quantité de blessés qu'il fallait bien faire attention pour ne pas marcher sur eux, et quel spectacle affreux! Les Orientaux conservent toujours dans leur apparence celle du brigand. Leur teint brun et leur costume multicolore, rouge, bleu, vert ou jaune, leur donnent souvent un aspect sinistre. Mais quand la figure est toute sanglante et déchirée, ils deviennent terribles. Je n'oublierai jamais un nègre qui était moitié couché en arrière, moitié assis dans l'escalier, il avait grimpé jusque-là, mais ne pouvait avancer plus loin, étant à bout de forces et la poussée des blessés qui essayaient d'avancer, était devenue trop forte, il s'était affaissé dans l'escalier et restait là, inerte. Sa figure n'était qu'une boule lacérée où on ne pouvait distinguer ni nez, ni bouche, ni yeux, la peau noire et

Sur l'invitation de M. Henry Dunant, fondateur de l'œuvre de la Croix-Rouge et promoteur de la Convention de Genève, et après en avoir conféré avec mon Chef, M. le Major Général Thaulow, je me permets par la présente d'adresser les remarques suivantes à la Conférence Internationale de la Paix, convoquée par S. M. l'Empereur de Russie, et qui doit se réunir le mois prochain à la Haye.

Ce sont les sentiments humains que fait naître chez chacun la somme effrayante des misères qu'entraîne la guerre, autant chez les vainqueurs que chez les vaincus; ce sont eux qui principalement ont rassemblé la conférence, et elle va s'occuper du plus philanthropique de tous les problèmes, celui de discuter la série des questions qui se concentrent autour du but élevé: de rendre les guerres moins fréquentes et moins cruelles et finalement prévenir toute guerre.

Le chemin qui mène à ce but est long, et comme il est ascendant, il est également ardu. L'on peut prévoir qu'on devra attendre encore longtemps avant d'atteindre la fin qu'on se propose. Il faudra auparavant passer par bien des degrés qui tous représenteront la solution de questions humanitaires relatives à la guerre.

C'est comme pouvant contribuer à resoudre quelques unes de ces questions: à se rapprocher du grand but, à faire progresser les devoirs humains que l'on doit pouvoir exiger de toute nation avant et pendant une guerre, à établir des obligations d'humanité qui auraient en leur pouvoir d'empêcher la guerre d'éclater; c'est comme telles que paraissent ces remarques.

Elles sont basées sur les expériences que j'ai eu l'occasion de faire pendant la dernière guerre turco-grecque. Envoyé par l'Etat norvégien pour étudier le service de santé et son fonctionnement en temps de guerre, j'ai été attaché à l'Etat-Major d'Edhem Pacha.

Les déficiences du service de santé de l'armée turque étant communes à celui, de toutes les autres armées, quoiqu'à un moindre degré, heureusement, on se trouvera également, pendant les guerres de l'avenir, en face d'un traitement insuffisant des malades et des blessés.

Ce qui est indispensable, c'est que le service de santé des armées possède un personnel suffisant et un matériel moderne. La force des autres divisions de l'armée donneront la mesure. Il faut donner aux officiers, aux sous-officiers, aux soldats du corps de santé une éducation en temps de paix qui les mette en mesure de remplir leur tâche à la guerre. *Il faut que le service de santé soit aussi complet et moderne que les divisions combattantes.* Lorsqu'une nation trouve les moyens d'organiser sa défense, de procurer des armes et des munitions, elle doit aussi créer un service de santé qui puisse traiter et soigner les malheureux qui versent leur sang pour elle.

Autant que je sache, certaines questions relatives à la Convention de Genève devant être discutées à la Conférence, je me permets de mentionner une chose qui me semble digne d'attention.

Est-ce juste qu'un pays quelconque puisse faire partie de la convention de Genève sans rien faire pour en exécuter les statuts? La Convention de Genève est-elle un ornement avec lequel on puisse dissimuler l'indifférence envers les blessés? La Convention de Genève porte-t-elle

seulement qu' on doit respecter, comme neutres, les institutions sanitaires, leur personnel, leur matériel, leurs blessés? Est-ce qu'elle ne demande pas à la nation qui l'adopte qu'elle organise son service de santé pour soulager les blessés? Ce qui plus est, ne demande-t-elle pas que la nation qui l'adopte soigne et ses propres soldats et ceux de l'ennemi au besoin?

Les statuts de la Convention ne doivent ils pas porter: qu'on demandera raison aux gouvernements de toute infraction aux devoirs envers la Convention en temps de paix, et la Croix ne doit-elle pas être reprise au pays quand il sera évident qu'il ne fait rien ou presque rien pour secourir ses blessés?

C'est un point d'honneur pour les pays civilisés de faire partie de la Convention de Genève, à plus forte raison le risque d'en être expulsé stimulera-t-il les nations à se conformer à son règlement et notamment en temps de paix.

Dans cette connexion d'idées, j'ose faire ressortir combien il semblerait désirable que la série des propositions de modifications à apporter à la Convention de Genève, présentées tant dans les Congrès que dans des brochures publiées par des particuliers, fussent discutées par la Conférence.

Je me permets de renvoyer à mon article intitulé: «Notes et impressions de la guerre turco-grecque en 1897,» dont j'ai l'honneur de joindre un certain nombre d'exemplaires.

Dans une lettre en date du 22 décembre 1898, M. Henry Dunant s'exprime comme suit:

«En lisant les pages où Vous racontez l'abandon des blessés Ottomans mes yeux ont été bien près de se mouiller par le récit de cet abandon affreux. Cela m'a rappelé l'année 1859. Mais l'incurie odieuse du service sanitaire turque en 1897, ajoutait encore à l'horreur de ce qui se passe malheureusement partout en temps de guerre. Je n'ai jamais cessé de réclamer, de rappeler, de supplier, partout où j'ai pu le faire; et à chaque guerre, depuis cette époque, l'insuffisance de tous les services sanitaires s'étant manifestée, j'ai souffert, pour ainsi dire à nouveau, ce que j'avais souffert de visu en 1859. C'est vous dire combien j'approuve votre «Cri» si humain.»

Dans cette brochure se trouve décrit d'une manière plus détaillée l'état défectueux du service de santé de l'armée turque pendant la dernière guerre, état qui a provoqué les remarques sus-mentionnées.

HANS DAAE

Médecin-major de 1^{ère} classe
de l'armée norvégienne.

le sang rouge ne faisaient qu'une masse difforme, tout était gonflé; c'était affreux. Il respirait. Mais il ne se plaignait pas.

A l'intérieur de la maison il régnait un peu plus d'ordre. Les infirmeries étaient bondées de blessés, il n'y avait pas une place de libre. Les blessés n'y étaient pas trop mal. Chacun avait un matelas et deux courtépentes remplies de laine et puis un oreiller. Le lit était donc irréprochable. Tous étaient pansés; mais le pansement était souvent mal fait. Il y avait des hommes qui avaient une jambe cassée et dont la jambièrre ne tenait pas ferme d'un côté; d'autres avaient arraché leurs bandages. La plupart restaient immobiles sans proférer une syllabe, mais quelques-uns geignaient et on entendait de loin leurs gémissements. Quelques-uns étaient mourants, d'autres se portaient bien et avaient bonne mine. Mais il n'y avait aucun ordre comme nous l'entendons dans nos hôpitaux européens. Dans une petite chambre qui était réservée aux officiers, il y avait un capitaine turc blessé de sept balles. Il avait l'air très vaillant, il nous serrait les mains et appelait sur nous la bénédiction de Dieu. Dans la même chambre se trouvait aussi un capitaine grec, blessé à la mâchoire gauche. Dans une autre chambre se trouvait un gentil garçon de 14 ans; il se penchait en avant, gémissant. Quand le médecin toucha à son bras gauche, il poussa un cri déchirant: le bras était fracassé. Lorsque, trois jours après, nous revînmes à Pharsale, on nous informa qu'il était mort, le pauvre petit. Voici un vieillard, qui devait avoir quelque soixante-dix ans. Il délirait et parlait haut et bravement du bonheur de tomber pour «padicha», c'est-à-dire pour son maître. Il voulait se battre encore et mourir pour son «padicha». Les yeux du vieillard enthousiaste étincelaient. Un autre vieillard était désolé parce qu'il n'avait tué qu'un seul Grec. Les scènes les plus diverses se déroulaient devant nos yeux.

Ces infirmeries avaient bien un certain cachet d'hôpital mais c'était un chaos en comparaison d'une ambulance moderne. Il n'y avait pas d'ordre. Les lits étaient jetés pêle-mêle, quelques-uns avaient la partie antérieure contre le mur, d'autres la partie postérieure, quelques-uns étaient rangés le long du mur, d'autres en étaient séparés. Et personne pour soigner les malades! Mais le désordre qui régnait dans la salle des opérations était encore pire. Elle était située au premier étage dans une des pièces les plus éloignées. Il fallait transporter les malheureux par l'étroit escalier tournant et puis par le corridor, avant d'arriver à la salle qui, naturellement, aurait dû avoir l'accès le plus facile et être la

plus centrale de toutes les pièces. Et quel gâchis! Bandages, instruments, lambeaux de vêtements dans une mare d'eau et de sang sur le plancher. Sur la table des opérations était couché un vieil homme qui avait un mollet fracassé. Un aide lui lavait les orteils, mais si maladroitement qu'il faisait craquer les os du mollet blessé. Cependant le vieillard restait tranquille et ne disait mot. En sortant des infirmeries nous entrâmes dans une pièce du rez-de-chaussée; mais ici ce fut horrible. Les blessés pansés étaient couchés sur le plancher, pêle-mêle, de sorte qu'il fut impossible de passer outre. La pièce était sombre et humide. Ce fut un soulagement de quitter cet hôpital sinistre.

Sur le champ de bataille de Dhomokos on ramassait des blessés 24 heures après le combat. Quand j'y arrivai, on était en train de mettre les derniers derrière une petite colline pour les transporter à cheval ou en voiture à Pharsalos.

J'arrivai le 18 mai de nuit à Dhomokos. Toute la ville était en flammes; le vacarme était indescriptible, partout de la fumée et des brandons. A chaque instant les coups de feu éclataient et on entendait les balles siffler. C'étaient les arnautes, qui s'amusaient à tirer sur les cochons, les moutons, sur n'importe quoi, à la lueur de la ville en feu. Après quelques difficultés nous découvrimus la demeure d'Edhem Pacha et je réussis, le soir même, à me présenter personnellement chez lui. Le jour suivant, au matin, je partis pour Phurca. Déjà la veille on avait entendu gronder le canon de ce côté, mais à la tombée de la nuit tout était redevenu tranquille; on s'attendait cependant à une bataille le lendemain. On ne se trompait pas. De Dhomokos à Phurca, qui est situé à une distance d'environ 15 kilomètres, je trouvai la route couverte de troupes en marche; à l'entrée du défilé une division était campée. Sur le sommet de Phurca je rencontrai une batterie qui avait ôté les avant-trains et qui se reposait au bord de la route. Au loin on distinguait le gros de l'armée grecque qui se retirait à travers la plaine vers Lamia et les Thermopyles. Nous échangeâmes quelques paroles avec le beau, jeune chef de la batterie et il nous raconta comment sa batterie avait, sans interruption, harcelé les Grecs dans leur retraite et comment elle avait gagné, souvent avec grande perte, les positions les plus dominantes. Tout à coup nous entendîmes éclater des coups de feu dans les broussailles du côté sud du défilé: c'était l'arrière-garde grecque qui faisait tête à l'avant-garde turque qui poursuivait. La batterie ne tarda pas à riposter. J'ai suivi tous ses mouvements, tantôt auprès d'elle, tantôt en avant, tantôt

en arrière. Grâce à l'amabilité du chef et des autres officiers, j'ai eu la meilleure occasion de suivre le combat et de me figurer les dispositions du service de santé. Mais il fallait pour cela avoir recours à la fantaisie, car celui-ci n'existait pas. J'étais ce jour-là avec l'attaché militaire de Serbie à Constantinople; il connaissait fort bien la Turquie et c'est lui qui, le premier, m'a dit qu'on chercherait en vain un service de santé dans les rangs des Turcs. Je croyais d'abord que c'étaient là des exagérations, il devait y avoir au moins quelques médecins et des brancardiers. Ce n'était pas possible qu'un Etat qui avait adopté la convention de Genève, fût tout-à-fait dépourvu d'un service de santé et puis le pays possédait une section de la Croix-Rouge! Il était trop absurde qu'une armée, si excellente sous tous les rapports, fût dépourvue des moyens les plus élémentaires pour secourir les blessés. Ces milliers de soldats avaient de quoi manger, ils avaient les meilleurs fusils, ils étaient commandés par des officiers capables, ils montraient une obéissance aveugle et ils se jetaient sur l'ennemi sans craindre la mort en bravant le feu le plus terrible. La ferveur religieuse les fanatisait. Les Grecs comprenaient quel sort les attendait et ils vendaient leur vie aussi chèrement que possible. Les braves soldats turcs n'avaient peur de rien; ils recevaient donc des blessures innombrables et tombaient en masse. Était-il possible que cette armée qui se composait des meilleurs soldats du monde, et qui marchait de victoire en victoire, manquât de service de santé? Une nation qui se tient sur ses gardes pour défendre ses droits, ne doit-elle pas songer à ses devoirs envers ceux qui sacrifient leur sang pour la patrie?

Je fis le tour du champ de bataille pour voir s'il n'y avait pas une seule main charitable qui eût prêté secours. Je découvris un soldat renversé sur une pente, s'appuyant contre un camarade, sa veste était trempée de sang et l'herbe autour de lui en était rouge. L'hémorragie était arrêtée, la blessure était pansée. Par qui? Le pansement était exécrable; on avait fourré de l'ouate sale dans la plaie ouverte qu'il avait au cou et le bandage était fixé selon l'ancienne façon par une bande épaisse de linge qui tenait mal. L'homme ouvrit le bandage avec le doigt et me montra la blessure. Il fallait bien que ce pansement eût été fait par quelqu'un qui portait de l'ouate et des bandages; il fallait bien supposer que c'était par un médecin et je me réjouissais d'avance à la pensée de trouver ici un représentant de l'humanité. Mais ce fut en vain.

Je trouvais beaucoup de blessés dont on ne s'était pas occupé et je trouvais des mourants qui languissaient.

Ce ne fut que plus tard que je sus que tous ces bandages avaient été appliqués par des «panseurs». Ces gens sont sortis des classes les plus obscures du peuple; ils ont fait service comme domestiques chez un médecin ou dans un hôpital et se sont ensuite engagés dans l'armée; il y en avait un certain nombre dans chaque division. Ces panseurs — pas les médecins — se trouvent à la ligne du feu et cherchent à soigner les malades. Ce n'est qu'à une ou deux étapes en arrière de la division qu'on trouve des médecins. Un médecin ou deux avaient établi ici de soi-disant infirmeries de division, mais elles n'offraient même pas le traitement et les soins qu'on trouve dans nos ambulances provisoires.

Bien que l'affaire de Phurca ne fût que peu considérable et peu sanglante, le sort des blessés fut dur.

Frappé d'une balle, le soldat s'affaissa. Ayant un peu repris connaissance et comprenant où il est, il tâche d'arrêter le saignement de la blessure ou de panser le membre mutilé. Personne ne se soucie de lui. Il y a peut-être un camarade qui a pitié de lui, qui l'aide à rouler quelque chose autour de la blessure et qui le soulève pour qu'il puisse se reposer à l'ombre d'un arbre. Beaucoup n'ont pas besoin d'autre secours — le ciel s'ouvre et les huris l'emmènent au séjour des bienheureux. Mais le pauvre qui n'a pas reçu une telle blessure, qui ne perd pas courage malgré les souffrances, malgré la soif, malgré sa faiblesse et qui reste patiemment dans les broussailles sans aucune chance de sortir de sa position désespérée, il fait enfin un effort, il recueille ses forces et son énergie et il se traîne vers la route. Il est peut-être assez heureux de trouver un camarade qui lui donne un peu d'eau, qui le soulève et qui l'aide; il trouve peut-être un panseur. Il y a peu de chance pourtant de le trouver. Mais supposons qu'il en voie un; on panser ses blessures. En attendant, le soleil se couche et la nuit arrive vite. De temps en temps un soldat blessé passe devant lui à cheval; celui-là a eu la chance de trouver un moyen d'être conduit en arrière, loin du champ de bataille où il trouvera du repos, où il sera traité et soigné. La nuit passe, aucun secours. Le lendemain, un camarade passe à cheval peut-être; il descend du cheval et soulève le blessé; unissant leurs efforts ils parviennent à l'infirmerie de la division, éloignée d'une vingtaine de kilomètres. Il trouve un médecin qui pourtant ne pourra rien faire. La blessure est infectée; il renvoie le blessé à une infirmerie, située à une autre

vingtaine de kilomètres plus loin. Il y arrive souffrant jour et nuit des douleurs les plus atroces. Il sera enfin arrivé au bout de ses peines. Il est arrivé à une infirmerie — une infirmerie comme celle de Pharsalos dont j'ai déjà donné la description.

Ce ne sont pas là des exagérations, c'est la vérité pour le grand nombre des cas. Je n'écris pas pour provoquer avec de grands mots la compassion pour les soldats blessés, mais je donne la description exacte des choses, parlant à la raison plus qu'aux sentiments.

On pensera ce qu'on voudra. Mais nous autres tranquillement installés dans nos maisons confortables nous ne pouvons pas nous faire idée de ce que souffre un homme blessé, abandonné sur le champ de bataille, de ce qu'il souffre pendant le transport vers le pays, de ce qu'il souffre pendant son séjour à l'hôpital. Ce sentiment âpre et brûlant, cette intensité de la douleur nous resteront étrangers. Avez-vous été témoin de toute la terreur de la guerre sur le champ de bataille? Avez-vous entendu les gémissements des blessés? Avez-vous vu les visages contractés des pauvres souffrants? Vous ne sauriez comprendre quelle est l'étendue épouvantable de ces douleurs. Si vous l'avez vu, vous ne l'oublierez jamais, mais vous vous promettez de faire tout votre possible pour apaiser les souffrances des soldats blessés.

On posera peut-être cette question-ci: Etant donné que les Turcs blessés étaient si mal traités, quel sort attendait les blessés grecs qui tombaient entre leurs mains? Est-ce qu'on les torturait encore davantage? Non, on les traitait plutôt mieux que les blessés turcs. C'était le vœu le plus cher des médecins turcs de faire tout leur possible pour les Grecs. Ils voulaient montrer à l'Europe que les Turcs n'étaient pas des barbares qui torturaient et mutilaient leurs ennemis, mais qu'ils étaient tout aussi humains que les Européens. C'est pourquoi ils faisaient de leur mieux pour bien traiter les Grecs, et ils ont réussi à convaincre tout le monde de leurs bonnes intentions. Tous les blessés grecs que j'ai vus et avec qui j'ai parlé étaient on ne peut plus contents du traitement et des soins qu'on leur donnait. Il n'y avait pas beaucoup de blessés grecs qui tombaient entre les mains des Turcs, car les Grecs généralement emportaient leurs blessés. Quand les Turcs avaient occupé une position, ils ne trouvaient presque jamais ni blessés, ni tués. Je parlerai une autre fois des soins dignes de tous les éloges que les Grecs montraient à l'égard de leurs blessés.

La dernière guerre était heureusement peu sanglante. Depuis longtemps on n'a vu en Europe une guerre si peu sanglante. Il y avait en tout, du côté turc, environ 4000 blessés et tués pendant un laps de temps d'un mois et demi. C'est à Dhomokos que les Turcs ont perdu le plus d'hommes, mais le nombre des tués et des blessés ne dépassait guère 1400 hommes. Quand on connaît l'état des choses et se rappelle que le nombre des médecins était tout-à-fait insuffisant et que tout secours sanitaire laissait beaucoup à désirer, on se demandera quel aurait été le sort des blessés si la guerre eût été plus sanglante.

D'autre part, comment les blessés de la dernière guerre auraient-ils été traités si l'assistance volontaire n'était pas venue en aide? Bien que celle-ci ne pût suffire à tout, c'est pourtant elle qui a travaillé le plus pour secourir les blessés. La Banque Ottomane avait envoyé à ses frais quelques ambulances, dont une se trouvait à Larisse, une autre à Pharsalos. Le chef de ces ambulances était le Dr. Lardy. La Croix-Rouge de Russie avait établi un gentil petit hôpital à Pharsalos avec cinq médecins et dix sœurs. On m'a dit que la Croix-Rouge d'Autriche avait envoyé une ambulance en Turquie mais je n'ai pas réussi à la rencontrer. La Croix-Rouge d'Allemagne s'était établie à Yildis Kiosque; d'autres sections européennes de la Croix-Rouge avaient envoyé de l'argent et du matériel.

Nous voyons dans cette guerre d'une part le besoin impérieux d'une assistance médicale, d'autre part l'impuissance d'y suppléer et la cause de ce contraste est le fait déplorable que les médecins militaires des Turcs généralement ne sont pas des chirurgiens. Les médecins turcs, qui avaient acquis une connaissance approfondie de la chirurgie, l'avaient étudiée à l'étranger. Les médecins militaires de Turquie et peut-être aussi les médecins civils peuvent, à ce que dit M. Kowalk, finir leurs études et commencer à pratiquer la médecine sans avoir vu un seul malade. Les médecins militaires des Turcs ne doivent guère inspirer de respect, puisqu'on n'a pas choisi un des leurs, mais un chimiste pour avoir la haute direction du service de santé à la guerre. Bonchowsky Pacha était l'âme de l'oeuvre. Avec une énergie étonnante et une intuition admirable il se multipliait pour y mettre un peu d'ordre.

Je ne doute pas que les médecins militaires des Turcs n'aient fait leur devoir et je sais que les médecins avec qui j'ai parlé, étaient rompus de fatigue, ayant travaillé jour et nuit.

Il est inutile d'essayer de décrire les cruautés de la guerre dans tous leurs détails effrayants. Ni plume ni pinceau ne suffi-

raient; inutile tâche que d'essayer de peindre la misère que nous avons vue sur le théâtre de la guerre. Il m'est impossible de décrire l'horreur du spectacle. Pour ceux qui connaissent la guerre, il suffira de mentionner que, pour évacuer les 1400 blessés turcs du champ de bataille de Dhomokos, il n'y avait ni brancardiers, ni brancards, ni voitures convenables; il y avait si peu de médecins que pour chacun il y avait plusieurs centaines de blessés. Encore n'y avait-il aucune surveillance, aucun système de traitement et de transport des malades. Il n'y avait rien qui ressemblât à l'organisation et au fonctionnement du service des pays civilisés. Mais les descriptions détaillées sont superflues; chacun pourra faire ses réflexions, quand on songe que les blessés qui étaient épuisés, mourants à force d'attendre sur le champ de la lutte, avaient encore à soutenir les fatigues d'un transfert pénible, qu'ils souffraient de leurs blessures, de la soif, de la faim et qu'ils n'avaient pour toute consolation que la pensée qu'ils seraient enfin soignés à l'hôpital; mais quelle amère désillusion en y arrivant! Il y en avait beaucoup dont on ne s'occupait pas du tout et qu'on laissait mourir tout simplement, car entre le moment où ils étaient blessés et le moment où ils arrivaient à l'hôpital, il s'était passé un temps si long que leurs blessures étaient infectées.

Pendant toute la guerre on n'a pas fait une seule laparotomie. Un chirurgien de mérite comme le Dr. Lardy avait pris toutes ses dispositions pour ces opérations, mais comme il y avait trop peu de médecins et des masses énormes de blessés, il fallait y renoncer. Le temps qu'une telle opération aurait demandé à elle seule était mieux utilisé à soigner beaucoup d'autres blessures et, en renonçant à sauver une vie par une laparotomie, il pouvait arriver à sauver plusieurs autres par des incisions moins radicales. Le manque de médecins le forçait à laisser mourir tous ceux qui avaient besoin de cette opération. Il en était de même des médecins turcs qui avaient appris à faire cette opération importante. Il fallait agir de même pour la plupart des cas qui demandaient un traitement d'une certaine étendue, bien qu'il y eût chance de sauver une vie humaine.

Il y avait d'autres blessés qui, en arrivant à un hôpital turc, furent enfin soignés après avoir attendu longtemps et péniblement; quelques-uns furent peut-être soignés d'une manière satisfaisante. Mais même en ce cas-là, quelle destinée leur était-elle réservée? Heureux qui pouvait être transporté plus en arrière et pouvait éviter l'hôpital.

Il ne faut pas oublier non plus que le blessé était privé des soins dévoués d'une main de femme. Eh bien! — le Turc n'y est pas accoutumé; peut-être qu'il n'en sent pas le même besoin que nous autres Européens. Mais les expériences des ambulances où des femmes étaient employées comme gardes-malades prouvent toutes que les Turcs aussi faisaient grand cas d'une douce main féminine. Et les femmes n'ont certainement pas trouvé de malades plus patients, car le soldat turc est reconnaissant de ce qu'on lui donne. Tout le monde connaît la description éloquentes que Maxime du Camp a donnée du rôle que jouent les femmes dans le traitement des soldats blessés, et ce qu'il en dit aurait certainement eu la plus belle illustration parmi les Turcs.

Comment se fait-il que les soldats turcs, ayant tant souffert et privés de toute consolation, n'ont pas perdu courage? C'est que la ferveur religieuse les a soutenus. Et s'ils ne se sont pas plaints, s'ils ont supporté avec la douceur d'un agneau toutes les souffrances, c'est qu'ils possèdent une énergie incroyable et une insensibilité complète aux douleurs. Il arrivait souvent que le malheureux, placé sur la table d'opération pour être opéré, refusait d'être chloroformé. «Donnez-moi une cigarette» était sa réponse laconique à la question s'il voulait se laisser chloroformer. Et fumant sa petite cigarette il supportait des douleurs que très peu d'Européens auraient pu endurer. On m'a même affirmé qu'un soldat s'est laissé trépaner le crâne pour en faire extraire une balle sans être chloroformé, sans laisser échapper une plainte, et qu'il tenait sa cigarette à la bouche pendant toute l'opération.

Malgré le mauvais traitement et malgré l'infection, le nombre des guérisons était assez considérable et la raison était la grande force vitale des Musulmans. Leur chair se cicatrise avec la plus grande facilité et cela tient à leur abstinence absolue des boissons alcooliques. Un vieux chirurgien français avec qui j'ai parlé à Larisse, m'a dit qu'il n'avait jamais rien vu de pareil. Il avait pris part à la guerre de 59 et à la guerre franco-allemande et il s'entendait fort bien au traitement des soldats blessés. Mais il n'avait jamais vu les blessures se cicatriser si facilement. «Un soldat turc», dit-il, «se contente de deux biscuits et d'un peu d'eau par jour; il supporte toutes les douleurs sans se plaindre et leur chair défie toute infection.»

Pour résumer toute la misère qu'on voyait dans la dernière guerre, je dirai que dans «Un souvenir de Solferino» il n'y a rien qui puisse être comparé à ce qui se passait dans la guerre turco-

grecque; celle-ci était même plus affreuse. On en est encore aujourd'hui, en Turquie, là où on en était en Europe, quand Dunant écrivit sa petite brochure quant au traitement des soldats blessés.

Le 19 mai, à trois heures de l'après-midi, l'entrevue eut lieu entre les parlementaires grecs et le chef de l'armée turque. Ayant assisté à cette entrevue solennelle, je retournai à Dhomokos, où je visitai une infirmerie de division et je partis ensuite pour Pharsalos. La guerre était finie et la cause de la misère n'existait plus.

J'ai cru qu'il était de mon devoir de publier mes expériences, mon devoir envers les Turcs, mon devoir envers les pays qui pourront peut-être risquer une guerre avec la Turquie, et mon devoir envers toute l'humanité. Car il ne faut pas que cet état de choses dure plus longtemps.

Je parais, peut-être en parlant ainsi, mal apprécier la grande bienveillance que l'Etat turc, les officiers turcs, tous, militaires et civils, ont témoignée à mon égard; j'ai peut-être l'air d'être ingrat envers les Turcs, mais j'assure que le seul motif qui me fait publier ces impressions de la guerre, est ma compassion pour les soldats blessés, turcs et autres, et c'est mon vœu le plus ardent que de contribuer quelque peu à éveiller en Europe la sympathie pour les Turcs.

Il faut se rappeler que les Turcs qui ont commis les excès dont on les accuse, ne forment pas la nation turque; car celle-ci est composée d'individus possédant des qualités admirables. Si la description que j'ai donnée du traitement des blessés turcs peut contribuer à améliorer le sort des blessés européens, les Turcs se sont rendus dignes d'une place d'honneur parmi les soldats souffrants et dignes de la sympathie sincère de tous les amis de l'humanité.

Je regrette que ma description ne soit pas flatteuse pour le service de santé turc, mais je n'ai nullement l'intention de le décrier. J'espère que les Turcs et les Européens pourront tirer profit des expériences que j'ai faites. Il en est de même de mes remarques sur la Croix-Rouge en Turquie et dans les autres pays.

Je suis persuadé que les imperfections du service de santé de l'armée et celles du fonctionnement de la Croix-Rouge qu'on remarquait lors de la dernière guerre, ne manqueront pas de se manifester en temps de guerre dans d'autres pays européens et je me ferai un devoir de signaler la manière dont on pourrait remédier à ces imperfections. Je ne viserais pas seulement la Turquie, mais la plupart des pays européens. Même en admettant que la plupart

des armées européennes possèdent un service de santé de beaucoup supérieur à celui des Turcs (dans quelques pays pourtant pas beaucoup meilleur), ils se ressemblent tous en ce point: qu'aucune armée n'est, de par ses propres ressources, à même de prendre soin de ses soldats blessés; elles ont toutes besoin de l'assistance volontaire.

Je crois que les causes principales des souffrances qu'éprouvaient les blessés, étaient celles-ci:

1° L'Etat avait négligé le service de santé de l'armée.

2° La section pour la Turquie de «la Croix-Rouge» n'avait pas cherché à remédier suffisamment aux imperfections du service de l'armée.

3° Les sections européennes de «la Croix-Rouge» n'avaient assisté assez efficacement ni «la Croix-Rouge» ni la santé de l'armée turques, ainsi qu'on aurait dû s'y attendre de la part d'une association internationale qui dispose de si grandes ressources.

Les expériences que j'ai faites pendant la dernière guerre correspondront, à tout prendre, à celles qu'on fera sans doute dans les guerres futures en Europe, et les prenant pour point de départ, j'indiquerai les moyens de remédier aux défauts mentionnés et les moyens de secourir les blessés, non seulement pour la Turquie, mais ce qui est l'essentiel, pour la plupart des pays européens:

Tout d'abord il sera nécessaire que le service de santé des armées possède un personnel suffisant et un matériel moderne. La force des autres divisions de l'armée donneront la mesure. Il faut donner aux officiers, aux sous-officiers, aux soldats du corps de santé une éducation en temps de paix qui les mette en mesure de remplir leur tâche à la guerre. *Il faut que le service de santé soit aussi complet et moderne que les divisions combattantes.* Lorsqu'une nation trouve les moyens d'organiser sa défense, de procurer des armes et des munitions, elle doit aussi créer un service de santé qui puisse traiter et soigner les malheureux qui versent leur sang pour elle. Ceci n'est qu'une demande humaine dont on ne contestera pas la justice. Les belligérants ont de temps immémoriale tenu trop peu compte de l'importance des soins qu'il faut donner aux malades. Il est triste de constater que parmi les armées modernes il n'y ait pas une seule dont le service de santé soit capable de remplir son rôle, soit par sa quantité soit par sa qualité.

Mais il ne faut pas se contenter des mesures que l'Etat pourrait prendre en vue de secourir ses malades et ses blessés. On doit exiger qu'aucun Etat ne commence la guerre avant que certitude soit

acquise que le blessé pourra être transporté, traité et soigné d'une façon efficace. On ne doit pas considérer comme civilisé un Etat qui, malgré cela, s'engage en campagne. Il faut qu'en temps de paix le souci des blessés soit inhérent au souci de la défense nationale, de sorte que ce soit un point d'honneur et de conscience que d'aider ses soldats blessés. Ce sont les grandes puissances qui devront donner l'exemple, non seulement parce que leur budget est beaucoup plus grand, mais parce que leur rivalité nécessite des armements toujours augmentés qui forcent les petits Etats à développer et à perfectionner leurs moyens de défense. Du moment que les grandes puissances comprendront quels sont leurs devoirs envers les blessés, elles pourront et elles devront, à plus forte raison, exercer leur influence et tâcher au moins de forcer les petits Etats à remplir ces conditions. *Les grandes puissances pourront empêcher les petits Etats de se battre et ce sera leur devoir de le leur interdire, si le service de santé de ces derniers n'est pas en état de remplir sa tâche.*

Il est de l'intérêt de la grande oeuvre de charité et il est de l'intérêt de l'humanité qu'on soit d'accord sur ce principe; c'est là en première ligne une cause nationale qui devra être appuyée de l'opinion universelle. Tous les hommes de coeur de chaque nation devront faire une propagande pour cette idée, pour que la tragédie, dont nous avons été les témoins sur la plaine de Thessalie, ne se renouvelle plus. C'est aussi une cause qui regarde les gouvernements. Ils exécutent, de par leur pouvoir, ce que le peuple leur ordonne et ils sont, de par leur pouvoir, à même de donner à la volonté du peuple une bonne direction. Mais c'est surtout aux différentes sections de «la Croix-Rouge» de s'occuper de cette tâche; son principe vital est d'éveiller ce qu'il y a d'équitable et de généreux dans les hommes et d'essayer de faire disparaître les calamités de la guerre. Je ne crois pas qu'il soit difficile de faire reconnaître par toutes les nations civilisées les demandes que je viens d'exposer. Ceci fait, il sera du devoir de «la Croix-Rouge» comme il sera du devoir de tout ami de l'humanité, de veiller à ce qu'on satisfasse à ces demandes et de contrôler qu'on y satisfasse surtout d'une manière efficace. Il faudra que «la Croix-Rouge» insiste sur le besoin de prendre soin du soldat blessé avec tant de force et d'une telle façon que les Etats perfectionnent leur service de santé et que tout ami de l'humanité appuie l'assistance volontaire de «la Croix-Rouge» par des donations. Il faudra qu'elle fasse voir à la nation quel sera le sort du pauvre blessé dans une guerre

future si clairement qu'il sera impossible et à l'Etat et aux personnes privées de ne pas répondre à ses appels et de ne pas faire acte de charité. Il faudra que chacun fonde, dans son milieu, une opinion en faveur des soldats blessés et crée un besoin d'améliorer leur sort par un développement de plus en plus perfectionné du service de santé de l'armée; il faudra qu'on appelle «la Croix-Rouge» qui s'est proposé le but de suppléer à ce que le service de l'armée laisse à désirer. Et de tous ces petits centres résultera une force capable de secourir tous les soldats blessés de la nation.

On sera de la sorte bien avancé vers le but que tous les hommes généreux se proposent: porter secours aux soldats blessés. Mais en ayant conscience de pouvoir secourir ses propres soldats, il faut se rappeler que le point visé est de secourir tous les soldats blessés du monde entier. Ce but sera difficile à atteindre, mais c'est toujours une consolation que la guerre est chose rare et que «la Croix-Rouge» des autres pays apportera son secours. Malheureusement, ce n'est pas encore le cas. Comment «la Croix-Rouge» deviendra-t-elle tout-à-fait internationale, si complètement qu'elle deviendra un être dont le cœur batte pour le monde entier et qui sente immédiatement toute misère et qui ne tarde pas à y remédier? Comment éviterons-nous le triste spectacle que nous avons vu se dérouler devant nos yeux en 1897? Est-ce que l'assistance volontaire jouera le même rôle dans les guerres de l'avenir?

Je ne ferai de reproche à aucune nation, je dirai simplement que le matériel de santé, le personnel et l'organisation de «la Croix-Rouge» — tout enfin — faisait défaut du côté turc, tandis qu'il y avait, du côté grec, abondance de personnel et de matériel, grâce à l'intervention charitable de l'Europe entière.

Il faudra que «la Croix-Rouge» prouve qu'elle est internationale, que ce n'est pas la sympathie ou la politique, mais l'amour du prochain et la charité qui dictent ses actions.

Je me permettrai ensuite de mentionner en quelques mots, une chose qui me semble digne d'attention.

Est-ce juste qu'un pays quelconque puisse faire partie de la convention de Genève sans rien faire pour en exécuter les statuts? La convention de Genève est-elle un ornement avec lequel on puisse dissimuler l'indifférence envers les blessés? La convention de Genève porte-t-elle seulement qu'on doit respecter, comme neutres, les institutions sanitaires, leur personnel, leur matériel, leurs blessés? Est-ce qu'elle ne demande pas à la nation qui l'adopte qu'elle organise son service de santé pour soulager les blessés? Ce qui

plus est, ne demande-t-elle pas que la nation qui l'adopte soigne et ses propres soldats et ceux de l'ennemi au besoin?

Les statuts de la Convention ne doivent-ils pas porter: qu'on demandera raison aux gouvernements de toute infraction aux devoirs envers la Convention en temps de paix, et la Croix ne doit-elle pas être reprise au pays quand il sera évident qu'il ne fait rien ou presque rien pour secourir ses blessés?

C'est un point d'honneur pour les pays civilisés de faire partie de la convention de Genève, à plus forte raison le risque d'en être expulsé stimulera-t-il les nations à se conformer à son règlement et notamment en temps de paix.

Les appels qui se font dans tous les pays pour le secours aux blessés, deviennent toujours plus éloquents. Dunant a su faire vibrer les cordes qui se cachent au fond de tout cœur humain; son travail fut l'œuvre géniale et énergique d'un homme éminent, et c'est son mérite d'avoir fait harmoniser ces cordes et d'avoir apposé sur notre siècle le sceau de l'humanité. Il nous a forcés de déployer ce qu'il y a de bon dans chacun de nous. Continuons son œuvre sainte et unissons-nous dans ce grand but: secourir les soldats blessés.

Les temps ont changé depuis l'époque où Dunant a commencé son travail assidu. Ce n'est pas la première fois qu'on discute les moyens d'améliorer le secours sanitaire sur le champ de bataille et dans les infirmeries. Il y a quantité de questions qui attendent leur solution et les demandes s'accroissent journellement. Quiconque connaît les devoirs qui incombent aux services de santé de l'armée et de la marine, connaît aussi ces demandes.

A ces demandes je joindrai celles que mes expériences de la dernière guerre m'ont fait entendre et je fais un appel sincère à tous ceux qui possèdent de l'influence en Europe, à tous ceux qui président aux travaux de «la Croix-Rouge», à tous les amis de l'humanité, qu'ils concourent à cette tâche et qu'ils fassent leur possible pour résoudre cette question importante:

Quels sont les meilleurs moyens de porter secours aux soldats blessés?

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THE
SHIP'S SURGEON
OF TO-DAY,



BY

CHARLES HENRY LEET,

Fellow of the Royal College of Surgeons, England.

*Member of the National Amalgamated Sailors' and Firemen's Union of
Great Britain and Ireland, and Medical Officer of the Bootle Branch.*

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"THE SHIP'S SURGEON OF TO-DAY,"

BY

CHARLES H. LEET, F.R.C.S.,

ENGLAND.

OPINIONS OF THE PRESS, &c.

"This pamphlet throws a lurid light on the discomfort and petty insolence a Surgeon who attempts to do his duty by his employers, the passengers, and the crew is exposed to from the Officer in command, UNLESS HE IS CONTENT TO CLOSE HIS EYES TO ALL ABUSES."—*The Lancet*, December 29th, 1889.

"DR. LEET is doing good service by drawing attention to the present very unsatisfactory position of the Ships' Surgeons." . . . "The manner in which Dr. Leet's career adroit was brought to an end is probably an example of the impatience with which the officials regard anything like criticism of the sanitary arrangements of their ships."—*British Medical Journal*, November 23rd, 1889.

"Judging from the numerous testimonials that he publishes we gather that Dr. LEET stands high, both professionally and socially."—*Liverpool Journal of Commerce*, October 22nd, 1889.

"There does indeed seem to be a need for reform in the cases to which you allude in your pamphlet."—*Mrs. SAMUEL PRINSOOL*.

"Your pamphlet will bear fruit."—*GOVERNMENT EMIGRATION OFFICER*.

"The statements you make of the treatment of the crews, supported, as it seems to be, by some admissions of the Shipowners, certainly justifies you in endeavouring to enlist the interest of the public in order to get such an improvement as is compatible with the efficient management of a ship. I hope your efforts may meet with the success they deserve."—*A LIVERPOOL SENIOR HOSPITAL MEDICAL OFFICER*.

N.B.—It is requested that this slip may be inserted in your copy of the pamphlet.—C.H.L.

Bottle, March, 1890.

Reprinted from SEAFARING, March 22, 1890.

SHIP SANITATION, No. 5.

DEFECTIVE VENTILATION.

To the Editor,

SIR—To prove how the subject of healthy accommodation for our seamen aboard ship should now engage public attention, take the following fact, which can be readily proved. This year, in one of the fastest and most fashionable Atlantic liners, in the fore-cabin, that is the port and star-board rooms, where some forty sailors eat, drink, and sleep for four hours at a time, the ventilators were closed up, being wintry weather, the air foul and stagnant, and the men obliged to hang blankets umbrella-wise to soak up the sweating drops from the metal roof and side walls. No wonder that when the influenza paid them a visit their blood was in such a poisoned condition that one sailor died of acute lung disease, although, all too late, transferred to the New York hospital shore. Is it not a well-known fact that officers and men would not their billet should they report to outsiders such facts as these? Now, Sir, to encourage "the only sanitary officer the ship carries" to do his duty in such cases of defective ventilation, will you kindly publish the following temperate letter, the first clause in full:—July 20, 1886.—Gentlemen, I beg leave to express my regret that during the recent alterations in this ship I was not called upon for any sanitary suggestions after an experience of THREE YEARS IN MEDICAL CHARGE, particularly as I had noticed, amongst other defects, that quite recently her ventilation had been seriously curtailed—a matter of vital importance to the health and comfort of the passengers. On calling attention to this subject last voyage, I was duly referred to the storage passenger clerk; but I shall be able more comfortably to feel that my responsibility ceases, if I submit in writing the chief insanitary conditions." Now, Mr. Editor, here are a few extracts from that report condensed as far as is compatible with lucidity. "Two large ventilators on the starboard and port side respectively leading from the newly added intermediate saloon to the first-class saloon forward, have been cut away. Were two of these ventilators accidentally removed upon recently enlarging the chief engineer's room and the engineers' mess? Staterooms forward of saloon:—On starboard side defective ventilation, no ingress of pure air when ports are closed, no ventilation to upper deck, air second-hand through storage hatchways, neither pure nor sweet-smelling. Ventilation of intermediate compartment:—No downdraught (no direct ingress of pure air into saloon, which is always full of passengers at meal times and in the evenings), all the more serious as there is free ingress of the vitiated cabin air into the saloon when the brass-bound ventilators are closed. The skylight is not made

to open! The two entrance doors from the deck do not open direct into saloon—are generally crowded with passengers gasping for fresh air in rough weather, and even these doors are shut in heavy weather. Yet the storage passenger clerk is of opinion that these doorways do sufficiently ventilate the saloon. On the three nights going out when all was shut down, the air was foul and stagnant—sea-sickness greatly aggravated the complaints numerous. The foul air from the intermediate overflows into stateroom passages, particularly when the wind is aft. Large hospital storage main deck:—No ventilator, boarded up to roof all round, A.C. Storage foul air:—Stewards, whose duties detain them between decks night and day, suffer in their health. The late head storage steward, J.I., died of lung disease, connected with blood poisoning by foul air. His successor, our present man, J.A., a fine looking young fellow of splendid physique and strictly temperate, nearly died of the same disease. Glory-hole:—Lower deck, 35 berths—number of stewards at night in bed 34—no ingress of air, no egress of foul air, no windfall. The foul air quite stagnant must develop blood poisoning and lung disease. The second cook, J.H., died of it. Steward W. broke down under it. A temptation to the stewards to sleep on deck or in the saloon: passengers talk about their "pale faces." This report, together with another respectfully submitted three months later, THE MANAGERS GRATEFULLY ACKNOWLEDGED BY DISPENSING WITH MY SERVICES.

"The manner in which Dr. Leet's career aboard was brought to an end, is probably an example of the impatience with which the officials regard anything like criticism of the sanitary arrangements of their ships."—(Editorial article, *British Medical Journal*, Nov. 23, 1889).

C. H. LEET, F.R.C.S.

BOOTLE, Feb. 22, 1890.

"He subsequently died of the same disease; see my pamphlet *The Ship's Surgeon of To-day*, page 15.

Why should a British Ship's Surgeon and his invalid wife, the daughter of a Church of England bishop, be obliged to starve in Christian England, because he had the courage and conscience to do his duty to the American and British travelling public, and to the poor sailors and seamen?

I receive no pay from the Seamen's Union as Medical Officer of their Bootle Branch.

Will friends read and circulate this letter "No. 5," and the pink fly-leaf enclosed. March 27th, 1890. C.H.L. BOOTLE.

DR. LEET'S
RECENT TESTIMONIALS.
(1886-89.)

From Surgeons, Royal Infirmary, Liverpool:

I have had the pleasure of knowing Dr. C. H. LEET for several years, both as a medical practitioner in this city and as a very frequent visitor in the wards of the Royal Infirmary. I have always regarded him as a thorough gentleman, an honourable man, and as a well-informed member of our profession, and I shall rejoice to hear of his success in his future career.

ROBERT BICKERSTETH, F.R.C.S.

I have known Dr. LEET for many years, and have much pleasure in expressing the high opinion I entertain of him as a professional man.

REGINALD HARRISON, F.R.C.S.

Dr. Leet was a constant attendant at the Liverpool Royal Infirmary, and lost no opportunity of keeping himself abreast of medical science. He is a man of gentlemanly character and stainless reputation.

W. MITCHELL BANKS, F.R.C.S.

*From Physicians, Royal Southern Hospital,
Liverpool:*

I have much pleasure in stating that I have known Dr. LEET for many years as a gentleman of high personal character and professional attainments. The fact that Dr. LEET is a Fellow of the Royal College of Surgeons of England, is sufficient evidence of the soundness and extent of his surgical knowledge; while his interest in all that is newest in medicine has been manifested by the visits to the wards of the Royal Southern Hospital, and careful investigation of cases under my charge at that institution, which he has made in the intervals of his voyages. Now that he has decided to remain on shore, I wish him the success which his professional attainments might fairly entitle him to expect.

WILLIAM CARTER, M.D. Lond., F.R.C.P. Lond.

Army Medical Service.

MEDICAL DEPARTMENT, WAR OFFICE, Dec. 26th, 1888.

SIR,—I have the honour to acknowledge your letter of the 13th inst., and in reply I beg to inform you that I shall be happy to bear testimony to your professional efficiency during your service, and you are at liberty to refer your employers to me any time with that view.—I have the honour to be, Sir,

Your obedient servant,

T. CRAWFORD, Director General.

FROM PRIVATE PATIENTS.

From Robert Durning Holt, Esq., Liverpool:

DEAR GRAVES,

I enclose a letter which I have received from my friend Mr. LEET. When we lived at Edge Hill we had professional experience of Mr. LEET, an experience which gives me the greatest confidence in introducing him to your Company.—Yours very truly,

R. D. HOLT.

From Fredk. Gregory, Esq., Solicitor, Birkenhead:

During the four years you were our family Doctor your skill and kind attention gained our complete confidence, &c.

From Basil Papayanni, Esq., Shipowner, Liverpool:

Having known you for more than ten years, I have great pleasure in testifying to your skill and ability as a surgeon and physician, and to your gentlemanly and kind treatment of your patients.

From Lord Ronald Gower, Stafford House:

I have much pleasure in giving my testimonial to Dr. C. H. LEET, having experienced his professional excellence two years ago.

From Hon. A. S. Northcote, Pynes, Exeter:

I have found Dr. LEET to be a most pleasant and efficient surgeon, &c.

From Hon. Horace Plunkett, Kildare Street Club, Dublin:

In November, 1885, I had occasion to consult Dr. C. H. LEET. I have much pleasure in stating that I had every reason to form the highest opinion of his professional skill.

From Lady Guy:

I can never forget how great my debt to you is for your unremitting care of my husband. It was, humanly speaking, owing to your skill and judicious treatment that Sir Philip's life was then spared, &c.

From the Vicar of W——, Co. Durham:

Of Dr. LEET's medical skill and experience I have had ample proof in my own family, my wife having been attended by him for some months in a very difficult and trying disorder with the most beneficial results, due entirely, I am confident, to that skill and knowledge which is only to be acquired by long and constant practice.

I feel the utmost confidence in saying that whatever place Dr. LEET may settle in will be a distinct gain by his presence, and can only wish himself, &c.

N.B.—These are a few brief extracts out of a printed book of forty-three Testimonials (see my pamphlet, "The Ship's Surgeon of To-Day").

C. H. LEET, F.R.C.S., ENG.,
BOOTLE, LIVERPOOL.



PREFACE.

The endeavour to compress into a pamphlet the chief points of my experience has unavoidably resulted in the omission of numerous facts of vital interest, detailed in the full manuscript of my story, for example, the Sanitary Reports, the cruel treatment I received from Alfred Holt's Commander of S.S. "Prometheus," Ocean Steamship Company, in the Red Sea, in 1887, and the shabby behaviour of the Cunard Directors. But I propose when the pamphlet is in the hands of the public to give a lecture in Liverpool and in Bootle to supplement all such deficiencies.

I feel convinced that the verdict pronounced by every competent and unbiassed reader of this truthful sketch, will be that no conscientious medical gentleman, with a spark of self-respect or of professional dignity, should stoop to accept a Ship's Surgeoncy in the British Mercantile Marine under the present humiliating conditions.

Unless for serious reasons, such as would be approved by H.M. Board of Trade, should Steamship Managers dismiss a Ship's Surgeon, bearing in mind the stain that will attach to his character thereby, as well as the hopeless task forced upon him of working up a shore practice without private means for a couple of years to float him.

Such has been my case; the Managers of the White Star, Cunard, and Alfred Holt Lines were made aware by my official letters that *I have no private means*.

As Surgeon of the Bootle Branch of the Amalgamated Sailors' and Firemen's Union of Great Britain and Ireland, I gave an Address at their Annual Congress held at Cardiff this month, pointing out to the Delegates that the welfare and efficiency of Seamen and Firemen were intimately bound up with the efficiency of the Ships' Surgeons.—See our Paper *Seafaring*, October 10th, 1889.

C. H. L.

116, DERBY ROAD, BOOTLE, LIVERPOOL,
October, 1889.

Brief Sketch of Official Life
as
Ship's Surgeon.

Eight years in the position of Medical Officer in the British Mercantile Medical Marine Service, following upon sixteen years full pay satisfactory service in the Army Medical Department (chiefly attached to the Royal Engineers), should peculiarly qualify me to submit a true picture of the conscientious *Ship's Surgeon of to-day*, an interesting study, not only for Her Majesty's Board of Trade, but also of much personal interest to the travelling public, British and American, saloon and steerage, whose sanitary environment on shipboard is supposed to be under the direction and control of the passenger steamship company's official—"the experienced surgeon."

Having been naturally blest with a good temper, no charge can be brought against me by shipowners or captains of insubordination or disrespect, so that a brief record of facts, official letters, and extracts from diaries will enable the public to see how far a typical case, such as mine, will bear out with almost startling exactness the truth of the assertions of the leading professional authorities quoted on page 36.

I am feeling so deeply the responsibility of "that important position" in the interests of the Atlantic trade particularly, and for my brother ship surgeons, that I would urgently provoke relief and reformation for this large department of public servants, even at the expense of my own future livelihood.

I will then, at once try to condense into a brief summary my personal experience for the unbiassed perusal of busy business men with no time to read the chapters *in extenso*.

Without delaying to allude to my special army training and

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examinations in sanitary science, on shore and afloat, in transports and at Military Medical School, Royal Victoria Hospital, Netley; having been obliged, through ill-health, to abandon medical practice in Liverpool, and seek relief for insomnia in a "life on the ocean wave," through the kind influence of our leading Liverpool surgeon,* I was appointed to the "important position" of surgeon to S.S. "Celtic," White Star Line. I very soon found insanitary conditions, but was indirectly warned all round to report nothing if my berth were to be permanent, &c. After bearing with my conscience for about two years I received my first snub, in 1885, when I had written a polite letter (p. 14) upon the steerage accommodation having been tampered with, to the junior manager of the White Star Line, addressed to him at Brevoort House, New York, he having crossed over with us and had personally inspected what I had written about; and what was the snub! He treated my letter with contemptuous silence.

I say, a conscientious sense of the "important position" towards the public and Board of Trade, as well as in the real interests of the shipowners, compelled me, after three years in the ship, to submit to the managers a full report of abuses, with respectful and reasonable recommendations upon the sanitary defects of S.S. "Celtic," dated 30th July, 1886, duly registered at the post office to ensure delivery. How was it received by Messrs. Ismay, Imrie & Co.? With contemptuous silence!

Similarly treated was another Official Letter (p. 15), respectfully written, 13th December, 1886, a few months later, and after dismissal, also duly registered, of a serious nature, practically charging the managers with hastening the death of head steward A. of that ship, through neglect of my professional recommendations, contained in the previous months' Surgeon's Log-Books as well as in the July Report.

The S.S. "Celtic" on being laid up that winter, 1886, until spring, the managers seized the plausible opportunity to—in plain English—dismiss me and "give me the sack" without a day's notice or a day's pay—(vide page 17).

My character by this publicity palpably suffering loss, and what was the real cause of my dismissal? Was it for the crime of

* E. R. Bickersteth, F.R.C.S.

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daring to write the sanitary Report of the previous July, and the private letter to the clerk the day before dismissal, begging him to call attention to my Log-Books! (p. 17). And why such a crushing punishment as dismissal,* when a few days after it, for the mere asking, they forwarded the following flattering testimonial!—

WHITE STAR FLATTERING TESTIMONIAL

C. H. LEET, Esq., F.R.C.S.

DEAR SIR,

Nov. 4th, 1886.

We have much pleasure in stating that you have served for three years and a half as surgeon on board the steamers of this company, and that during that period you fulfilled the duties of that important position in a most careful, attentive, and efficient manner.

Yours faithfully,

ISMAY, IMRIE & Co.

Recommendation to WHITE STAR MANAGER from ROBERT D. HOLT, Esq. (Liverpool).

(From Diary, June 13th, 1883.)

DEAR GRAVES,

I enclose a letter which I have received from my friend Mr. LEET. When we lived at Edge Hill we had professional experience of Mr. LEET, an experience which gives me the greatest confidence in introducing him to your Company.

Yours truly,

R. D. HOLT.†

From ROBERT D. HOLT, Esq. (Liverpool).

INDIA BUILDINGS, LIVERPOOL,

DEAR DR. LEET,

21st December, 1886.

I don't see how I can add anything to the high certificate you carry from the White Star Company. It is a satisfaction to me to know that I had the pleasure of introducing you to that Company, as also to the Ocean Steamship Company, in which service you now hold an appointment.

I am, yours truly,

ROBERT D. HOLT.

* An old friend, whose family I professionally attended when in Medical practice in Liverpool.

† I applied to be re-appointed three times after dismissal, viz.:—23rd May, 1887, through Mr. Imrie; by telegram, 24th May, 1887, and by official letter to Ismay, Imrie & Co., 9th June, 1889.

The Captain of S.S. "Celtic," B. Gleadell, was ungentlemanly and insulting to me during these three years I held the "important position" of surgeon on board; even the purser, his bosom friend, would say to me: "Well, doctor, I could not bear half of what you take from the captain."

Satisfactory corroboration of these assertions will be readily forthcoming from passengers on S.S. "Celtic," during these three years, from officers and members of the crew, and from the late popular agent of the White Star Line, at New York, Mr. R. J. Cortis, a gentleman beloved for his truthful and straightforward character, who, while S.S. "Celtic" was in port in New York during these three years must have dined some twenty times at least, at the saloon table, and heard the coarse vulgar personalities thrust at me, the company's surgeon, by their commander, from his official chair at the head of the table, with strangers often present, the stewards, such as Samuel Rule, looking on ashamed of their commander's behaviour to their doctor, whom I can say, without vanity, they liked and respected.

But the injury to my character and future livelihood by this White Star treatment did not cease on dismissal from their service, their captain, not content with having driven me out of his ship, must needs go out of his way to injure me by—with the full weight of his official position—giving such a bad character * of me to my next employers, the Ocean Steamship Company (Alfred Holt's Line), to their captain of S.S. "Prometheus" as to induce the latter to treat me when surgeon of S.S. "Prometheus" (1887) in a cruel and insulting manner (ill as I was in the Red Sea, etc.), although on the previous voyage to China he was kindness itself! I respectfully reported in official letters registered and addressed to Alfred Holt, Esq. (he being, I was told, part-owner and manager combined) this extraordinary conduct of his captain, but the letters were treated with contemptuous silence, all replies were written by his Medical Superintendent, who acted most unprofessionally throughout, not even affording me the official interview with his master, Mr. Alfred Holt, to which I was legally and honourably entitled. To

* See my official letter to Board of Trade p. 17; also my letter to Captain Gleadell p. 37.

whom could I go for advice and redress? What could one poor oppressed and insulted surgeon do against two such powerful steamship companies? The Liverpool Board of Trade officer, and shipping officials declared they were powerless. So I submitted the entire "Prometheus" affair to Her Majesty's Board of Trade praying for a court of inquiry upon the captain's (of S.S. "Prometheus") conduct. (p. 17). Here is the reply:—(p. 21).

BOARD OF TRADE MARINE DEPARTMENT,

13th September, 1887.

SIR,

I am directed by the Board of Trade to acknowledge the receipt of your letter of the 8th instant, relating to your treatment whilst on board the steamship "Prometheus," and in reply, to inform you that your complaints are not of such a nature as to justify the interference of this board.

I am, sir,

Your obedient servant,

THOMAS GRAY.

C. H. LEET, Esq., F.R.C.S.,
WOOLTON, LIVERPOOL.

I also officially reported to Messrs. Ismay, Imrie & Co., the misconduct of their captain of S.S. "Celtic," in slandering me to the captain of S.S. "Prometheus," and the former's insulting behaviour towards me whilst their surgeon on board S.S. "Celtic." Here is their reply:—

September 6th, 1887.

"We are in possession of your letter of yesterday, in reference to certain statements relating to yourself, which have been attributed to Captain Gleadell, and also alleging discourtesy on his part towards yourself whilst surgeon of the S.S. "Celtic," under his command.

With regard to the former it is purely a question which concerns Captain Gleadell and yourself, and as to the latter, it is the first time any complaint has been brought to our knowledge, and as the opportunity for investigation practically passed away with the termination of your services, we cannot, for obvious reasons, venture to re-open the matter, nor do we think that it would serve any good purpose to do so."

Yours faithfully,
ISMAY, IMRIE & Co.
(J. HUGHES.)

I wrote a polite letter, 3rd October, 1887 (p. 37) to Captain Gleadell for an explanation of the "*awful report*" Capt. Webster said to me he had received concerning me from Capt. Gleadell. No reply! contemptuous silence.

In October, 1887, after recovering sufficient strength at the Convalescent Home, Woolton, Liverpool, I went home to Stanhope Rectory, Darlington, and professionally attended my father-in-law, the late Bishop Ryan, D.D., until his death, January, 1888. I was appointed, March, 1888, to the Cunard Steamship Company as Junior Surgeon, and served with "conduct entirely satisfactory to those captains under whose command I sailed" (vide page 28) in S.S. "*Aurania*," "*Gallia*," and "*Seythia*" for the nine months, until my ship was laid up in the winter. After a *long-fide* official promise in writing (p. 28), from the general manager to be re-appointed in the spring traffic, I refused midwifery engagements at Witton-le-Wear, ordered additional uniform, and sent printed copy of his official promise to numerous friends in U.S.A. and at home. March comes round, and in reply to my letter he writes to say "younger men are preferred, and, therefore, no opening for your services" (vide p. 28)! Of course, this excuse was a mere blind, the real reason for my practical dismissal having been, probably, too much zeal in prescribing their medicines for the poor steerage passengers sent back to Europe by New York and by the Boston State Charity (vide Captain Hains', S.S. "*Aurania*" Statement, p. 38); or a White Star evil report.

I respectfully laid my case before the Cunard Directors, submitting to them, and to Sir William Forwood in a separate

letter, that their general manager's action was not only inconsistent and "would establish a serious precedent in the Medical Department, while commanders are eligible up to 70 years of age, but that it would affect me—the individual—so injuriously "as to virtually stamp incompetency upon my face in the eyes of "my future employers, a disastrous result, probably unforeseen in "this somewhat hasty decision, nor could it have occurred to the "office officials that should this 'Question of Age' be submitted "to the Medical Press at home and in U.S.A., the verdict, to say "the least, would not exclude men of my own age (53) from "further active sea employment." (Letter to Sir William).

But a glance at my official communications* to the Directors, would satisfy the public that personal interests have been subordinated to those of the Cunard Company itself, earnestly recommending with all *bona fides* a new departure in their medical branch, namely, the appointment of a shore surgeon—Medical Superintendent—as absolutely necessary to supervise and instruct these *Younger Surgeons*, strengthening my suggestion by recording some serious irregularities and ABUSES that came under my personal notice even in my short tenure of office, and which would have been impossible had such a professional superintendent, instead of ignorant lay officials, been in charge of the medical department of the Cunard Company (see copy of post card p. 29).

I believe the Cunard's general manager and Captain Webster of S.S. "*Prometheus*" were old "friends" in the National Line together, could the latter have passed on to the former the "*awful report*" Captain Gleadell of the White Star had given him of me!

I am now seeking a livelihood here in Seaforth, in private practice, and opening a cheap dispensary near the Cunard and White Star docks, Bootle.

As a final effort in the interests of truth and justice I submitted on 13th and 17th August, 1889, a full statement to H.M. Board of Trade (p. 22), requesting an official inquiry into my complaints against the Managers of the White Star and Cunard

* All my official letters will be read *in extenso* at the public meetings.
As I am unable to afford the expense of publishing them here.

Steamship Companies, Liverpool; and received much the same reply as on the former occasion, viz., that "this board has no power to interfere in your behalf." (p. 27).

I can confidently appeal to all the Medical Emigration Officers of H.M. Board of Trade, at Liverpool, as to the satisfactory discharge of duty during the many years I was under their official supervision as ship surgeon in the above named Companies.

* TESTIMONIALS.

The printed book of forty-three Testimonials, was forwarded in June to about two hundred steamship acquaintances, friends, and members of the press, etc. These Certificates are from Government Emigration Medical Officer, Liverpool; Director General, Army Medical Department, War Office; HIGHEST CERTIFICATES FROM ALL THE STEAMSHIP COMPANIES, AND CAPTAIN P. J. IRVINE; LIVERPOOL PRIVATE PATIENTS; LEADING MEDICAL MEN OF LIVERPOOL, LONDON, BIRMINGHAM, AND NEW YORK; SALOON PASSENGERS, INCLUDING MANY MEN OF LIGHT AND LEADING.

CERTIFICATES OF STATE OF HEALTH. (PRINTED ON LAST PAGE OF BOOK OF TESTIMONIALS)

From Charlton Bastian, F.R.S., August, 1887, and June, 1889; Dr. Fred Shattuck, Boston, Mass., U.S.A., November, 1888; Dr. Waters, Liverpool, 14th December, 1888; Dr. Althaus, London, 27th August, 1887; Dr. Carter, Liverpool, 5th May, 1889. All disproving the cruel and unprofessional opinion of Alfred Holt's Medical Superintendent (p. 19).

MEMBERS OF THE CREWS GRATEFUL FOR MEDICAL TREATMENT.

S.S. "AURANIA."

Captain Hains, S.S. "Aurania," thoroughly satisfied with my treatment of his own case on board that ship, March, 1888.

* The book of Testimonials can be inspected at, or borrowed from my
Bottle Surgery, 9 to 12 noon daily. 116, Derby Road.

Dr. Campbell, of New York, the family physician of Mr. Vernon Brown, Cunard Steamship agent, said to Captain Hains, "How unlike is Dr. Leet to an ordinary ship surgeon" (*vide* my official letter to Cunard Steamship directors, 16th March, 1889). Chief Officer—Fourth Officer—Third Officer, Mr. B.—Chief Cook—Stewardess, Mrs. McK.

S.S. "GALLIA."

Extra Second Officer, Mr. P.—Chief Engineer, Mr. D.—Engineer, M.—Fireman, Thomas—Stewardess, Mrs. M.—Boatswain, T.—Carpenter, John Stewart—Interpreter, Sear—Head Stowage Steward, R. P. (Consumption)—Steward, J. J. (Consumption).

S.S. "SCYTHIA."

Chief Stewart, B.—Chief Engineer—Chief Cook—Carpenter, F.—Boatswain's Mate, Wellwood.

Total admissions (entered in Surgeon's Log Books) for medical treatment, March, 1888, to January, 1889, during the charge of the above-named steamers, over 600. Total number who died under treatment, ONE.

CONCLUSION.

What, then, is the conclusion of the whole story?

Simply this; that these three first-class powerful steamship managers—White Star, Alfred Holt, and Cunard—have followed the universal custom and supported their officials against the unprotected and conscientious ship surgeon, and, by their action getting widely known in Liverpool, I am now practically boycotted by the Inman and all other lines from further sea employment, and snubbed by the employes.

The residents in this neighbourhood of Seaforth, naturally are perplexed and unable to form an unbiased opinion until these facts of the case are laid before them.

My old friends and acquaintances the members of the National Amalgamated Sailors' and Firemen's Union of Great Britain and Ireland, having appointed me Member, and

their Surgeon at Bootle, will read and circulate at all the Branches of the Union this story of oppression and injustice, having experienced similar treatment at the hands of steamship managers. See their organ *Safaring*; Annotation on my letter by the Editor (p. 44)

The whole body of ship surgeons will sympathize with me knowing the keen professional competition I am compelled to face in my struggle to earn a livelihood amongst the working men of our British Mercantile Marine at Bootle.

Will not the ship surgeons also organise and form a Union?

CORRESPONDENCE, &c.

R.M.S. "CELTIC,"

NEW YORK, 3rd June 1885.

DEAR MR. HUGHES,

I had no opportunity of speaking to you upon sanitary matters before you left the ship; will you, then, kindly allow me to submit a few facts for your consideration?

1st. The Board of Trade Medical Officers at Liverpool and Queenstown and the Health Officer here asked whether the regulation air-space between decks for the steerage passengers was attended to, and also every available ventilation to diminish the "crowd-poison," which is invariably being given off from the bodies of unclean passengers when congregated together.

2nd. At your personal inspection of our steerage, we brought to your notice the fact that the regulation air-space had been encroached upon by mails and cargo, and that before the surveyor's inspection at New York, the latter would have been removed, and so no adverse report could be substantiated.

3rd. Upon a recent voyage, an intelligent steerage passenger told me that he had taken notes of the superficial area and cubic space measurement, making the usual deductions for the pile of luggage which should, upon that occasion, have been consigned to the hold!

4th. In the opinion of the best medical authorities, the "ulcerated sorethroat" prevalent on shipboard (and we had quite our usual number of cases) arises from the impure atmosphere between decks and consequent blood-poisoning.

5th. It is not desirable to separate husband and wife in the steerage sleeping arrangements. For example, one such husband sleeping forward nearly died of "D.T." and it was the general remark that he would have been "kept straight" had he been with his wife in the proper married rooms.

Lastly. I trust you will give me credit for writing this letter in the interests of the health of the passengers under my charge, and therefore in the interests of the company whose orders I undertake to carry out.

You will kindly understand that if the commander or the purser are given this letter to read, in their laudable anxiety to "fill up the ship and make it pay," they may misconstrue my motive in writing it, and in consequence may entertain in the future some irritation or antagonism towards me. Whereas I need hardly assure that I do everything in my power to get along smoothly, and these officers afford me every assistance in the conscientious discharge of my duties towards the Board of Trade, and my employers, the White Star Company.

Faithfully yours,

C. H. LEET,

Surgeon, S.S. "Celtic."

We have no baths in the steerage.

12, EDGE LANE, LIVERPOOL,

13th December, 1886.

Messrs. ISMAI, IMRIE & Co.,
Liverpool.

GENTLEMEN,

I beg leave to express my regret at the comparatively sudden death of my late head steerage steward Atkinson, of S.S. "Celtic," and consider it my duty to request your re-perusal of the strong remonstrance contained in my sanitary letter of 30th

July, 1886, against this man, having been sent, regardless of my opinion, back to that arduous duty, lest he should die of blood-poisoning by foul air, as did in my opinion, his predecessor in that post, steward Inglis.

Again, in my August Log Book, I stated that "Atkinson required a glass of port wine daily."

Again, in September, on seeing him continued as my chief subordinate on the muster day of sailing, I begged him to accept from my private purse a glass of port wine daily (the only thing he cared for at night after his hard day's work). "No, thank you, sir," he said; "I am all right." Although everyone who knew him well could see his failing health.

I beg leave to record now that I felt at that time very much humiliated as it was known in the ship I had reported on Atkinson's state of health, and the receipt of that letter of 30th July, above alluded to, had not been even acknowledged by the White Star office, although forwarded by post in a registered envelope from Queenstown, nor was I ever spoken to by any of the firm upon the contents of that letter, and I would further express my conviction that this once "fine young fellow of splendid physique" would have been alive to-day had my SANITARY LETTER of 30th July received due consideration.

In conclusion, I beg leave most respectfully to state that it is reported in the ship's company that poor Atkinson's death was comparatively so sudden, and decomposition set in so rapidly, there was no time to warn his old messmates to attend the funeral. Nor would anyone have attended with more heartfelt sorrow than myself; for conscientious, sober, self-denying young men even the White Star company cannot afford to lose.

I have written this letter without prejudice; the only motive namely, that medical officers may be encouraged to interest themselves in their own most important duties and their reports receive that attention which they invariably do in the public service.

Yours faithfully,

C. H. LEET, F.R.C.S.

WHITE STAR DISMISSAL, 2ND NOVEMBER, 1886.

Mr. Graves stated to me in your office, before Mr. Hughes, 2nd of November, 1886, "You cannot be re-appointed to the "Celtic"—even if she comes out in the spring—that letter (pointing to my private letter to the clerk, Mr. Bruce, requesting him to call attention to my Log Book, with its Sanitary Entries) is quite sufficient," or words to that effect (from my official letter to Messrs. Ismay, Imrie & Co., 9th June, 1889, transcribed from my Diary, 2nd Nov., 1886).

WHITE STAR CONTRADICTION, 30TH NOVEMBER, 1886

The managers, writing 30th November, 1886, say:—

We must remind you that this company dispensed with your services, not in consequence of any reports made by you on sanitary matters, but on account of the ship to which you were attached being put out of commission for a lengthened period.

We are at all times willing to receive reports from the ships' doctors when matters requiring to be remedied come under their notice.

Copy of my first Letter to Board of Trade.

CONVALESCENT HOME, WOOLTON,
8th September, 1887.

SIR,

I have the honour to submit most respectfully for an Inquiry by the Board of Trade into my complaint against Commander (Master) John R. Webster, Master of S.S. "Prometheus," Ocean Steamship Company (Alfred Holt's Line), for his unprovoked, illegal, insulting, and cruel treatment towards me personally when Surgeon in charge of S.S. "Prometheus," on the voyage to China, sailing from Liverpool 3rd June, 1887.

I was removed from S.S. "Prometheus" by the Colonial Authorities sick at Penang 9th July, and sent home from Penang General Hospital passenger on S.S. "Deucalion," O.S.S.C., on 19th July, arriving in London 25th August; the "Prometheus" being due home about 20th September.

* If so, why have they never acknowledged my respectful Sanitary Reports?

I beg respectfully to enclose "Statement of Facts," written by me at the time. Each act was recorded as it occurred, so that a glance over the "Statement" will prove that I have good grounds for advisedly making use of the four above-named adjectives as indicating Captain Webster's treatment. I may, however, briefly sum them up here:—

1. "Unprovoked" means that no angry word, or disrespectful act, or unnecessary letter can be charged against me; throughout the whole trying ordeal I maintained entire control of my tongue and temper.

2. "Illegal" means an Officer having been sent on duty on the "bridge," 16th June, 1887, at or near Port Said (in the fierce heat, suffering from inflammation of the liver), without my knowledge or consent, Captain Webster having previously arranged for days, to land that sick Officer at Port Said for return invalided to England.

3. "Insulting" refers to Captain Webster's behaviour, that having on the previous voyage treated me in the most friendly manner (*vide* "Statement"), on this second or succeeding voyage, from the first day of sailing (3rd June) he changed his behaviour, not speaking to me at the saloon table, and a lady passenger sitting between him and me at each meal; the Chief Officer even testifying that such change of manner on the part of Captain Webster from the previous voyage "made all the mates feel uncomfortable at the saloon table." Having asked respectfully for Captain Webster's reasons in writing for this painful and intolerable silence, after bearing it for fourteen days—some forty-five meals—and getting no answer, my brain and nerves broke down, and I placed myself on the sick list, but "fit for duty." Captain Webster officially visited me in the presence of the Chief Officer in my cabin on 22nd June, 1887, and said in loud, angry voice, "You eat plenty—hearty appetite, so not sick—therefore, come to table" ("Statement" p. 26). Again, when off Colombo, 30th June, he said, "You shan't see the Consul;" I having respectfully expressed a wish to see the Consul or Attorney-General for advice and protection.

4. "Cruel" refers to Captain Webster saying to me at

Penang, "You are not sick; I have taken your name off the sick list out of Log Book days ago" (or words to that effect). Yet the same day, 8th July, I was examined (I was ordered by the Colonial Authorities to be medically examined) by the two Colonial Surgeons separately, and each Surgeon certified I was so ill as to be taken (out of the ship) to the General Hospital, Penang, next morning, 9th July, 1887!

N.B.—Captain Webster, being well aware for months that I suffered from "Insomnia," by his recent treatment alluded to above, aggravated that symptom by all this worry, and such like conduct in Medical Jurisprudence implies cruelty and probably malice.

I beg to state I have been leaving the matter in the hands of the Medical Superintendent, Ocean Steamship Co., begging for an impartial investigation by Mr. Alfred Holt, on arrival home of S.S. "Prometheus;" but the Medical Superintendent has interviewed me, and also written to me, with palpable bias stating, in his official memo. to me of 1st September, his conviction that "cerebral irritation has been gradually unfitting me for the life of a Ship Surgeon," and advising me not to wait for Captain Webster's return, but to accept "£5 and go and live with my friends."

This would be wrong, I submit, even to Captain Webster, whose conduct needs investigation in his own best interests (as my friends will insist on my character being cleared), and the Ocean Steamship Company will not, I fear, recommend me to another Company, unless there is a public and impartial investigation by the Board of Trade or other Government body.

I am a poor man, and cannot afford a legal action.

I beg to add that the Penang Correspondence enclosed will prove that my complaint was officially lodged with the Master Attendant Captain Bradbury, before I was ordered to "sign off articles" (in hospital, instead of in the presence of the Harbour Master—which was illegal, I believe), and the Master Attendant Captain Bradbury's official letter to me (No. 199, 14th July, 1887) shews he could come to no decision in consequence of Captain Webster giving his "Statement at a separate time," when he

could have, and ought to have, been present when I made my Statement by his (Captain Webster's) order to me.

I beg leave to state I am still weak and suffering from this mental worry, since June, 1887, over three months. The physicians (Dr. Charlton Bastian, F.R.S., University College, London; Dr. Althaus, Harley Street; Dr. Glynn, Liverpool) say I cannot get well until this matter with the Ship's Captain is cleared up, and will induce (if prolonged) disease of the brain.

I have the honour to be, sir,
Your obedient servant,
C. H. LEET, F.R.C.S., Eng.

The Assistant Secretary,
Marine Department,
Board of Trade,
London.

Reply from Board of Trade to above.

Any further communication should be
addressed to
THE ASSISTANT SECRETARY
(MARINE DEPARTMENT),
BOARD OF TRADE,
LONDON, S.W.
And the following letter and number should
be quoted :— M 16652

Telegraphic Address.
BOARD TRADE MARINE
LONDON.

BOARD OF TRADE,
(MARINE DEPARTMENT),
LONDON, S.W.,
13th September, 1887.

CERTIFICATES.

Sir,

I am directed by the Board of Trade to acknowledge the receipt of your letter of the 8th instant, relating to your treatment whilst on board the Steamship "Prometheus," and, in reply, to inform you that your complaints are not of such a nature as to justify the interference of this Board.

The enclosures to your letter are returned herein.

I am, Sir,
Your obedient Servant,
THOMAS GRAY.

C. H. LEET, Esq., F.R.C.S.,
CONVALESCENT HOSPITAL,
WOOLTON, LIVERPOOL.

Copy of my second Letter to Board of Trade.

SEAFORTH, LIVERPOOL,

13th August, 1889.

SIR,

I have the honor to submit for your favourable consideration this my respectful application for an official inquiry into my complaints against the managers of the White Star and Cunard Steamship Companies, Liverpool, for their action in dismissing me and refusing to re-appoint me to the post of Ship Surgeon in these public Atlantic Passenger Lines—causing me loss of character and livelihood so that I am now practically boycotted from further employment in the British Mercantile Marine Service, after eight years of special training and sea experience—the Cunard breaking their official promise (Vide Appendix A) to re-appoint me this spring.

The real ground for their action has been the fact that I have had the courage and conscience to report to them in writing, officially and respectfully (in the case of the White Star, after a patient delay of three years) certain serious abuses and insanitary conditions, gravely affecting the health of the travelling public—American and British—saloon and steerage.

Upon the enclosed post card are stated some of these abuses.

I would respectfully point out the hardship of our present position as ship surgeon, that whereas in the case of Poor Law Medical Appointments, the medical officer cannot be removed without the sanction of the Local Government Board. We, poor despised, unprotected Ship Surgeons can be kicked out at the end of any voyage without warning, or reason given, or a day's pay to start medical practice in private life, as I am now compelled to do without any private means whatever.

Is this custom reasonable or just?

Will Fellows of the medical colleges, like myself, with a spark of self-respect or professional dignity submit to such humiliating treatment?

Yet, if we elect to "keep in" with the managers, we must insult and silence our consciences and share the risk and disgrace of a public investigation, such as it is my duty now to request of the President of H. M. Board of Trade.

Your emigration officers, in Liverpool, apparently acquiesce in at least one of the abuses, namely, the Cunard manager, officially and systematically since 1885, suppressing part of the ship surgeon's official Report required at the end of each voyage by the Board of Trade.

I beg to state that our Medical Journal (vide *British Medical Journal* leading Article, 14th July, 1888—*Lancet's* Commissioners Report, on Port of Liverpool Emigration, 15th December, 1888, Appendix F) have repeatedly indicated that increased powers are required from Government for your department to carry out the necessary reforms in the medical department of the mercantile marine, and that public opinion, American and English, if brought to bear will expedite the movement.

I may, therefore, take the liberty upon receipt of your official reply to submit printed copy of this correspondence to His Excellency, Oliver Ames, Governor of Massachusetts, U.S.A., who kindly assisted me in studying the American Immigration Question, etc.; also to the Governor of New York City and to many influential friends in U.S.A. and England.

I beg leave, respectfully, to record the fact that my character sustained serious damage in shipping circles by your refusal to investigate my former complaint of "illegal, cruel, unprovoked and insulting treatment" in the Alfred Holt Line S.S. "Prometheus," vide your letter M 66652, 13th September, 1887.

That treatment had resulted from the late Captain Gleadell, S.S. "Celtic," White Star Line, slandering me to Alfred Holt's commander of S.S. "Prometheus." Messrs. Ismay, Imrie & Co. refusing to investigate my official written complaint of that slander, in their letter to me of September 6th, 1887—another act of injustice on their part.

This apparent combination of three powerful steamship

companies to boycott me has now been successful—so damaging to my public character that I felt in honor bound to withdraw my application for employment in the Union Cape Steamship Company, although recommended personally by my friends, the deputy chairman of the company, Frank H. Evans, M.P.; Sir Henry Barkly, late Governor of Cape of Good Hope; Samuel Plimsoll, Esq.; and Sir A. Slade, Bart., through Dr. Robson Roose, of London (vide their letters Appendix D).

And what has been my crime?

Too zealous discharge of duty to the Board of Trade, the shareholders, the American and English passengers, and the crews.

I beg to enclose—

Appendix A. The Cunard managers official promise of re-appointment and their subsequent refusal upon frivolous grounds, "Preference given to younger men": 16th, March, 1889.

Appendix B. My letter to White Star Managers, 10th June, 1889, for re-appointment, and their official refusal on the following day. "Quite unable to hold out any encouragement of our being able to avail of your services."

Appendix C. The printed post card stating some of the abuses.

Appendix D. Union Steamship Co.'s correspondence.

Appendix E. Letters re-printed from the *Booth Times*, containing recommendations for the better safeguarding of life and health on shipboard.

Appendix F. Printed book of my forty-three testimonials, with letter to American and British steamship acquaintances, and extracts from *Lancet* and *British Medical Journal*.

I have the honor to be, sir,

Your most obedient servant,

C. D. LEET, F.R.C.S., Esq.

The Assistant Secretary,
Marine Department,
Board of Trade, London, S.W.

SEAFORTH, LIVERPOOL,

17th August, 1889.

SIR,

I have the honour to inform you that by an oversight which I deeply regret, an incorrect addendum was attached to, and forwarded with, my letter to you on the 15th inst. May I respectfully request that the enclosed correct addendum be substituted for it and duly attached to the said letter of the 15th inst.

I beg leave to add that the whole of the Reports, letters, etc., bearing upon my official life in these steamship companies have been carefully copied *in extenso* on brief paper by a solicitor's engrossing clerks, and thus are ready for publication, or for the perusal of your solicitors in Liverpool.

The loss of character and livelihood I have sustained as the result of the humiliating position of ship surgeon so wholly unprotected by H.M. Board of Trade, has the sincere sympathy of the leading medical men of Liverpool, and of the staff of the British Medical journals.

I have the honor to be

Sir,

Your most obedient servant,

C. H. LEET,

F.R.C.S. Esq.

The Assistant Secretary,
Marine Department,
Board of Trade,
London.

ADDENDUM.

My official sanitary Reports or letters submitted to Messrs. Ismay, Imrie & Co., White Star managers, dated respectively 3rd of June, 1885 (addressed to Mr. J. Hughes, assistant manager); July 30th, 1886; October, 1886 (accompanying S.S. "Celtic" Surgeon's Log Book); 13th December, 1886, submitted after my dismissal by Mr. W. S. Graves, one of the firm, on 2nd November, 1886—although several of them carefully registered at the Post Office to ensure delivery—were neither acknowledged by writing, nor alluded to directly or indirectly to me until the day of my dismissal, 2nd November, 1886. The above mentioned dates are taken from my letter to the managers asking for re-appointment, dated 10th June, 1889, which letter is enclosed herewith in Appendix B.

In the case of the Cunard Steamship Company, in consequence of relying upon their general manager's promise of 2nd November, 1888, to re-appoint me in the spring. I went home to Witton-le-Wear, and refused medical practice with midwifery engagements for February, March, and April—then upon receipt of the general manager's letter of 16th March, 1889 (vide Appendix A), breaking his promise—I submitted the matter to the Directors of the company, enclosing a careful list of some abuses and insanitary conditions which had come under my personal observation whilst holding the position of ship surgeon, in their Atlantic passenger steamers in 1888-89—together with recent lay and medical testimonials—trusting that such evidence of conscientious and courageous discharge of duty might afford some claim to be re-instated as their ship surgeon, but the Directors supported their general manager's action, and so I was practically dismissed, with loss of character and obliged to start in medical practice here, in Seaforth, Liverpool, without private means—snubbed by the Steamship Companies' lowest employés.

C. H. LEET, F.R.C.S.

Reply from Board of Trade to above.

Any further communication should be addressed to
THE ASSISTANT SECRETARY,
(MARINE DEPARTMENT),
BOARD OF TRADE,
LONDON, S.W.
And the following letter and number
should be quoted:—
M 15933 and 15990.
Telegraphic Address,
BOARD TRADE, MARINE,
LONDON.

BOARD OF TRADE,
(MARINE DEPARTMENT),
LONDON, S.W.
21st August, 1889.

EMIGRATION.

SIR,

In reply to your letters of the 15th and 17th instant, complaining of your having been dismissed from the service of the Atlantic Steam Ship Company, I am directed by the Board of Trade to state that the appointment of Surgeons to ships sailing under the Merchant Shipping and Passengers Acts rests with the owners, and this Board have no power to interfere in your behalf.

The enclosures in your letter are returned herein.

I am, Sir,

Your obedient servant,

GEORGE J. SWANSTON.

DR. C. H. LEET, F.R.C.S.,
SEAFORTH,
LIVERPOOL.

APPENDIX A.

THE CUNARD STEAMSHIP CO., LTD.,
GENERAL MANAGER'S OFFICE.

8, WATER STREET, LIVERPOOL,
2nd November, 1888.

DEAR SIR,

It is with regret I have to inform you, that in consequence of laying one or two vessels up for the winter, I am obliged to give the medical charge of the "Gallia" to your senior in our service; but that on the resumption of the spring traffic, if you are disengaged, I hope to offer you a similar position.

I have pleasure in stating that, during your six or seven months' continuous service with us, in charge of a large number of emigrants and cabin passengers, your conduct has been entirely satisfactory to those captains under whose command you sailed.

Yours truly,
THOS. BOUMPHREY,
General Manager.

DR. LEET.

(Copy.)
CUNARD CO.,
GENERAL MANAGER'S OFFICE.

LIVERPOOL, 16th March, 1889.

DEAR SIR,

Your letter of yesterday is received. Unfortunately our passenger season has not opened so well as we anticipated, and sailings we had intended to make have been put back. Owing to this, and to the fact that we think it desirable to give preference to younger men, I regret to say there will be no opening for your services.

Yours truly,
THOS. BOUMPHREY,
General Manager.

TO DR. LEET.

APPENDIX B.

My letter to White Star managers of 10th June, 1889, asking for re-appointment, although forwarded to the Board of Trade, is not re-produced in this pamphlet as the facts it contained are already recorded, but here follows copy of their official refusal to re-appoint me on the day following.

10, WATER STREET, LIVERPOOL,
June 11th, 1889.

DR. C. H. LEET,
9, STRAND, LONDON.

DEAR SIR,

We return the documents which accompanied your letter of yesterday in support of your application for re-appointment in the White Star steamers, and in reply have to inform you that our staff is at present quite complete, and as there are no changes likely to occur, which are not already fully provided for, we are quite unable to hold out any encouragement of our being able to avail of your services.

Yours faithfully,
ISMAY, IMRIE & CO.

APPENDIX C.

Copy of Post Card.

Respectful appeal to the American and British public for an investigation into my complaints against the Atlantic Steamship Co's, viz., that whilst presenting flattering testimonials, they dismissed me because I had the courage and conscience to respectfully report upon such ABUSES as the following:—

IN WHITE STAR LINE.

Regulation steerage passenger space taken up by mails and cargo. Insufficient hospital accommodation. Defective ventilation. Chief Hospital occupied by purser for over two years. Accelerating the death of head steerage steward, Atkinson, through disregard of my medical warnings. My last surgeon's log book full of insanitary facts.

IN CUNARD STEAMSHIP CO.

Systematic suppression of important sanitary information (which is required by the Board of Trade in every ship surgeon's monthly Report to Government), in 1888-89. Human blood in the vaccine lymph supplied for steerage passengers. Ship's hospitals occupied by steerage passengers. Ship's waterways blocked up. Surgeons' cabins most unhealthy. Surgeries defective.

White Star Managers refused (6th Sept., 1887) to investigate Captain Gleadell's slander of me to Alfred Holt. I am now turned adrift without a cent.!

CHARLES H. LEET, F.R.C.S. Eng.

SEAFORTH, LIVERPOOL,
August, 1889.

APPENDIX D.

Union Steamship Co. correspondence not required to be reproduced in this pamphlet.

APPENDIX E.

Re-printed from the *Boole Times* July 27th, 1889.

ALLEGED CRUELTY ON A CUNARD LINER.

SUDDEN DEATH AT BOOTLE.—THE SECOND ENGINEER IN TROUBLE.
UNFOUNDED CHARGES.

Mr. S. Brighouse, County Coroner, held an inquest at the Borough Police Court, on Tuesday, at 3.30, touching the death of Isaac Macanlay, 15, Ashfield Cottages, Ashfield Street, Liverpool, which occurred at the Borough Hospital on Friday, the 19th instant. The deceased was a trimmer on board the *Pavonia*, which arrived in dock on Wednesday last. He was ill when the vessel arrived, and was removed to the Borough Hospital, where he died as stated above.

Mr. Tobin appeared on behalf of the Cunard Co., the owners of the *Pavonia*.

Richard Macanlay said the deceased was his son. He had stayed with witness when he was a boy. He saw his son taken off the *Pavonia* to the hospital a few days before he died.

Nurse Warburton said the deceased died on Friday, the 19th inst.

The Coroner adjourned the inquest till Wednesday at 4.30, in order that further inquiries might be made by the police.

Mr. S. Brighouse, County Coroner, on Wednesday resumed the inquest at the Police Court, Bootle, on the body of Isaac Macanlay, twenty-five years of age, a coal trimmer, who lived with his father at 115, Ashfield Cottages,

Ashfield Street, Liverpool, who received injuries on board the Cunard Steamer *Pavonia*, from the effects of which he died in the Bootle Borough Hospital on the 19th inst. Inspector Heydon conducted the case for the police, and Mr. Tobin, barrister, appeared for the Cunard Company and Alexander Robertson, the second engineer of the *Pavonia*.

In the course of the inquiry it was stated by the Coroner that charges of cruelty had been made against the second engineer, and he was present to hear them.

Robert Macanlay, of 115, Ashfield Street, said that the deceased was his son. He was 25 years of age, and was a trimmer for the Cunard Company. He saw his son removed from the *Pavonia* on the 17th inst. to the Bootle Borough Hospital. Before he made the voyage witness last saw him on June 18th, at his own home. His son had always lived with him when on shore. He then appeared to be in good health. He only remembered his son being ill once—about two years ago. He scarcely recognised his son on his

"The Ship's Surgeon of To-day."

This pamphlet has been published in the interests of the travelling public, American and British, seamen and steerage, not forgetting the members of the crews, in order to draw attention to the neglect of ship's sanitation and to the evasion—in the case of one fashionable Atlantic Line for the past four years—by Steamship Managers and their Ship's Surgeons of the Sanitary Regulations of Her Majesty's Board of Trade and Passengers' Act.

In performing this duty conscientiously, my pamphlet has received the hearty approval and support of the British Medical Press.

But the expenses, about £40, connected with publishing, can hardly be defrayed out of a weekly income of some fourteen shillings (derived from my dispensary in Bootle), after deducting for rent, board, and drug bill.

My brother, Canon Ambrose Leet, D.D., of Dublin, Chaplain to H.E. the Lord Lieutenant, will gladly acknowledge any contributions towards aiding my efforts in this undertaking, and assisting my Dispensary for the Poor.

My Sanitary Reports and Letters on the subject, readily published by *The British Medical Journal*, December 21st, 1889, and *The Lancet*, January 4th, 1890, should be studied by the Press, Lay and Medical, British and American.

What hope can there be of reform in the Medical Department of the British Mercantile Marine? None, I fear, from this side of the Atlantic; but the Americans will doubtless follow the precedent so successfully carried out in 1882, and once again appeal to the British Government through our Consul-General at New York. —*Lancet*, January 4th, 1890.

January, 1890.

Bootle, Liverpool.

C. H. L.

N.B.—It is requested that this slip may be inserted in the pamphlet.

was a freeman on board the *Pavonia*. He sailed in that ship on her last voyage from Boston, when she arrived in dock on Wednesday. Macanlay was his trimmer; he supplied witness with coal. He was able to do his work. He refused to do it two or three times on the voyage home. He had worked all night going out. He did not complain of being ill at Boston, not until they were two days out of Boston. He lay in his bunk and Mr. Robertson, second engineer brought him out and set him to work again. He could not say what

IN CUNARD STEAMSHIP CO.

Systematic suppression of important sanitary information (which is required by the Board of Trade in every ship surgeon's monthly Report to Government), in 1888-89. Human blood in the vaccine lymph supplied for steerage passengers. Ship's hospitals occupied by steerage passengers. Ship's waterways blocked up. Surgeons' cabins most unhealthy. Surgeries defective.

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In reply to Inspector Heydon—his son had a black eye, and one of his shoulders and his ribs on both sides were black. His son did not tell him anything of this. He asked his son what was the reason of his being in this state, but he did not seem able to answer, though he tried. In consequence of what the porter at the hospital told him, he went to the police.

By Mr. Tobin—His son was a fine, strong fellow, and did not suffer from anything except pneumonia two years ago. He did not believe his son was easily affected by cold. He never saw an old wound on the instep of his son's left foot. He was always active. This was his first voyage to sea.

The Coroner—I was under the impression that he had been many voyages.

Mr. Tobin said that on the articles signed by deceased it was stated that he had last sailed on the *Spain*.

The Coroner—They sometimes say such things.

Witness said his son had never sailed before.

The Coroner—What was his occupation?

Witness—A header of casks. He was in constant employ for the last two years until three weeks before he sailed in the *Pavonia*. He left his former employment in consequence of slowness of trade. He did not leave to go to sea because he thought it would do him good, but because he did not wish to be idle.

By the Jury—He believed his son was a substitute during the Sailors' Strike. He would have no knowledge of the duties of a fireman. Witness afterwards said he could say positively that his son had no wound on his instep.

Nurse Warburton, Bootle Hospital, said the deceased died at the Hospital on the 19th. She did not see him when he was admitted. He was under her care at nine that night (Wednesday), and on Thursday night. He was not able to make any statement during the time she was there.

By Inspector Heydon—He spoke to me but not sensibly.

John McLoughlin, 15 court, 6 house, Darnley Street, Liverpool, said he was a fireman on board the *Pavonia*. He sailed in that ship on her last voyage from Boston, when she arrived in dock on Wednesday. Macaulay was his trimmer; he supplied witness with coal. He was able to do his work. He refused to do it two or three times on the voyage home. He had worked all night going out. He did not complain of being ill at Boston, not until they were two days out of Boston. He lay in his bunk and Mr. Robertson, second engineer brought him out and set him to work again. He could not say what

day this happened, but it was between twelve and four. Deceased commenced to work when the engineer brought him down about two o'clock, and he worked until about four o'clock, the end of the watch. Witness now said it was about three days out of Boston that deceased complained—they started on Saturday, July 6th. When they were about five days out deceased refused to do his duty. When the engineer was shouting at him he supposed deceased got faint-hearted. He said he felt ill and he was away that watch. Macaulay stayed in the forecabin when he was sick. There is a hospital on board, but as this was his (witness's) first voyage he could not say whether it was for firemen or trimmers. He had seen Macaulay stagger about with weakness. He saw him sitting on the coal and he was bleeding from the mouth. Witness said he could not say what day it was, but it might be Wednesday or Thursday, in the twelve to four watch. He had seen deceased working an hour before this. When he saw deceased bleeding from the mouth Robert Newcomb, a fireman, was there. Macaulay did not say what had caused his mouth to bleed. The second engineer was in the coal bunk when witness looked in an hour before. Deceased worked the next watch and when about seven days out from Boston he again complained of being ill, two days after he saw his mouth bleeding. Macaulay was shifted from under him and Newton was put in his place. Macaulay trimmed coal for other firemen, but he was ill all the time. Witness did not know anything about Macaulay having attempted suicide by jumping over the side of the vessel, and he had never seen anyone strike him. They were ten days and a half on the voyage, and Macaulay worked for witness up to the last three days.

In answer to the Coroner, witness said that he was not in the employ of the Cunard Company now. He was not going to sail in the *Pavonia* on the following day. He had not seen Robertson since the 17th inst. until that day.

In answer to Mr. Tobin, witness said he never heard anyone say that Robertson had struck Macaulay. He did not hear that Macaulay had told the doctor that the bleeding of the mouth was caused by a fall on the coal in a fainting fit. Witness had previously seen deceased fall in a fainting fit, and he and Robertson had carried him in and had done all they could to help him. Robertson had always treated Macaulay well. Macaulay was always complaining of the heat.

Inspector Heydon said there was an officer in court who would state that witness did speak to him about the bleeding in the mouth.

Witness said he did not say to P.C. 46 that the bleeding of the mouth was caused by a blow from the second engineer, Robinson. He had made no statement.

In answer to Mr. Tobin, witness said that he was at the Cunard office, where he had made a statement.

Robert Wm. Newham, Moses Street, Liverpool, said he was a trimmer. He had been a trimmer once before, when he worked his passage from Boston. On the last voyage of the *Pavonia* he was paid. He worked with Macaulay, who seemed to be in good health going out. They started on the return voyage on Saturday, 6th inst. He did not see Macaulay struck, but he saw him after he was struck. This was when they were about three days out. He saw Macaulay about five minutes before he was struck. Deceased was sitting on some coal in the bunk, and complained of being poorly. Five minutes afterwards witness saw deceased lying on the coal on the head of his bunk bleeding from the mouth. Deceased told him that he had been struck by some person who was not present at the time. Deceased lay on the coal for about an hour and a half or two hours bleeding from the mouth. Witness next saw deceased in his bunk at five o'clock. Deceased only worked one watch afterwards. Witness had never seen anyone strike Macaulay.

In answer to Mr. Heydon, witness said he was told by persons that deceased had made an attempt to jump overboard, but the second engineer stopped him.

In answer to Mr. Tobin, witness said he had no spite against the second engineer. He had been fireman first, but he was displaced by the second engineer and made a trimmer, which is a lower grade.

In answer to a Jurymen.—The firemen were all non-union men.

Dr. Cook, surgeon on board the *Pavonia*, said he was on board the ship on the last voyage to and from Boston. On the return voyage Macaulay came to him on the 17th suffering from a slight attack of diarrhoea. Witness did not enter minor cases in his book (handed to coroner). Macaulay was with him on the 24th, but he did not consider him in a dangerous condition. On the 10th witness sent the deceased off duty suffering from an enlargement of the groin. Macaulay went on duty that night of his own accord. On the 11th deceased came to witness suffering from pneumonia in both lungs, and witness ordered him off duty permanently. On the 12th Macaulay was no better.—Here the doctor explained that the book handed to the coroner was not written at the time, but copied from notes made at the time. The book was written upon the day of reaching port. On Wednesday Macaulay seemed better in the morning, but worse in the afternoon. During the whole of the time Macaulay had never complained of having received injuries, but that deceased exhibited symptoms of violence on Wednesday when he came to witness with a cut on the bridge of his nose, which was bleeding. He said he had got it down in the stokehole from a blow with the coal. Witness did not think that this blow had any influence on the health or the death of Macaulay.

In reply to Inspector Heydon, witness said that of his own knowledge deceased did not work after the 11th. There was no truth in the statement that Macaulay had applied to be allowed to go off duty, and the doctor had refused.

In reply to Mr. Tobin, witness said he never saw any cut about the mouth of deceased. Deceased would be more easily affected by cold or heat in consequence of his suffering from pneumonia. Witness prescribed for deceased, but Macaulay did not always follow his directions, and this would affect his health.

By the Coroner.—Macaulay had never complained of being struck by Robertson.

In answer to one of the jury, witness said that he heard that water from a hose was poured on Macaulay, to revive him from a faint. It was quite right to use water in this case.

Dr. Johnson, house surgeon at the Borough Hospital *pro tem.*, said that deceased was brought to the hospital on Wednesday. He was suffering from inflammation of both lungs. It would not do deceased any good to remove him in the condition he was. Deceased was not sufficiently conscious to tell witness anything about himself. He died on Friday from inflammation of the lungs.

In reply to Inspector Heydon, witness said he saw no discolouration on the shoulder or ribs of deceased.

Dr. Sprakeling, medical officer of health, said he had made the post-mortem examination of the body. He did not find any marks of violence, but the congestion of the lungs was very marked. He was of opinion that death had been caused by the pneumonic condition of the lungs and the fatty condition of the heart. The morbid condition of the other organs seemed to prove that deceased had had typhoid fever.

Inspector Heydon said that the police had never been of the opinion that Mr. Robertson used violence to the deceased.

Mr. Alexander Robertson, second engineer of the *Pavonia*, said he had never struck the deceased. He had not thrown coal at him, nor had he ill-used him in any way.

The Coroner then summed up, and the jury returned a verdict of "Death from natural causes."

THE S.S. "PAVONIA" FATAL CASE.

[TO THE EDITOR.]

SIR,—The report of the coroner's inquest in this case in your last week's issue is very melancholy reading, and as similar cases occur from time to time I send you, in the best interests of the steamship companies themselves, a few out of many recommendations submitted by me this spring to the Directors of an old-established steamship company, having been obliged myself through ill-health to take the post of ship surgeon in several first-class passenger lines:—

"Recommendation for the appointment of a Ship Surgeon or Medical Superintendent to supervise and instruct young ship surgeons in their duties, to receive and forward their official reports to the manager, etc."

"The surgeon's log-book to contain daily entries of every sick person on board over two or three days ill, together with record of the daily treatment. Reports of all serious cases being submitted in writing to the commander for *hourly* entry in the ship's official log-book on the day submitted. Post-mortem examination of members of the crew in cases of sudden death."

"The medical Superintendent to advise young surgeons to be constantly on the alert for cases of injury or disease. Also to avoid intimacy with passengers and officers on board, such as drinking and smoking in their cabins; any disrespect or snub to the surgeon to be entered in his log-book, copy being submitted to the commander at the time. Surgery: To encourage attention to duty and professional study by providing a surgery on upper deck in pure atmosphere and good light properly fitted up."

"Ships' hospitals to be under the surgeon's charge, whether occupied or not."

"The Medical Superintendent should advise the Marine Superintendent upon the state of health of officers and crew. Officers suffering from serious chronic disease should not be employed (they might suddenly expire on the bridge), and delicate stewards soon break up in the unhealthy steerage atmosphere."

"Sick Firemen.—How many surgeons are considerate enough to exempt from the rule of fixed hours three times daily for the surgery to be open in the case of sick firemen, and be glad to see them at the surgery before or after any watch, as their duties are heavy!" Such was my practice.

Bearing still more closely on the Pavonia case, I would urge ship surgeons to obtain permission from the managers, before going on board, to early admit sick members of the crew into one of the three or four ship hospitals, where diet and medical treatment can alone be satisfactorily carried out, giving the man a fair chance of his life.

Firemen require immediate medical attention, as only the exact number of duty men are carried, so that every man laid up means six hours' watches for his substitute—*fearfully hard work*. Hence it is of vital importance to the engineers to have a painstaking and vigilant surgeon.

Were the status and duties of the ship surgeon professionally supervised by a "shore boss," a class of thoughtful, experienced, and contented medical officers with robust self-respect would thus be organised. All would then work harmoniously on board, human life would be effectually safeguarded, and such lamentable cases as that of poor Macaulay become well nigh impossible.—Yours, &c.,

C. H. LEET, F.R.C.S., Esq.

Seaford (Liverpool), 29th July, 1889.

Re-printed from the *Bottle Times*, August 17th, 1889.

DEATH OF ANOTHER TRIMMER IN THE ATLANTIC PASSENGER TRADE—

A WARNING AND AN APPEAL.
(TO THE EDITOR).

SIR,—Only last Saturday week you had the goodness to publish my letter alluding to the poor trimmer who had been landed in a dying condition on the 17th July, from the Cunard s.s. "Pavonia," containing some recommendations bearing upon the better safeguarding of human life of members of the crew in this stormy trade, pointing out in particular that the class of firemen (including trimmers, of course) require "immediate medical attention, as only the exact number of duty men are carried, so that every man laid up means six hours' watches for his substitute—*fearfully hard work*," this remark having great force in the case of "green hands"—untrained men. May I now transcribe the account of the coroner's inquiry into the second fatal case:—

DEATH FROM BLOOD POISONING.—At the Coroner's Court, Dale Street, yesterday, Mr. Clarke Aydinall and a jury inquired into the circumstances of the death of John William Davies, 22 years of age, a carter, who lived at 16, Hughes Street, West Dorset Road. Davies a short time ago left his employment as a carter, and was engaged on board the White Star steamer "Britannic" as a coal trimmer. Whilst climbing in a coal bunker for some of the fuel he fell and hurt his left hip, and when he arrived home he found himself incapacitated from further work in consequence of this injury. Last Tuesday he was taken to the Mill Road Infirmary, where he died on Friday last from blood poisoning, caused by an abscess set up by the injury to the hip. The jury returned a verdict of "Accidental death."—*Liverpool Courier*, August 7th.

Yesterday, Sunday afternoon, 11th August, I visited the poor widow, residing with her baby and her old mother at 19, Hughes Street. Their story may be thus condensed:—"Our Jack was out of work; without our consent he engaged as a trimmer on board s.s. "Britannic," White Star Line, 26th June. At New York several men deserted from the ship, throwing more work on the remaining acting trimmers, of whom again some laid up on the homeward passage. Sailed from New York on 10th July, and had the accident on the 12th, but he would not report sick. Worked up to day of discharge, 20th July; received wages £3 7s., and character "V.G." When he arrived at their cottage door the wife exclaimed, "Here is our poor Jack with death in his face." Nursed him a week at home, paying a doctor. His leg was drawn up and hip contracted. Admitted into hospital 30th; operation 31st; died on 2nd August; coroner's inquiry on the 6th August. Funeral expenses £4 17s. 6d. (I saw the receipted bill); club money £7. Upon this sad story I will only offer one word of warning—the result of practical observation: That no man without previous sea experience of two or three voyages as fireman or trimmer should be ordered watches longer than the regulation time. Good and willing hands should not be overworked. The surgeon should inspect men after every six hours' watch. In fact the engineers in *Bottle* and *Liverpool* have great difficulty in securing efficient trained men under the present unsatisfactory system, or rather want of system, of engagement.

Finally, a word of appeal.—May I commend the case of this widow and fatherless child to the charitable public!

The Aged Mariners' Home receives "munificent donations," but if human life on board the Atlantic passenger steamers (in the firemen's room) be not more carefully supervised, a fund should be started for the relief of the families of this most useful class, who have lost their bread-winners through blood-poisoning in the conscientious discharge of unhealthy and exhausting duties.—Yours, &c.,

C. H. LEET, F.R.C.S., Esq.

Seaford, Liverpool,
17th August, 1889.

* The White Star Co., sent the widow five pounds as a result of this appeal.

APPENDIX F.

"SHIP OWNERS, SHIP SURGEONS, AND SHIP PASSENGERS."

"The President of the Board of Trade tried to shift the blame (referring to misappropriation of Hospitals through Dr. Tanner's question in Parliament) on to the Ship's Surgeons—it was their duty to see that the requirements of the law are not evaded, if they have been evaded, then the surgeons who have not reported the evasions have failed in their duty. * * * What has been the fate of surgeons who have found fault, for although the Board of Trade has not heard of it, fault has been found, as might be ascertained on application to the Local Government Board. Are any of these courageous surgeons afloat now? Is it not well known that much less than a formal complaint, even a protest, or a suspicion that the surgeon once, for an imprudent moment, thought of making a protest, is enough to lead to instant dismissal? Are not the agreements between the Steamboat Companies and surgeons so drawn, that these officers are at the mercy of the Companies who may even refuse, without reasonable cause given, to pay a salary fairly earned? When the Public Health service of this country comes to be reformed on a sound basis, it will be necessary to make the Health Department responsible for the supervision of the health of the passengers carried by emigrant and trans-oceanic passenger ships; then the responsibility would be met, now it is shirked because it falls upon a Board which has no Sanitary Advisers. The Board of Trade does not understand the gravity of the case, or the importance of its duties in this matter, and in consequence, very serious inconvenience and expense are inflicted upon our Colonies and upon the United States * * * Obviously the ship ought to carry some independent officer responsible, not to the *Ship owners whose interest it is to smother complaints*, but to the department whose business it is to investigate them. Such an officer the Ship's Surgeon might be, and where the place has been tried, as in the Emigration services of the Australasian Colonies, he has well discharged his duties * * * Sooner or later the United

States and our Colonies will grow tired of waiting, and the Board will have to take down the tape-bound parcel of papers from its shelf, and find, under external compulsion, a solution to a difficulty which might now be made to cease to exist, by the simple expedient of doing what is just and right because it is right and just."

[Leading article, dated 14th July, 1888, *British Medical Journal*.]

Report of *Lancet* Special Commission
on British Emigration Service.

* * * "If the Surgeon on board were quite independent of the proprietors of the ship and owed his appointment to the Sanitary Authorities, all ship owners would have to observe the same rules and standard of excellence. At present the *Surgeons are in great need of some form of protection to render them independent of the Captains and Owners*. Such a reform would have for effect the introduction of a better class of surgeons into the service, and this would be a great advantage to the shipowners. Also it is *urgent that the Surgeons on board ships should be instructed to make full reports*."

Report on Port of Liverpool Emigration.

December 15, 1888.

N.B.—The italics in the Extracts are mine.

My Letter to Captain Gleadell upon his Slender.

CONVALESCENT HOME,

WOOLTON, NEAR LIVERPOOL,

3rd October, 1887.

CAPTAIN GLEADELL,
S.S. "Germanic."

SIR,

May I submit for your information the remarks of Capt. J. R. Webster, of S.S. "Prometheus," on or about the 1st June, 1887 (to me), in these words:—"By the way, I got an awful report of you from your late Captain, yes, a fine report," or words to that effect.

As a medical man's livelihood depends upon his character, I shall be greatly obliged if you will inform me as to the truth or otherwise of that statement, as it was made seriously, and probably has been the cause of Capt. Webster's extraordinary behaviour to me on board S.S. "Prometheus."

I beg to add that Messrs. Ismay, Imrie & Co. in their memo. of 24th May, 1887, say to me:—"We are obliged for your offer of services, of which we regret we are unable to avail, as we have no opening."

Would the managers have so written if anything serious or "awful" had been recorded against me?

Hoping to hear from you before you sail, as I am greatly distressed by this report.

I am, Sir,

Yours faithfully,

C. H. LEET, F.R.C.S.

Forwarded to White Star Office, care of Mr. Bruce being written on the envelope.

No reply! contemptuous silence! !

Extract FROM MY DIARY, May 2nd, 1888.

NEW YORK, S.S. "AURANIA."

Captain Hains' Statement.

"Visit of Captain Hains to ship; cautioned me not to order any drugs not actually necessary (at New York.) 'Oh! that is the doctor who orders so much medicine (was said at the Cunard office), last voyage he emptied his medicine chest,' said Capt. Hains. So care! I told Captain Hains in reply that '165 prescriptions were dispensed on outward voyage, so that I have to give medicines. Total passengers and crew outward voyage 1284.' Here follows extract from 'Surgeon's Report of Practice', S.S. 'Aurania' for above voyage:—"The steerage passengers 'homeward are in many instances in delicate health, and continually applying for medical treatment and medicines, hence the apparently large expenditure from the medicine chest, but

"it is in the interests of the service to be courteous and attentive to all applying for medical relief."

"Chemists' bill in New York three dollars for Lithia water for Commander's use." (From official letter to Directors Cunard Co., 27th March, 1889.)

Copy of my Letter to the Cunard Directors.

WILTON-LE-WEAR, DARLINGTON,

8th April, 1889.

SIR,

I have the honor to acknowledge the receipt of my packet of testimonials and letters from friends with your letter of the 6th inst., informing me that the Directors had read my communications, for which I beg you will have the goodness to convey to them my grateful thanks, and at the same time the respectful expression of my disappointment that the disastrous effect upon my public position in Liverpool shipping circles,—the logical result of your general manager's action dismissing me from the Cunard—has received, so far, no consideration at their hands. However, as individual interests are trifling compared with those of a great British Company I beg leave to submit most respectfully the enclosed, my final letter,¹ dated 27th March, 1889 (and only held back awaiting your official letter of the 6th inst.), upon the subject of a medical superintendent over your *youth* surgeons, submitting facts recorded at the time they severally occurred in your passenger steamers while in my medical charge, and with suggestions now respectfully drawn therefrom.

I have the honor to be, sir,

Your most obedient servant,

C. H. LEET, F.R.C.S.

A. P. MOORHOUSE, Esq.,

SECRETARY

CUNARD S.S. Co., LIMITED, LIVERPOOL.

¹ Fifteen pages of brief paper, being letters dated 18th, 19th and 24th March, 1889.

² Twelve pages of brief paper.

N.B.—These letters will be read out to the public at my lecture (see Preface).

Copy of Board of Trade Orders to every Ship Surgeon in the Atlantic Passenger Trade.

GOVERNMENT EMIGRATION OFFICE,

LIVERPOOL, 11th December, 1888.

I approve of DR. C. H. LEET, taking charge of the Passenger Ship "Scythia," of Liverpool, under the provisions of the 42nd Section of the Passengers Act, 1855.

J. DE VERE HILL,
pro Emigration Officer.

It is desirable that Surgeons in charge of Passenger Ships should keep a record of any sickness that occurs on the voyage, whether among Saloon Passengers, Emigrants, or Crew, and should report the same to this Office * at the end of the voyage, making special mention of the following particulars:—

Date of commencement of voyage.

Date of termination of voyage.

Date of the commencement of any infectious or contagious diseases, the number of cases, and the number of families affected.

Has the Ship been disinfected?

State the number of deaths and their causes.

Was the ventilation sufficient? if not, state where it was defective.

Were any complaints made by the Emigrants? if so, state what complaints, and what steps were taken in each case.

* The report should be addressed as follows:—

O. H. M. S.

The Emigration Officer,
Board of Trade Offices,
Liverpool.

Canard order to their Ship Surgeons upon the Form of Report to the Government Emigration Office omits the subject of "Disinfection of the Ship after Contagious disease on Board" and the questions,

"Was the ventilation sufficient? if not, state where it was defective."

"Any complaints made by Emigrants, &c."?

Copy of Canard Order altering the above.

8, WATER STREET,

LIVERPOOL.

23-9-88.

Canard S.S. Co., Limited.

GENERAL MANAGER'S OFFICE.

The Surgeon S.S. "Gallia."

DEAR SIR,

In future you will please furnish the Emigration Officer with the following particulars, viz:—

Date of commencement of voyage.

Date of termination of voyage.

Date of commencement of any infectious or contagious diseases, the number of cases, and number of families affected.

State the number of deaths and their causes.

Such Report to be sent in the Ship's despatch box under cover to me.

Yours truly,

F. W. MASSEY,

pro GENERAL MANAGER.

Canard Orders to me to alter the above.

The General Manager orders ME to suppress Sanitary information, 14th May, 1888, viz:—(from my Diary *verbatim*.)

"Reported myself (May 14) to General Manager—wrote out Report afresh, in the office, for the Board of Trade. The General Manager was angry that I had stated in the Report that (after the infectious case of measles had been removed to Hospital by

Castle Garden Authorities) "her bedding had been thrown overboard, and the berth thoroughly disinfected on the day—28th April, 1888—the disease was detected." The General Manager said, "We don't give any information about Sanitary matters to the Board of Trade, you must carry out our usual Form of Report, furnished to the Ships' Surgeons on this subject. Sit down and write this Report afresh, leaving out the clause about the disinfection." (See my letter of 27th March, 1889, to the Directors of the Cunard Steamship Company, submitting a careful list of some ABUSES and insanitary conditions in their ships).

Cunard Order on Hospitals.

CUNARD OFFICIAL ORDER TO THEIR SURGEONS UPON THE SHIPS' HOSPITAL.

(Copy.)

"The Hospitals are to be under the Surgeons charge only when occupied by patients, at which time he will be responsible for their cleanliness and proper ventilation. When unoccupied they are to be at the Captain's disposal."

Letter to the Editor of "Seafaring."

SIR,

For the past eight years, while holding the position of ship surgeon in the first-class Atlantic, Pacific, China and Australian Passenger Steamship Lines, I have been naturally interested in the physical welfare of our British crews.

Such questions as the following press for consideration:—

1. Should not the Sailors and Firemen of the National Amalgamated Sailors and Firemen's Union of Great Britain and Ireland, voluntarily submit to Medical Examination upon joining the Union? that in their own best interests the physically unfit may be weeded out, and the personal health of the reliable and sober toilers be placed under occasional medical supervision in every Branch of the Union.

2. Can it be true that the present system of engagement for each Atlantic voyage permits the runners, employed by the Steamship Companies, to have the patronage and selection of the ship's

sailors and firemen, exposing the runners to the temptation of "tips" from green hands and their own friends, to the probable exclusion, most unjustly of many trained applicants?

3. Would not the Medical Inspection of firemen's rooms, even on some fashionable Atlantic Liners, detect the absence of arrangements for drying their wet clothes and storing their soiled ones—the absence of bathrooms for personal cleanliness—and probably no heating apparatus? With a deck or floor always more or less wet—fruitful sources indeed of chest disease in the Atlantic fogs.*

4. Why should not the inspection of the fore-castle and firemen's rooms be as much the daily duty of the ship's surgeon as the inspection of the steerage decks? Would it not greatly assist the mates and engineers in detecting loafers and removing the genuine sick to hospital for *bona fide* treatment and speedy cure?

5. Does not the stewards department and the "glory-hole" require medical supervision? The public can judge by reading my SANITARY REPORTS when they are published.

I am now, sir, settled down, and have opened a surgery here adjoining our Liverpool (North End) Branch of the Union. My old friends, the sailors and firemen, will kindly keep me informed of all matters affecting their health and medical treatment on ship board, the sick and injured members of the crews on arrival home visiting me as they pass up the staircase to the Union room. Will you allow me in a future issue to make some more suggestions?

Yours, &c.,

C. H. LEET, F.R.C.S., Eng.,

Hon. Member of the Union.

116, DEEBY ROAD, BOOTLE,
LIVERPOOL, 9th Sept., 1889.

* There was an epidemic of blood-poisoning in the firemen's room in S.S. "Celtic," White Star Line, on homeward passage, June, 1885. About eleven men were almost dying (one did die after removal to deck hospital). Captain Goodell refused until urgently pressed by me in writing to take the sick men out of the room and place them in hammocks under the forward turtleback, where they all rapidly improved, etc.

At the Liverpool office, the Chief Engineer and Marine Superintendent urged the cause to be Malaria, contracted by sleeping on deck in New York, but the Managers listened to my opinion, that foul emanations from fifth under the deck of the firemen's room was the source of the poison, and they found it to be correct, the new deck costing over £100. But the despised ship surgeon was not even informed of the truth of his conviction, and of the new deck, until privately told by one of the Engineers!

N.B.—This footnote did not appear in the original letter to *Seafaring*.

Editor's annotation on above Letter.

"Marine engineers have set other certificated officers an example of what can be done by organisation. There is a considerable number of duly qualified medical men serving as surgeons aboard passenger ships, and they also need organising. The work has been started by one of the oldest and most influential surgeons afloat, who is a staunch friend of *Seafaring*, and of the Sailors' and Firemen's Union. By bringing other surgeons into the fold he will not only do a good thing for them, but for the Union, as it will be all the better for having as members men of such superior education as surgeons usually are."

BOSTON HERALD, U.S.A.

Special Correspondent—ARTHUR WARREN.
19, BRIMPTON SQUARE, LONDON, S.W.,
March 25th, 1889.

DEAR DR. LEET,

It is with the greatest possible pleasure that I add to the already long list of testimonials which you are fortunate in possessing, and which I am sure you deserve in every respect. Knowing as I do, the earnest and thoroughly faithful manner in which you discharge your duties, and appreciating as I do, the close study and long experience which you have given to all Sanitary matters connected with international Marine Passenger traffic, and your intimate knowledge of all that is required of Ships' Surgeons in the Atlantic service especially, I am bound to say that your withdrawal from that service would be a real public loss. In all my travelling I have never met a man so thoroughly qualified for the position you fill, and I am certain that the Steam Ship Company which engages you will have the right man in the right place. If there were more men like you in the service the service would be so much the gainer. Indeed so clearly am I

conscious of your professional merit, my dear Doctor, that I cannot refrain from expressing the hearty wish that circumstances could be shaped so as to give you the Medical charge of all the Emigration passing through and from English ports to the United States. You are surely needed for the work.

Believe me with every good wish for your success,

Sincerely yours,

(Signed) ARTHUR WARREN.

DR. C. H. LEET, F.R.C.S.

(Extracts from my Diary).

TREATMENT OF A SICK FIREMAN IN S.S.
"DEUCALION," ALFRED HOLT LINE.

"A sick fireman, John J. Lowe (of 7, Milton Street, Birkenhead), very ill, was shut up and locked in the after-wheel house, on the 30th July, 1887, at sea." At 7-45 p.m., he was visited by Henry Leonard, lamp trimmer, of 11, Walnut Street, Mount Pleasant, Liverpool, who, on knocking the door again, said to me (I was sitting on the saloon deck), "That poor chap very bad—he is off his head, sir, (we both heard him through the shut door shouting and calling out) . . . My God! this poor brother man, weak and delirious at times, left alone, (how could he have been!) liable to jump up in his ravings and strike his head against the wheel!" The wheelhouse is practically a box—no outlet for the impure air—no inlet, except what could get up by the rudder, which is nearly air-tight" [the glass ports of this wheelhouse, facing the saloon deck, were kept closed].

"3rd August. His wheelhouse door permanently unlocked for the first time, and door left open for air, he lying on his own dirty mattress and partly on the hardwood floor; dirty shirt and drawers, and feet dirty mud colour for want of washing. He is very thin and wasted; poor bones want soft mattress."

"I should have had a cabin cleared out of its tea-chests (there being NO HOSPITAL of any kind on board), put the sick man in it, and given the Stewardess (no ladies being on board) one shilling per diem to nurse and feed him. Mr. Holt would doubtless approve" (Diary, 31st August).

"Another fireman had to do six hours' watches, on account of the other man Lowe being laid up—this duty in the heat of the tropics can only be called *white slavery*. An extra fireman should be taken during the hot weather voyage through the Red Sea and Indian Ocean to China, as one fireman at least is likely to be laid up.

N.B.—My Diary continues to give full daily details of Lowe.

C. H. L.

* In the Indian Ocean, about 8° N. Lat. en route to Red Sea, homeward bound. My letter to Mr. Alfred Holt, 23rd August, 1887, off Portland, begging him to send the poor fireman to Convalescent Hospital, Liverpool, was treated with the usual contemptuous silence!

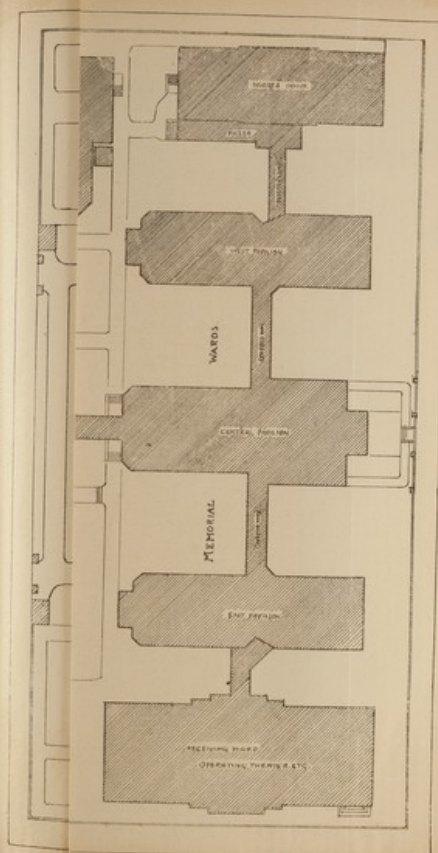
Finis.



REPORT
OF THE
BOARD OF MANAGERS
OF THE
PENNSYLVANIA HOSPITAL
TO THE
CONTRIBUTORS,
AT THEIR ANNUAL MEETING HELD FIFTH MONTH 3RD, 1897.
COMPRISING THE
REPORT OF THE DEPARTMENT FOR THE SICK AND WOUNDED
AND OF
THE DEPARTMENTS FOR THE INSANE,
TOGETHER WITH THE
ACCOUNTS OF THE TREASURER AND STEWARDS.

PHILADELPHIA:
Spangler & Davis, Printers, 222 Chestnut Street.
1897.

PINE STREET



SPRUCE STREET

1906 EXISTING BUILDING - - - - - APRIL 1906

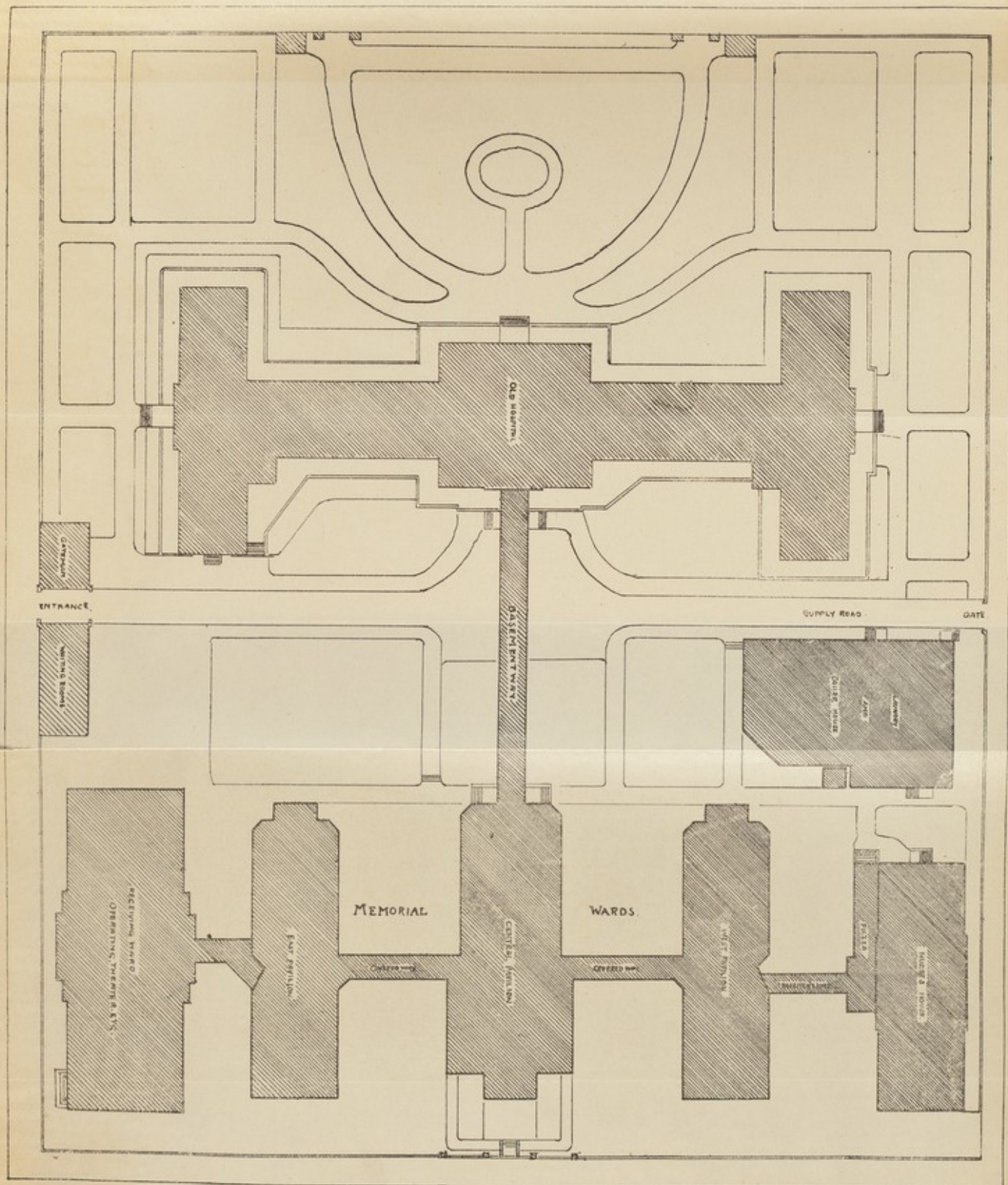
PINE STREET.

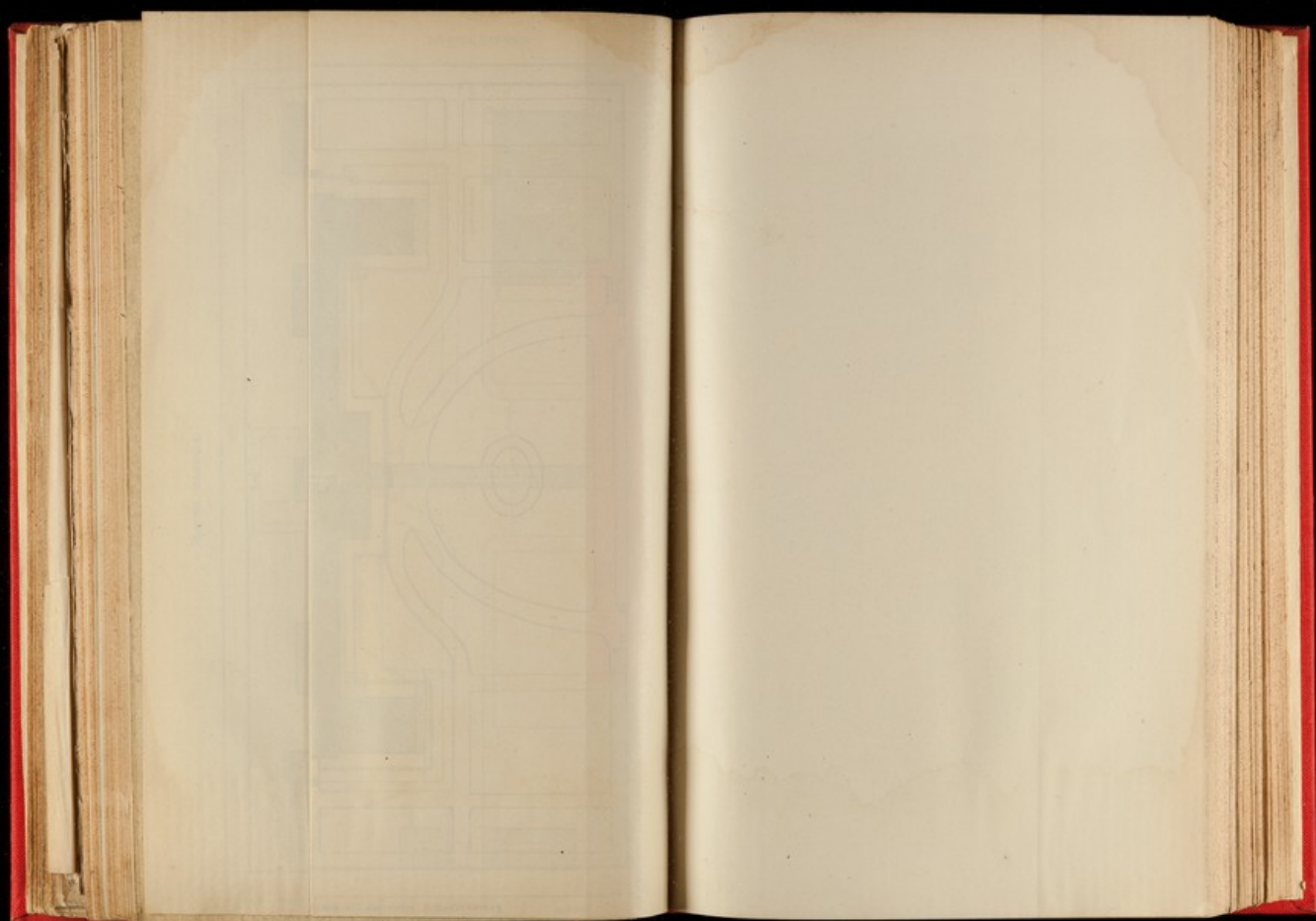
NINTH STREET

SPRUCE STREET

PENNSYLVANIA HOSPITAL. . . BLOCK PLAN.

SHOWING EXISTING BUILDINGS. . . April, 1896



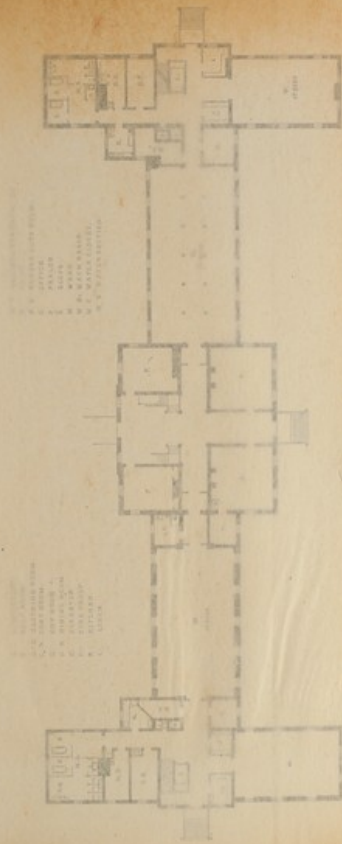




Engraved by W. L. Stone

PENNSYLVANIA HOSPITAL.

Drawn by W. L. Stone



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- 786. BALL ROOM
- 787. DANCE ROOM
- 788. BILLIARD ROOM
- 789. GYMNASIUM
- 790. SWIMMING BATH
- 791. BATH ROOM
- 792. TOILET ROOM
- 793. KITCHEN
- 794. PANTRY
- 795. BREAKFAST ROOM
- 796. DINING ROOM
- 797. LUNcheon ROOM
- 798. TEA ROOM
- 799. CAFE
- 800. BAR
- 801. CIGARETTE ROOM
- 802. TOBACCO SHOP
- 803. BOOK SHOP
- 804. FLOWER SHOP
- 805. FRUIT SHOP
- 806. MEAT SHOP
- 807. BUTCHER SHOP
- 808. BAKERY
- 809. CONFECTIONERY
- 810. ICE HOUSE
- 811. STABLE
- 812. COACH HOUSE
- 813. GARAGE
- 814. WAREHOUSE
- 815. OFFICE
- 816. RECEPTION ROOM
- 817. WAITING ROOM
- 818. LECTURE ROOM
- 819. READING ROOM
- 820. LIBRARY
- 821. MUSEUM
- 822. THEATRE
- 823. BALL ROOM
- 824. DANCE ROOM
- 825. BILLIARD ROOM
- 826. GYMNASIUM
- 827. SWIMMING BATH
- 828. BATH ROOM
- 829. TOILET ROOM
- 830. KITCHEN
- 831. PANTRY
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- 833. DINING ROOM
- 834. LUNcheon ROOM
- 835. TEA ROOM
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- 837. BAR
- 838. CIGARETTE ROOM
- 839. TOBACCO SHOP
- 840. BOOK SHOP
- 841. FLOWER SHOP
- 842. FRUIT SHOP
- 843. MEAT SHOP
- 844. BUTCHER SHOP
- 845. BAKERY
- 846. CONFECTIONERY
- 847. ICE HOUSE
- 848. STABLE
- 849. COACH HOUSE
- 850. GARAGE
- 851. WAREHOUSE
- 852. OFFICE
- 853. RECEPTION ROOM
- 854. WAITING ROOM
- 855. LECTURE ROOM
- 856. READING ROOM
- 857. LIBRARY
- 858. MUSEUM
- 859. THEATRE
- 860. BALL ROOM
- 861. DANCE ROOM
- 862. BILLIARD ROOM
- 863. GYMNASIUM
- 864. SWIMMING BATH
- 865. BATH ROOM
- 866. TOILET ROOM
- 867. KITCHEN
- 868. PANTRY
- 869. BREAKFAST ROOM
- 870. DINING ROOM
- 871. LUNcheon ROOM
- 872. TEA ROOM
- 873. CAFE
- 874. BAR
- 875. CIGARETTE ROOM
- 876. TOBACCO SHOP
- 877. BOOK SHOP
- 878. FLOWER SHOP
- 879. FRUIT SHOP
- 880. MEAT SHOP
- 881. BUTCHER SHOP
- 882. BAKERY
- 883. CONFECTIONERY
- 884. ICE HOUSE
- 885. STABLE
- 886. COACH HOUSE
- 887. GARAGE
- 888. WAREHOUSE
- 889. OFFICE
- 890. RECEPTION ROOM
- 891. WAITING ROOM
- 892. LECTURE ROOM
- 893. READING ROOM
- 894. LIBRARY
- 895. MUSEUM
- 896. THEATRE
- 897. BALL ROOM
- 898. DANCE ROOM
- 899. BILLIARD ROOM
- 900. GYMNASIUM
- 901. SWIMMING BATH
- 902. BATH ROOM
- 903. TOILET ROOM
- 904. KITCHEN
- 905. PANTRY
- 906. BREAKFAST ROOM
- 907. DINING ROOM
- 908. LUNcheon ROOM
- 909. TEA ROOM
- 910. CAFE
- 911. BAR
- 912. CIGARETTE ROOM
- 913. TOBACCO SHOP
- 914. BOOK SHOP
- 915. FLOWER SHOP
- 916. FRUIT SHOP
- 917. MEAT SHOP
- 918. BUTCHER SHOP
- 919. BAKERY
- 920. CONFECTIONERY
- 921. ICE HOUSE
- 922. STABLE
- 923. COACH HOUSE
- 924. GARAGE
- 925. WAREHOUSE
- 926. OFFICE
- 927. RECEPTION ROOM
- 928. WAITING ROOM
- 929. LECTURE

REPORT
OF THE
BOARD OF MANAGERS
OF THE
PENNSYLVANIA' HOSPITAL

TO THE
CONTRIBUTORS,
AT THEIR ANNUAL MEETING HELD FIFTH MONTH 3RD, 1897.
COMPREHENDING THE
REPORT OF THE DEPARTMENT FOR THE SICK AND WOUNDED
AND OF
THE DEPARTMENTS FOR THE INSANE,
TOGETHER WITH THE
ACCOUNTS OF THE TREASURER AND STEWARDS.

PHILADELPHIA:
Spangler & Davis, Printers, 329 Commerce Street.
1897.

REPORT

OF THE

ONE HUNDRED AND FORTY-SIXTH ANNUAL MEETING OF THE
CONTRIBUTORS TO THE PENNSYLVANIA HOSPITAL.

PENNSYLVANIA HOSPITAL, 5th mo. 3rd, 1897.

At the one hundred and forty-sixth Annual Meeting of the Contributors to the Pennsylvania Hospital, the day and year aforesaid, Frederick Fraley was called to the Chair, and John T. Lewis, Jr., was appointed Secretary.

The minutes of last meeting were read and approved.

Alexander Biddle read the Annual Report of the Board of Managers, which was accepted and referred to the incoming Board of Managers, to print such matter as they may deem expedient.

Benjamin H. Shoemaker read the report of the Department for the Insane for the last year, which was accepted and referred to the incoming Board of Managers, to publish such matter as they may deem expedient.

On motion of Joseph G. Rosengarten, seconded by Henry C. Townsend, it was

Resolved, That the Board of Managers be requested to consider the advantage of inviting a conference of representatives of the Hospitals of this city, with a view to such improvements in methods and management as may be suggested and recommended.

FREDERICK FRALEY, *Chairman*.

JOHN T. LEWIS, JR., *Sec'y*.

PENNSYLVANIA HOSPITAL.

At the 146th Annual Meeting of the Corporation, held 5th month 3rd, 1897, the following Contributors were elected to serve for the ensuing year.

MANAGERS.

BENJAMIN H. SHOEMAKER,	JOHN W. BIDDLE,
ALEXANDER BIDDLE,	JOHN T. LEWIS, JR.,
T. WISTAR BROWN,	JOHN S. JENKS,
CHARLES HARTSHORNE,	JOSEPH E. GILLINGHAM,
JAMES T. SHINN,	EFFINGHAM B. MORRIS,
JOHN B. GARRETT,	JAMES P. TOWNSEND.

TREASURER.

HENRY HAINES, 514 Walnut Street.

At the first meeting of the Managers, the Board unanimously elected

BENJAMIN H. SHOEMAKER, *President*,
JAMES T. SHINN, *Secretary*.

STANDING COMMITTEES.

LOANS.....	{ ALEXANDER BIDDLE. T. WISTAR BROWN. JOHN B. GARRETT.
APOTHECARY SHOP AND PATHOLOGICAL MUSEUM.....	{ JAMES T. SHINN. JOHN W. BIDDLE. JAMES P. TOWNSEND.
LEGACIES AND TRUSTS.....	{ CHARLES HARTSHORNE. JOHN T. LEWIS, JR. JAMES P. TOWNSEND.
LIBRARY.....	{ JOHN S. JENKS. JOSEPH E. GILLINGHAM. EFFINGHAM B. MORRIS.
MEDICAL COMMITTEE.....	{ BENJAMIN H. SHOEMAKER. ALEXANDER BIDDLE. T. WISTAR BROWN. CHARLES HARTSHORNE.
FARM COMMITTEE.....	{ JOSEPH E. GILLINGHAM. JOHN W. BIDDLE. JAMES T. SHINN.

PENNSYLVANIA HOSPITAL.

ATTENDING MANAGERS.

1897-98.

1897. 5th month,	{ CHARLES HARTSHORNE; May. { JOHN T. LEWIS, JR.; 121 S. Fifth Street.
6th month,	{ JOHN T. LEWIS, JR.; June. { JOHN S. JENKS; 328 Chestnut St.
7th month,	{ JOHN S. JENKS; July. { JAMES P. TOWNSEND; 709 Walnut Street.
8th month,	{ JAMES P. TOWNSEND; August. { JAMES T. SHINN; 313 South 41st Street.
9th month,	{ JAMES T. SHINN; September. { JOHN W. BIDDLE; 119 S. Fourth Street.
10th month,	{ JOHN W. BIDDLE; October. { T. WISTAR BROWN; 235 Chestnut Street.
11th month,	{ T. WISTAR BROWN; November. { JOHN B. GARRETT; 228 S. Third Street.
12th month,	{ JOHN B. GARRETT; December. { JOSEPH E. GILLINGHAM; 400 Chestnut Street.
1898. 1st month,	{ JOSEPH E. GILLINGHAM; January. { BENJ. H. SHOEMAKER; 205 N. Fourth Street.
2nd month,	{ BENJ. H. SHOEMAKER; February. { EFFINGHAM B. MORRIS; Girard Life & Trust.
3rd month,	{ EFFINGHAM B. MORRIS; March. { ALEXANDER BIDDLE; 1307 Walnut Street.
4th month,	{ ALEXANDER BIDDLE; April. { CHARLES HARTSHORNE; 228 S. Third Street.

The Attending Managers visit the Pine Street Hospital every Fourth Day (Wednesday) at 9 A. M., and the Departments for the Insane every Seventh Day (Saturday) at half-past one P. M.

OFFICERS APPOINTED BY THE MANAGERS
FOR THE ENSUING YEAR.

HOSPITAL ON PINE STREET.

Steward,
DANIEL D. TEST.

Clerk and Librarian.
JOHN McCAHAN.

Apothecary.
THOMAS H. BULLOCK.

Matron and Superintendent of Nurses.
LUCY WALKER.

MEDICAL AND SURGICAL STAFF.

Physicians.	Surgeons.
J. M. DA COSTA, M. D.	THOMAS G. MORTON, M. D. <i>President of Staff.</i>
ARTHUR V. MEIGS, M. D.	JOHN ASHHURST, JR., M. D.
MORRIS J. LEWIS, M. D.	RICHARD H. HARTE, M. D.
JAMES C. WILSON, M. D.	W. BARTON HOPKINS, M. D. <i>Secretary of Staff.</i>

PATHOLOGIST, CURATOR AND MICROSCOPIST,
HENRY M. FISHER, M. D.

SOLICITOR.
J. RODMAN PAUL.

OFFICERS—CONTINUED.

OUT-PATIENT DEPARTMENT.

Physicians.	Surgeons.
HENRY M. FISHER, M. D.	WALTER D. GREEN, M. D.
FREDERICK A. PACKARD, M. D.	ROBERT G. LE CONTE, M. D.
JOSEPH LEIDY, M. D.	JOS. M. SPELLISSY, M. D.
J. ALLISON SCOTT, M. D.	JOHN H. GIBBON, M. D.

For the Eye and Ear.
GEORGE C. HARLAN, M. D. PETER N. K. SCHWENK, M. D.

Throat and Nose.
ALEXANDER W. MACCOY, M. D.

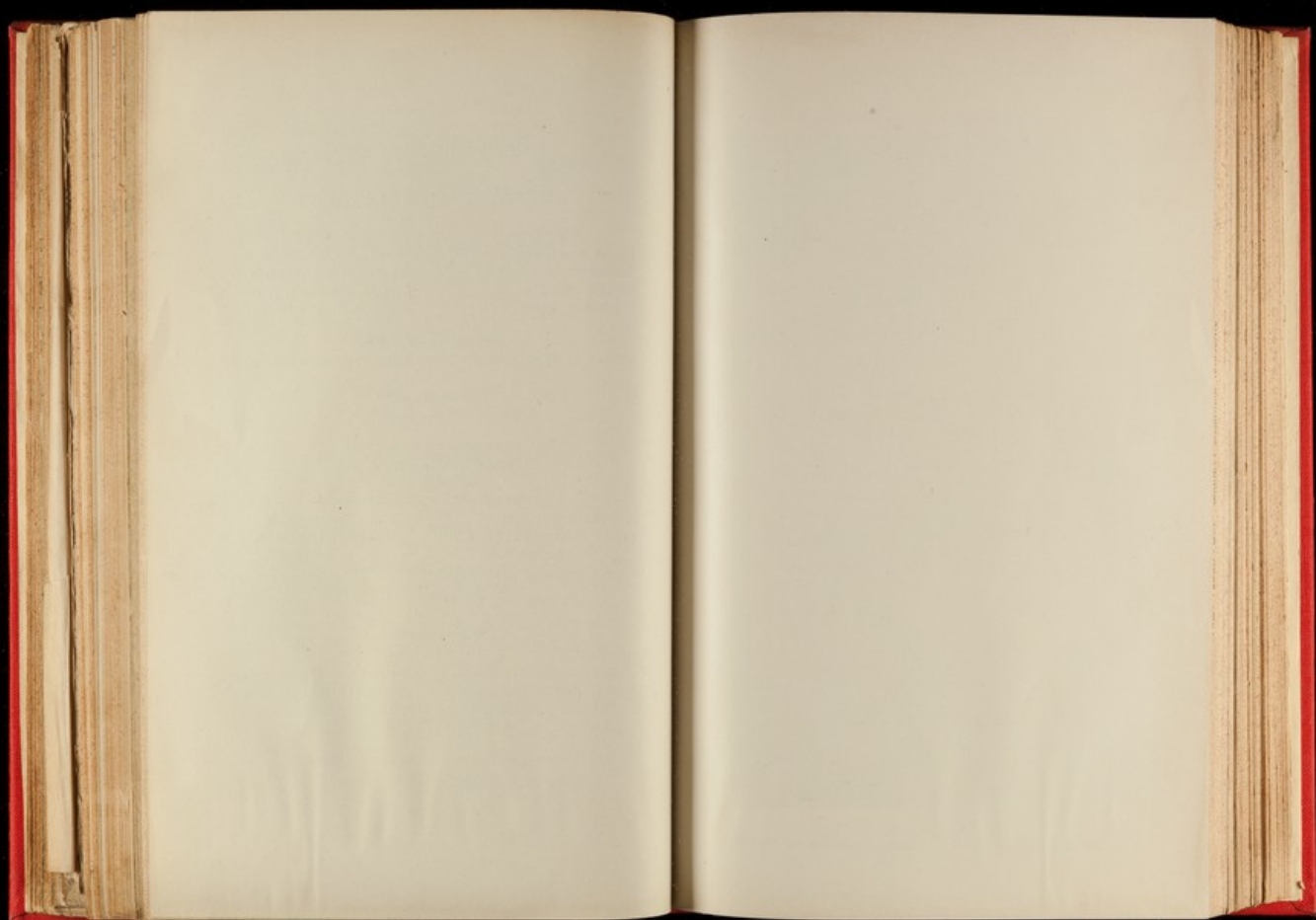
Gynaecological Department.
J. MONTGOMERY BALDY, M. D.

Mental and Nervous Diseases.
A. R. MOULTON, M. D. ELI E. JOSSELYN, M. D.
HENRY B. NUNEMAKER, M. D. HORACE PHILLIPS, M. D.

Orthopaedic Department.
THOMAS S. K. MORTON, M. D.

Resident Physicians
In the House.
J. CLINTON STARBUCK, M. D. RICHARD F. WOODS, M. D.
JOSEPH SCATTERGOOD, M. D. J. NORMAN HENRY, M. D.
CLARENCE F. M. LEIDY, M. D.

Assistant in House Keeping, MARTHA G. FYERLY.
Assistant in Training School, ADA PAYNE.



REPORT
OF THE
BOARD OF MANAGERS
OF THE
PENNSYLVANIA HOSPITAL
TO
THE CONTRIBUTORS,
AT THEIR
ANNUAL MEETING, 5TH MONTH 3RD, 1897.

The continued efforts of your Board of Managers to make your Hospital equal to the highest requirements of modern days, is manifested in the group of new and renovated buildings which now occupies the space between Eighth and Ninth Streets, and Spruce and Pine Streets.

The North-easternmost of these, known as "The Walter Garrett Memorial Building," as indicated by the tablet on its walls, has been built and equipped since May, 1895. A special report upon this building has been prepared for publication in the office of the Architect, Addison Hutton, with explanations of the purposes of use desired by the professional staff, and diagrams of its divisions and numerous apartments.

This is not the only new work of the past year. The Western wing of the old Hospital of 1756 has undergone an entire transformation, the old alcoves of the women's wards once used and designed for the insane have disappeared, and with them the last suggestion of personal restraint considered desirable a century ago, but now abolished. These wards, now women's medical wards, present the same clean, spacious, well-ventilated features as the men's wards in the opposite wing, and as well adapted for cure as any new construction of the day.

Whilst referring to what has been done, it must yet be said that much remains to do. No hospital can ever be complete where careful, good management exists. Not to be in need of money, or of new means of useful aid, must mark a state of lukewarmness, not of activity in love and charity.

A Pathological Laboratory is greatly needed, perfect in all its parts, where scientific examinations of tissues can be promptly made as well as careful attention to chemical analyses, and where observations on growth and development may be carried to their fullest effect. This, it is hoped, will be gained in the future. An absolute necessity for a hospital of the coming century.

A Gynecological Department, now authorized to use six beds, needs more consideration for efficient service.

The Eye, Ear, Throat and Nose Department seek for extension. The Eye alone seeks for accommodation for two clinics a week, and promises to more than double its work. It has increased forty per cent. in out-patient service.

A new kitchen for the whole group of buildings is required—where all the cooking may be economically and thoroughly done, with easy access to all departments; this also involves a dining room for domestics, a sick-diet kitchen, possibly a bakery, a cold storage division, with store rooms, lavatory, etc., etc.

Rooms for at least fifteen nurses are now needed. Space for such additions may be found South of the Nurses' Home on Ninth Street, which ought to afford accommodation for one hundred beds, although designed for hardly half the number. Nothing can show more than this the growth of work in the Pine Street Hospital.

It is within the experience of the managers that an efficient matron declared that "to go into a men's surgical ward after midnight was a risk no woman should encounter." The hospital nursing through all hours of day and night is now done by fifty-two trained nurses, and we have work for more.

It is doubtful if under good supervision the supply of good nurses will equal the demand. The graduating class of the Training School of the past year is thirteen in number.

MARY H. BODINE.	E. FRANCES LIVERMORE.
MAIDA CAVILEER.	ALICE J. MOONEY.
HELEN T. CRESSAP.	SARAH McMULLEN.
MARGARET ELDER.	JENNIE H. SPENCER.
ANNA C. GARRETT.	GERTRUDE WANNOP.
ALICE M. GARRETT.	HANNAH WOLCOTT.
LINDA B. WOOD.	

No greater blessing can be given to a community than a corps of thoroughly trained nurses imbued with the considerate care which relieves the family and household of the burdens which sick-

ness produces. Skilled in preparation of food, administering medicines, watchful as to pulse, temperature, and changes, as well as attentive to the soothing cares for the weak, forlorn and irritable, which make medical aid all but divine.

We are greatly indebted to the ladies for their kindly efforts in our wards and at the First day services held for patients, and it is highly proper we should consider their desire for better facilities for worship. The old clinical lecture room is asked for by Charles M. Morton, who for twenty-five years has aided this work, often paying as many as four visits a week.

The ladies' Visiting Committee carry their work to the bed-side, and do much to cheer the sick with religious sympathy. The manifest feeling for another's pain is most grateful when friends have ceased to be around us.

We may, with propriety, note the care the officers of the Police Patrol give to the unfortunate whom they bring to our wards. They handle them with tenderness, and thoughtfulness for their condition, and often with evident self-sacrifice to themselves.

The ambulances have been in service 1034 times—on some days 12 trips were made.

On 10th mo. 26th, 1896, Miss Lucy Walker was given the title of "Matron and Superintendent of Nurses," given in confirmation of her industry, intelligence and valued work.

We have received through Dr. S. Weir Mitchell a fine portrait of Dr. Thomas Cadwalader—the gift of John L. Cadwalader, Esq., of New York, whose ancestor (the original of the portrait), was connected with the early history of the hospital. Its records show that he was a member of the Provincial Council from 1755 to the Revolution, when he became Medical Director in the Army. Among the leaders of the medical profession in 1751, in Philadelphia, are mentioned Dr. Thomas and Phineas Bond and Dr. Thomas Cadwalader, all on the first medical and surgical staff of the hospital. The latter prepared the first systematic course of medical lectures delivered in the Western Hemisphere, and Dr. Bond the first clinic. They all may be considered as founders of our Corporation, and among the eminent physicians of the day. Dr. Shippen, who delivered the first course of Anatomical lectures, was also one of our hospital chiefs.

The death of Jos. B. Townsend was announced on the 26th of 10 mo., 1896, as having occurred on the 11th of that month. Resolutions were passed expressive of our high consideration of his

The death of our counsel, Arthur Biddle, who was elected 4th Mo. 27th, 1897, has deprived us of a careful guardian of our legal interests, which have continued in charge of the firm of which he was a member, for forty years, shielding us from embarrassment on trying occasions. His personal worth, accomplishments and ability, were hereditary in aid of our Hospital work, which never failed to lead us to happy solutions of unforeseen difficulties.

WHICH HAVE BEEN RECEIVED OR ANNOUNCED SINCE
MAY, 1896.

Estate of Henry I. Stout.....	\$20,000 00
Albert Lawrence Smith.....	30 00
Estate of Dr. Hayes Agnew.....	5,000 00
" " Eaton Dunbar, City Hospital.....	400 00
" " " Insane.....	400 83
" " " Simon Muhr, 3% City Loan.....	2,020 00
" " " " money.....	2,912 03
" " " Charles I. Moffat.....	693 06
Henry Norris.....	100 00
R. Francis Wood.....	10 00
Lavinia Barton.....	950 00
Estate of Eaton Dunbar.....	368 67
John C. Bullitt.....	100 00
James May Duane.....	30 00
Jacob P. Jones.....	10,000 00
Jane T. Hunter, towards free bed in name of Dr. Charles T. Hunter.....	1,648 97
D. M. Lutz.....	10 00
Mary M. Johnson, Pine St. Hospital.....	7,000 00
" " " for Insane Department.....	7,000 00
Sarah M. Marshall, Pine St. Hospital.....	7,600 00
" " " for Insane Department.....	7,600 00
Charles Borie Lewis.....	30 00

We are advised of a bequest from the Executors of the late Geo. M. Conarro of..... \$2,000 00

And of a large bequest under the will of Elizabeth Schaffer, consisting largely of real estate.

The increase of our work points to the necessity for a new resident Physician. At times it is found that those on duty are overtaxed, although complaint of over-work has never been made by our Professional Staff and all work is cheerfully performed. But thought for the suffering requires that no delay in prompt treatment for cure should ever occur.

The Hospital on Pine Street is visited on every Wednesday by two Managers in regular order, and the roll called or noted at the bedside on the Saturday preceding the last Monday in each month. The two Departments in West Philadelphia, are visited on every Saturday.

To these latter, about 3,000 visits at each Department have been paid since their opening. These visits are inspections, and can always be made personal to a patient if desired.

In the men's wards seven women are in attendance, and about 90 additional are employed in the general work.

Patients remaining May, 1896.....	186
New patients received.....	2,615
Patients remaining May, 1897.....	204
Beds occupied during the year.....	2,801

WORK OF PINE ST. HOSPITAL.—Continued.

RECEPTION WARDS.

	Men	Women	Total
Recent accidents.....	8,041	3,619	11,660
Transferred after preparation to the wards of the Hospital.....	451		

OUT-PATIENT DEPARTMENT.

	New Cases	Visits
Medical.....	2,240	4,359
Surgical.....	7,568	29,722
Eye.....	920	6,161
Ear.....	466	2,228
Nose and Throat.....	599	2,386
Gynecological.....	349	1,125
Mental and Nervous.....	15	94
Orthopedic.....	52	141

DEPARTMENT FOR INSANE.

MEN PATIENTS.

Patients discharged.....	78
New cases.....	79
Remaining.....	182
Total treated.....	565

WOMEN PATIENTS.

New patients.....	73
Patients discharged.....	72
Remaining.....	233
Total remaining in department for insane.....	415

STATEMENT OF EXPENSES.

For insane men.....	\$ 85,823 33
“ “ women.....	119,992 02
Total.....	\$205,815 35
Expended by Pine St. Hospital for Sick and Hurt, men and women.....	\$ 95,543 47
Total expenses of the Charity.....	\$301,358 82

In the Insane Department for Men our means of affording a higher class of accommodation to persons of substance are not equal to what is occasionally asked for.

A plan of a new building has been prepared with eight suites of rooms, each with a bed chamber, bath room, parlor, and porch. The site proposed is North of the Main Building and East of the Swimming pool, gymnastic hall and cricket ground. This villa will give to the Department for Men the same facility as the villa at the Women's Department.

The Swimming Pool continues its usefulness. About 300 plunge baths a week is an ordinary allowance, and the general health of the patients is undoubtedly benefited thereby. The medical baths, needle baths, shower baths and hot baths, are all in useful service.

FARM REPORT.

The Hospitals are supplied with milk from our own farms (600 acres) near Newtown Square. The net results show a profit of about \$4,000 for the year. The milk, vegetables, grain and hay, with other produce, are all consumed by our Departments. The accounts being kept as between strangers; but we have the supervision of the herd, the pastures, the product and the distribution, and control its purity and use. About \$16,000 was the cost of the milk supply for the year.

The visits during the summer season by the patients form a pleasing variety, with benefit to the general health.

The receipts from the West Philadelphia Departments are usually slightly in excess of expenses, but during the past year the endowment fund income has been obliged to supply a deficit.

The embankment from Market Street to Haverford Avenue, a distance of about 1,500 feet, is nearly completed; it is filled in with ashes and a topping of earth. About 80 feet in width, on the east side of the embankment, there is a space about 200 feet deep, which admits of future improvement as a building site of great value.

The Tea Room at Women's Department is in use three times in the week. A modelling class furnishes occupation for the three remaining afternoons. Constant agreeable occupation, with music, painting, drawing, reading, lectures, with magic lanterns, and photography are means in constant use for pleasurable diversion in the wards. The mind may be disturbed in one line of thought,

whilst clear intelligence exists in others. Valuable contributions to medical science and philosophy have come from wards where mental alienation has yielded to repose and new environment.

The Professional service in all Departments is believed to have been intelligently administered; some forms of disease, of frequent occurrence in past days, now rarely appear.

The first four months of a resident's duty are now passed in West Philadelphia, a beginning of medical duty which is deemed an improvement in the course of study.

Our thanks are due to all our officers for able service under many complications arising from changes of wards, whilst the general care of the sick and injured has been continued with uniformity.

We close our report with acknowledgment of thanks for that Divine mercy which has aided our never ending work, for a century and a half, and which as your charity under the favoring blessing of Providence, we hope will ever be well dispensed.

On behalf of The Board of Managers.

BENJ. H. SHOEMAKER,
President.

JAMES T. SHINN,
Secretary.

DESCRIPTION

OF THE

Walter Garrett Memorial Building.

Some years ago the Managers of this Hospital came to the conviction that before long the requirements of modern surgery must be met with better facilities than those afforded by the existing buildings. They then began to take counsel as to what measures would be the best to keep their trust up to the times in these particulars, and to put the Hospital, if possible, in the very vanguard of progress.

Many plans were drawn, many other hospitals were examined, many books upon the subject were studied, and the surgeons of the Institution consulted. Finally, drawing upon all these resources, combined with the experience of past generations, the Building Committee were able—in conjunction with their medical advisors and the architect—to bring their plans to a degree of completeness which warranted them in proceeding with the construction of the three Memorial Wards, which were begun in 1892. For the means to erect this group, the Board is largely indebted to the liberality of a former President of the Hospital—Mr. Wistar Morris.

Reference has already been made in other reports to the construction of the Nurses' House, the Out-Patient Department, the thorough betterment of the interior of the Pine Street Building, and the re-construction of the Power House and Laundry; so that we now come to the description of the

Walter Garrett Memorial Building.

This was undertaken last year, and opened for full service on the twenty-third of March of this year. It contains the Operating Theatre, Receiving Wards and Children's Ward, with other adjuncts more fully hereafter described. This building stands close to the line of Eighth Street, and as seen from Spruce Street forms one of the group of five new buildings. It has been erected solely through the generosity of a member of a family of philanthropists, to which the Hospital is already largely indebted for munificent gifts.

ENTRANCE.

CARRIAGE PORCH.

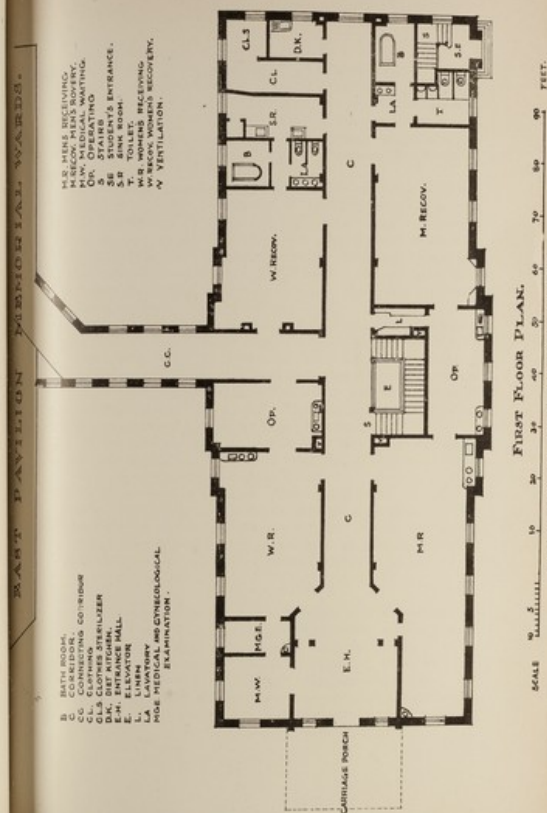
FIRST FLOOR.

At the further end of the lobby is a wide central hall leading to the north end of the building; midway are the stairs and elevator, and opposite these the corridor connecting this building with the main Hospital group. On either side of this hall, at an angle with the lobby, are wide doors leading to the Receiving Wards—that on the right for men, and that on the left for women.

The Men's Receiving Ward measures fifty-three feet by eighteen feet, having doors at the northern end leading into a small operating room. Cases not to remain in the Hospital will receive dressings or minor operations in these two rooms. But those patients who are to remain will pass from the operating room into a large Quiet or Recovery Ward.

This Recovery Ward contains twelve beds, and in it each patient will be undressed, bathed, and put in proper condition to be sent to such ward of the Hospital as his disease or injury may warrant. At the northern end of this Recovery Ward is a door which leads to the baths and lavatories. Persons found to require serious operations, after being prepared as far as possible in these rooms, will be transferred to the second floor for further treatment.

The Women's Receiving Ward, on the left side of the lobby, is similar to that for men but not so large. It has an operating room



at its northern end, and beyond is a Quiet or Recovery Ward. Patients requiring anaesthesia in either of the minor operating rooms of the reception floor will be put to bed in the Quiet Wards until in condition to return to their homes. Sun-stroke cases will not be taken into the Receiving Wards as heretofore, but will be treated in the cool, deep basement, or in tents in the open grounds, until their condition permits them to be removed to the proper wards.

Beyond the Women's Quiet Ward are the necessary baths and lavatories. Beyond this again, communicating also with the main hall, is a Scullery for all the wards of the floor; here is a flushing sink for the washing of utensils, also a steam closet wherein all articles may be quickly warmed or dried. When it is remembered how many of those seeking hospital help arrive cold from exposure and shocked by concussion, or loss of blood, the importance of such a feature is readily understood.

Next to the north, opening only to the hall, is a room for ticketing baggage and storing the clothing of each patient. From it there opens a small room which contains steam and hot air sterilizing apparatus; here clothing infected with disease germs or vermin, may be steamed or baked enough to destroy entirely not only all parasites, but their eggs as well. This is of great value to protect the Hospital from invasion by these persistent pests.

At the extreme northern end and left side of the corridor is placed a diet kitchen, from which to serve food to those who temporarily occupy beds in the Quiet Wards.

In these wards a sufficient number of beds are provided to receive all who may be admitted between sunset and morning; so that the quiet of the main wards may never be disturbed by the entrance of new patients during the night, or patients recovering from the effects of ether, or under the influence of liquor.

DISTRIBUTION.

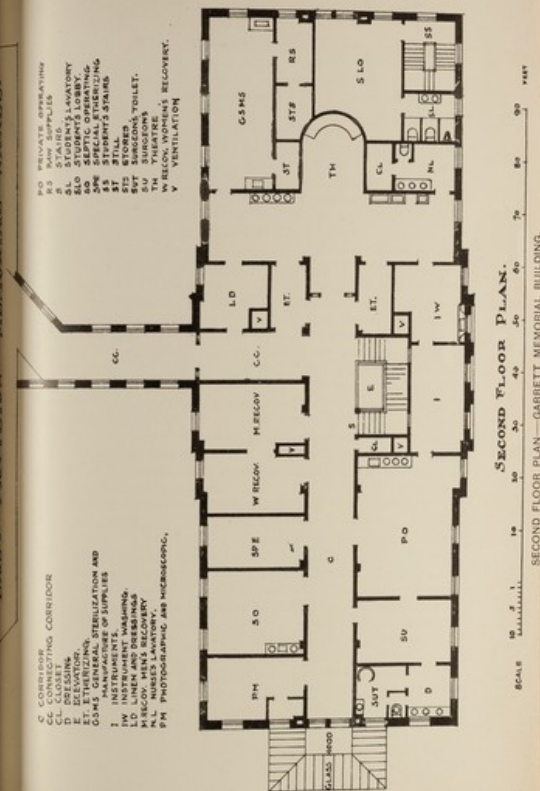
In the centre of the building on the right hand side of the corridor an elevator is arranged to serve from basement to third story. This is surrounded by grille work and a marble staircase. Opposite to this is a corridor of nine feet wide, leading to the basement of the main Hospital, which affords ready access to all the basement corridors, and to the elevators running upwards therefrom to serve the various wards. This building—especially the Receiving

On the second floor one finds himself surrounded by a complete series of rooms and arrangements for the practice of modern surgical treatment. To the right large double doors lead into the Operating Theatre. Here operations are performed, and clinical instruction to advanced students and visiting physicians is given.

On either side of these doors, opening into the corridor as well as to the Theatre, are two rooms where patients can be etherized before appearing in the Theatre. This Theatre is forty-five feet by forty-six feet, thoroughly lighted in day time through a great glass dome and many windows, and at night by a large electroillumination provided not only with Welsbach lights but electric lamps, to be used together or separately. Under the glass dome stands the operating table, surrounding which on the semi-circle towards the north, rises seven tiers of seats, numbering in all two hundred and four. These seats are carefully adjusted at elevations permitting every spectator to have a free view over the heads of those seated below him. Each student has a suspended chair of the most comfortable model, entirely different from the ordinary wooden benches to which medical students have been long accustomed.

Behind the operating space is a corridor thirteen feet by forty-six feet clear, extending from one side of the building to the other. This liberal space gives free ingress and egress of beds, and permits the assembling without crowding of the numerous and varied appliances which have become necessary in the healing art. On either side of the operating space are flushing sinks and wash basins, also pipes supplying sterilized water at any temperature desired, drawn from a water sterilizer close at hand. There are also steam closets for heating blankets and linen, racks for swinging bottles of antiseptic solutions, movable tables for instruments and dressings, together with electrical apparatus for treatment.

The Theatre is entered by students through a special door and gate opening from Eighth Street. On the line of this staircase is a students' lobby of ample dimensions, from which opens a coat



room and lavatory; the passage to the seats at the top of the Theatre is reached by a second flight of stairs. From this upper level the seats are accessible by descent towards the centre. By this arrangement the students do not make a thoroughfare of the Hospital; like the audience of a theatre, they are perfectly separated from the performance and the performers.

On one side, under the seats of the Theatre, is the nurses' dressing room. Here nurses who are to assist in operations don their sterilized linen clothes, and prepare themselves with the same care as the surgeons, perfecting the antiseptic details. This room has wash basins and other necessary fittings. On the other side of the Theatre is a series of rooms where are prepared all the dressings for the entire Hospital. Directly opposite these rooms is another room devoted to the storage of finished supplies, which communicates with the corridor, thus facilitating the distribution of the supplies to the various wards and smaller operating rooms. Opposite the nurses' dressing room, connected with the operating space, is a small room devoted to the washing and sterilizing of the instruments. Next in suit on the south is the instrument room; this contains a battery of five large cases made of enameled iron and plate glass, which display an armamentarium of the finest surgical instruments, and also two brass sterilizers to keep the instruments in order. Next is an operating room where work can be done upon private patients, or when the Theatre is in use by another surgeon; it is thoroughly fitted for all ordinary uses and is as perfect in its appointments as the Theatre, but contains no seats for spectators.

The next rooms on this side are devoted to the private use of the surgeons; first is a sitting and consulting room, second a dressing room, and third is a toilet room with needle bath. All of the rooms between the instrument room and surgeons' lavatory communicate with one another and open upon the corridor.

On the west side of the corridor are two rooms for the recovery of patients from the effects of anesthetics and their operations, before they shall be transferred to the wards. Next is a special etherizing room; then a room devoted exclusively to operations upon cases affected with virulent and dangerous infectious diseases, such as lock-jaw, anthrax, glanders, tuberculosis, gangrene, etc. This room is lined throughout with hydraulic cement, and has doors and windows of such character as will permit it to be filled with live steam at a slight pressure. The intention is to operate

here upon virulent cases, and then leave everything that has been used in the room; steam will be turned on from corridor attachments, and by means of perforated pipes the room will be sprayed and filled with steam. It is thus expected to do away with what has always been a great danger from these virulent cases, which must from time to time be admitted, and occasionally communicate infection to other persons.

The room in the south-western corner is to be devoted to microscopic and photographic work; it contains a dark room, sinks, Roentgen X-Ray apparatus, and other necessary appliances.

The second floor which has just been described, all the parts of which may be properly called an operating suit, connects by a cross corridor with the main floor of the surgical pavilions of the Hospital, so that on this level the transportation of the patients is by the shortest possible route between the operating rooms and wards.

THIRD FLOOR.

The third floor of this building has been arranged for, and is occupied as a children's ward. This ward contains twenty-five beds, and has in close connection a nurse's room, a pantry, a diet kitchen, sink and utensil room, steam drying closet, bath and lavatory. On this floor is also a small isolation ward, and a large cheerful play room answering to the requirements of a sun bath.

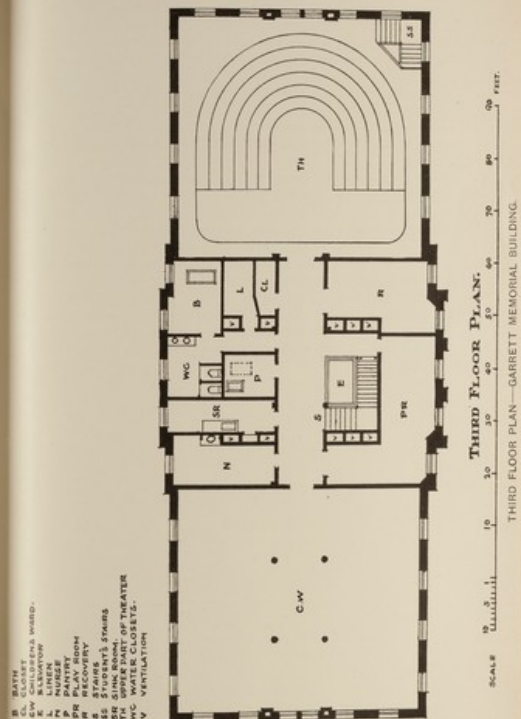
CONSTRUCTION.

The construction of the building is mainly of bricks and iron. The amount of combustible or easily destructible material has been reduced to the minimum. The doors and sashes, and some of the minor fittings are wood.

The outer walls are double, with air space between the sections; the partitions and floor construction are hollow bricks resting on steel beams, girders and posts.

The ward floor surfaces are formed with hard wood; the lining of the stair wall is enameled bricks; all other floor and wall surfaces are of hard plastic material smooth to the touch, and resistant of water and fire.

The plan of the building has been made to conform to the needs of the work to be done within its walls. The architectural design has been greatly subordinated to the practical demand that many things should be compactly placed in contiguous places. Yet it is hoped the attempt to preserve the family likeness to the parent building and its recent children, has been reasonably successful.



The important purpose of the structure, its conspicuous position, and the fact that it is designed to commemorate the giver of a worthy gift for the beneficent purposes of the Hospital, would seem to justify the care the Managers have taken with regard to its design.

The wall facings are of red bricks, with door pieces and window trimmings of pink granite; these apertures being disposed as symmetrically as possible. The visible roof is of light green slates, the cornice and a small cupola are copper, colored to match the stone courses.

The details are classical, and depend on moulding from which sculpture is almost excluded. The intention is that the appearance shall be agreeable without giving the impression of waste of money; that it shall be in every way as nearly as circumstances will permit, entirely worthy of its place and association; and it is believed that these ends have been fully attained.

The Building Committee acknowledge their indebtedness to Dr. T. S. K. Morton, who has advised with their architect from time to time, keeping constantly in touch with the work from its inception to its completion. By this collaboration it is believed that every important requirement has been foreseen and provided for.

STATISTICS OF THE PENNSYLVANIA HOSPITAL,

DEPARTMENT FOR THE SICK,
FOR THE YEAR ENDING FOURTH MONTH 24th, 1897.

Number of patients remaining in the Hospital Fourth
month 25th, 1896,—pay, 12; free, 174; total, 186
Patients admitted during the year,—
pay, 106; free, 2,509; total, 2,615
Total number treated in the Wards during the year.... 2,801
Number of patients treated in the Receiving Wards and
not remaining in the House..... 11,209
Number of out-patients treated during the year..... 12,209
Total number of patients treated..... 26,219

Average daily number of patients maintained in the Wards,—
pay, 5.75; free, 194.25; total, 200
Average stay of each patient, 26.07 days.

Cost for maintenance of in-patients.....\$85,543 47
Cost of out-patient service..... 10,000 00
Total expense for the year..... \$95,543 47
Average cost per week for each in-patient..... 8 20
Average expense to the Hospital of each out-patient.. 43

Of the patients discharged

The proportion cured was..... 76.40 per cent.
" " relieved..... 11.90 "
" " removed without material im-
provement..... 2.00 "
" " died..... 9.70 "
100.00

Deducting sixty-six who died within twenty-four hours after
entering the Hospital, makes the percentage of deaths 7.16.

Of the 2615 patients admitted during the year there were:

	Males.	Females.	Totals.
Under 18 years of age.....	284	184	468
Single.....	768	235	1,003
Married.....	599	331	930
Widowed.....	105	109	214
	1,756	859	2,615

Since the foundation of the Hospital in 1751, there have been
admitted to beds in the wards, 137,107 patients, of whom 93,459
were poor persons, supported at the expense of the Institution.
Of these 137,107 patients there have been

Cured.....	89,657
Relieved or improved.....	22,581
Left the Hospital without material improvement....	8,812
Pregnant women safely delivered.....	1,376
Infants born.....	1,296
Died.....	13,193
Remaining.....	204
	137,107

Since the re-organization of the Out-Patient Department in 1872
there have been treated 159,615 out-patients, making 614,948
visits.

The out-patient service was first inaugurated in 1752. No
record of the number of patients treated, appears to have been kept
at this early time. In 1797 it was re-organized, and continued
until 1817 when it was suspended. In 1872 it was re-established
on an improved system, and has shown a decided increase in the
number of patients treated each year since.

Table exhibiting the number of natives of the United States and
of foreign countries received into the Hospital during the last
ten years:

	United States.	Ireland.	Italy.	Russia.	Other countries.
1888	1,085	555	130	41	564
1889	1,032	477	112	79	500
1890	1,036	432	134	83	517
1891	1,087	429	137	113	539
1892	924	339	10	166	481
1893	1,028	359	163	203	445
1894	1,012	325	171	251	459
1895	1,069	297	246	234	529
1896	1,263	285	209	182	499
1897	1,416	296	222	205	476
	10,975	3,794	1,566	1,557	4,951

Table showing nativity of patients :

BORN IN FOREIGN COUNTRIES.		BORN IN UNITED STATES.	
Australia.....	3	Alabama.....	3
Austria.....	36	Connecticut.....	5
Austria.....	3	California.....	3
Africa.....	1	District of Columbia.....	30
Belgium.....	3	Delaware.....	36
Bermuda.....	3	Florida.....	5
Canada.....	8	Georgia.....	11
Cuba.....	4	Indiana.....	3
Denmark.....	6	Illinois.....	8
England.....	81	Iowa.....	1
France.....	12	Kentucky.....	8
Finland.....	4	Louisiana.....	4
Germany.....	139	Massachusetts.....	16
Greece.....	4	Missouri.....	2
Haiti.....	2	Maryland.....	63
Holland.....	3	Maine.....	3
Hungary.....	20	Minnesota.....	3
Ireland.....	296	Michigan.....	3
Isle of Man.....	1	New York.....	68
Italy.....	222	New Jersey.....	74
Jamaica.....	1	North Carolina.....	23
Nova Scotia.....	13	Ohio.....	17
Portugal.....	5	Pennsylvania (Phila. 560).....	929
Poland.....	30	South Carolina.....	6
Russia.....	265	Tennessee.....	2
Romania.....	2	Texas.....	3
Scotland.....	20	Virginia.....	91
Sweden and Norway.....	26	West Virginia.....	4
Switzerland.....	3		
Spain.....	2		
South America.....	9		
Siberia.....	1		
San Salvador.....	1		
Unknown.....	22		
Wales.....	4		
West Indies.....	4		
	1,199		1,416
	Total, 2615.		

Table showing employment of patients :

Artificial flower maker.....	1	Bottle washers.....	2
Attendants.....	5	Button makers.....	3
Artists.....	3	Butler.....	1
Actors.....	2	Bartenders.....	5
Agents.....	14	Book-keepers.....	6
Butchers.....	17	Book-binders.....	2
Bakers.....	28	Bill posters.....	2
Barbers.....	8	Bridge-builders.....	6
Bricklayers.....	12	Brewers.....	3
Boiler-makers.....	4	Bottlers.....	1
Blacksmiths.....	12	Box-makers.....	2
Brush-finishers.....	2	Brush-makers.....	3
Broker.....	1	Clerks.....	23

Carriage trimmer.....	1	Junk dealer.....	1
Caterer.....	1	Knitters.....	2
Carpenter.....	36	Lithographers.....	5
Cooks.....	51	Lead workers.....	19
Cloak model.....	2	Lawyer.....	1
Cigar-makers.....	19	Laborers.....	376
Coopers.....	4	Laundresses.....	20
Chamber-maids.....	17	Letter-carrier.....	1
Contractor.....	1	Lamp-lighter.....	1
Couch-maker.....	2	Locksmith.....	1
Compositors.....	2	Longshoremen.....	41
Chain-smen.....	1	Marble finisher.....	2
Cutler.....	1	Manager.....	2
Cabinet-maker.....	11	Metal polishers.....	3
Collectors.....	2	Molders.....	2
Cashier.....	1	Machinists.....	16
Conductors.....	3	Mechanic.....	1
Children.....	151	Merchants.....	12
Coalheaver.....	3	Miners.....	10
Coachmen.....	5	Musicians.....	7
Confectioners.....	2	Mill hand.....	1
Druggist.....	1	Millwrights.....	2
Dredging.....	1	Manufacturers.....	4
Domestics.....	399	Mill girl.....	1
Dressmakers.....	11	Milkmen.....	2
Dishwashers.....	11	Milliners.....	2
Elevator men.....	6	Mid wives.....	3
Engineers.....	15	Newsboys.....	3
Errand boys.....	15	Nurses.....	16
Expressman.....	1	Oystermen.....	7
Engraver.....	1	Optician.....	1
Electricians.....	5	Photographers.....	2
Fruiters.....	5	Plasterers.....	3
Farmers.....	26	Paper box makers.....	2
Fisherman.....	1	Produce dealers.....	2
Firemen.....	13	Packers.....	3
Florists.....	3	Physicians.....	11
Foundryman.....	1	Printers.....	11
Factory hands.....	11	Peddlers.....	16
Grocers.....	4	Painters.....	23
Gardeners.....	3	Paper-hanger.....	1
Gas-fitters.....	1	Police officers.....	13
Glass blower.....	1	Plumbers.....	7
Glass polishers.....	2	Porters.....	6
Glove maker.....	1	Pressmen.....	2
Harness maker.....	1	Reporters.....	4
Hostlers.....	83	Rag pickers.....	3
Hol-carriers.....	2	Restaurant keepers.....	6
Hotel keepers.....	5	Railroad men.....	10
Housewives.....	198	Riggers.....	9
Hatter.....	1	Roofers.....	4
Hucksters.....	10	Shoemakers.....	27
Ironworkers.....	16	School teachers.....	7
Ice men.....	2	Stone-cutters.....	7
Ice cream makers.....	2	Sailors.....	8
Inspector.....	7	Shoeblocks.....	59
Infancy.....	28	Salesmen.....	33
Jockey.....	1	Steam-fitters.....	2
Jewelers.....	2	Shirt-makers.....	3
Janitors.....	5	Sawyer.....	1

Stewards	10	Telegraph operators	4
Soap boilers	3	Tailors	52
Street cleaners	3	Tinsmiths	5
Stenographer	1	Type-setters	2
Sugar refiners	9	Tile setter	1
Spool maker	1	Tin roofers	3
Soldiers	2	Type writers	2
Spinner	1	Upholsterers	4
Scale maker	1	Unclassified	25
Seamstresses	5	Varnisher	1
School	165	Watchmen	6
Stone-masons	4	Waiters	41
Saloon-keepers	4	Wheelwright	1
Store-keepers	12		
Tanners	3		
Telegraph linemen	2	Total	2615

GENERAL SUMMARY

OF RECEIPTS AND PAYMENTS OF THE TREASURER AND STEWARDS OF THE PENNSYLVANIA HOSPITAL, FROM FOURTH MONTH 25th, 1896, TO FOURTH MONTH 24th, 1897.

RECEIPTS.

Cash on hand Fourth Mo. 25th, 1896..	\$20,350 01	
Income from Mortgages	15,182 48	
Income from Ground Rents	3,509 70	
Income from Stocks and Loans	30,220 48	
Income from Delaware County Farms..	16,820 93	
Funds from Insane Department against		
Salaries paid	4,500 00	
Rents from Real Estate	3,250 03	
Real Estate sold	10,000 00	
Bequests and Contributions secured in		
Cash	52,420 98	
Income from Investments for the Shield's		
Bequest	4,437 25	
Income from Investments held for the		
Williamson Bequest	2,777 00	
Insurance Money returned	667 50	
Income from Investments held for the		
Drake Bequest	200 00	
Principal of Mortgages paid off	39,000 00	
Borrowed from Derbyshire Estate	20,000 00	
Principal of Loans paid off or sold	122,313 37	
Principal of Ground Rents paid	6,800 00	
		352,449 73
Receipts of Hospital for the Sick during		
the year	6,652 18	
Balance on hand Fourth Month		
25th, 1896	501 38	
		7,153 56
Receipts for Hospital for the Insane :		
Department for women.		
Balance on hand Fourth Month		
25th, 1896	3,579 24	
Receipts for the year	127,427 61	
		131,006 85
Department for men.		
Balance on hand Fourth Month		
25th, 1896	1,000 67	
Receipts for the year	91,488 49	
		92,489 16
		\$583,099 30

PAYMENTS.

Managers' Drafts for Salary of the Treasurer	\$1,000 00	
Manager's Drafts for Salary of the Officers of Insane Department	14,685 00	
Paid Incidental Expenses, Taxes and Repairs to Real Estate	3,465 55	
Paid Interest on Money specifically given to Hospital for Insane	4,595 34	
Paid Department for Insane for Board of Patients on Shield's Fund	4,628 00	
Paid Department for Insane for Board of Patients on Williamson Fund	2,028 00	
Paid for Repairs, Wages and Stock at Delaware County Farms	15,840 37	
Paid on account of City Hospital Improvements	161,352 53	
Paid on account of Improvements at Department for Insane	10,831 61	
Paid Interest on Hunt Endowment Fund and Derbyshire Loan	4,800 00	223,226 40
Expenditures of Hospital for the Sick during the year	95,543 47	
Balance on hand Fourth Month 24th, 1897	760 09	96,303 56
Expenditures of Hospital for Insane : Department for women. Balance on hand Fourth Month 24th, 1897	3,422 73	
Expenditures for the year	127,584 12	131,006 85
Department for men. Expenditures for the year	89,578 03	
Balance on hand Fourth Month 24th, 1897	2,911 13	92,489 16
Balance in the Treasurer's hands on Deposit in the Provident Life and Trust Company of Philadelphia	40,073 33	
	\$583,099 30	

RECEIPTS AND PAYMENTS

OF

DANIEL D. TEST, STEWARD

OF THE

PENNSYLVANIA HOSPITAL,

FOR THE YEAR ENDING FOURTH MONTH 24th, 1897.

PAYMENTS.

MEDICAL DEPARTMENT.

Medicines	\$3,238 14	
Wine	51 50	
Spirits	968 20	
Porter, Ale, etc	69 50	
Surgical Instruments and Appliances ..	1,767 21	
Muslin for Bandages	1,558 33	
Splints, Plasters, Paper, etc	435 36	
Cotton, Gauze, Lint, etc	1,956 72	
Disinfectants	53 95	\$10,099 00

HOUSEHOLD EXPENSES.

Meat, 111,176 lbs	9,369 15	
Fish	913 38	
Poultry, 13,280 lbs	1,689 33	
Eggs, 9,547 doz	1,549 35	
Butter, 10,209 lbs	2,216 55	
Vegetables	2,435 86	
Fruit	1,203 80	
Cheese	90 86	
Bread, 63,879 lbs	2,380 82	
Biscuit and Baking Powder	135 27	
Flour and Meal	197 98	
Rice	69 18	
Salt	15 00	
Spice and Pickles	211 01	

Carried Forward

\$22,477 54

Brought forward.....	\$22,477 54	
Apollinaris and Ginger Ale.....	66 50	
Sugar, 21,414 lbs.....	1,007 48	
Tea	169 09	
Coffee, 3,873 lbs.....	841 90	
Chocolate and Cocoa.....	47 33	
Milk, 110,138 qts.....	5,675 43	
Ice Cream and Cake.....	191 62	
Lard	43 36	
Macaroni, Corn Starch, etc.....	172 47	
Molasses and Honey.....	57 37	
Ice, 413½ tons	1,795 40	
		\$32,545 49

FURNITURE, FUEL, ETC.

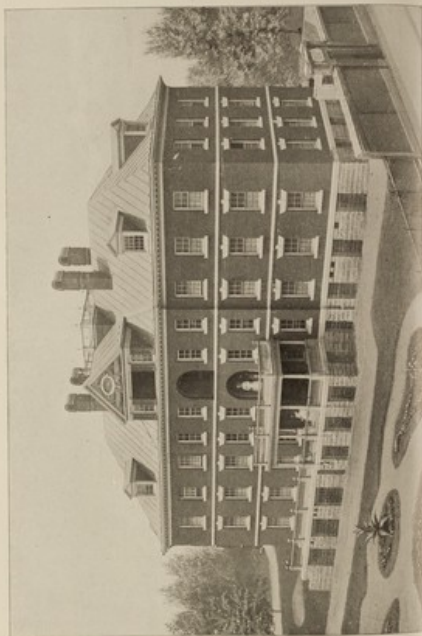
Furniture	61 17	
Furnishing and Dry Goods	1,708 39	
Bedding	124 00	
Coal, 2,077 tons	4,833 47	
Gas	4,239 60	
Candles and Burning Oil.....	36 07	
Starch and Indigo.....	132 23	
Soap and Sal Soda.....	955 94	
Water Rent.....	205 72	
		12,296 59

HORSES, CARRIAGES AND FEED.

Fodder	266 70	
Horse Shoeing.....	103 01	
Carriages and Harness.....	320 91	
		690 62

REPAIRS AND IMPROVEMENTS.

Heating Apparatus and Machinery....	939 72	
Brick Laying, Tiling, etc.....	53 95	
Carpentering and Material.....	961 48	
Painting and Glazing	1,402 36	
Roofing, Spouting, etc	262 42	
Plumbing and Gas-fitting.....	110 71	
Hardware, etc.....	529 03	
Kitchen Ranges	3 80	
Electrical Work	80 40	
		4,343 87
Salaries and Wages		30,252 59



NURSE'S HOUSE—FIVE STREET HOSPITAL.

MISCELLANEOUS.

Hauling Ashes and Garbage.....	\$716 60
Garden and Grounds.....	441 24
Clothing for Patients.....	184 67
Medical Library.....	150 55
Stationery and Printing.....	949 41
Telephones.....	618 79
Incidental Expenses.....	1,931 17
Patient's Library.....	100 00
Uniforms for Employés.....	219 38
Balance on hand Fourth Month 24th, 1897.....	\$5,315 31
	760 09
	<u>\$96,303 56</u>

RECEIPTS.

Balance on hand Fourth Month 25th, 1896.....	501 38
Board of Patients.....	5,949 50
Nursing.....	356 50
Discounts.....	5 37
Fines.....	17 00
Interest on Deposits.....	29 21
Articles Sold.....	249 60
Ambulance Hire.....	25 00
Donations.....	20 00
	6,652 18
From the Treasurer.....	89,150 00
	<u>\$96,303 56</u>

Examined and found correct, Fifth Month 1st, 1897.

T. WISTAR BROWN.
CHARLES HARTSHORNE.
JOHN B. GARRETT.
JAMES T. SHINN.

DONATIONS

RECEIVED BY THE STEWARD.

Charles Norris, magazines.
 Mrs. Hallowell, magazines and papers.
 Mrs. A. J. Coburn, old linen.
 Jabez Hough, magazines and papers.
 Mrs. Wm. Simpson, Jr., cut flowers.
 Ninth Presbyterian Church, magazines and papers.
 Mrs. Edward Wetherill, old linen and muslin.
 Thomas C. Barry, cut flowers many times.
 Mrs. M. P. Grey, magazines.
 Junior Auxiliary, Church of the Redeemer, Bryn Mawr, cut flowers many times.
 Mrs. J. R. Fell, cut flowers several times.
 Needlework Guild of America, Philadelphia Branch, forty-nine garments.
 George Craig, cut flowers.
 Mrs. James Hopkins, one wheel chair.
 John Story Jenks, planting thirty-six oriental plane trees; one thousand hyacinth bulbs; one thousand tulip bulbs.
 Andrew Marshall, large cake.
 Mrs. Wm. Supplee, books.
 Rudolph Blankenburg, large lot of books in Russian language.
 Miss Janney, number of volumes of "Truth."
 John Story Jenks, seven utensil racks, and equipment of Urinalysis Room.
 Hugh Graham, cut flowers several times.
 Mrs. John T. Lewis, box of toys for children's ward.
 D. Landreth's Sons, one thousand bulbous roots.
 Joseph E. Gillingham, forty quarts ice cream, fifteen pounds cakes.
 Henry T. Coates, picture books for children's ward.
 J. Lewis Good, loan of fifty chairs.
 The Misses Blanchard, fifty dollars for reference books for nurses, barrel of white grapes and barrel of apples for Christmas, two Easter lilies, also subscription to two magazines.
 The Misses Perot, subscription to magazine.

Mrs. Nicholas Lennig, making 135 towels, 185 pillow cases and 24 shirts.
 Friends' Dorcas Society, making garments.
 Ladies' Visiting Committee, ice cream for nurses on two occasions, also Christmas tree with decorations, and a present to each patient.
 Franklin Fire Insurance Co., subscription to Harper's Magazine for one year.
Public Ledger, Press, Record, North American, Evening Bulletin, Call, Item, for daily copies.

ABSTRACT OF CASES.

SURGICAL CASES.	Male.	Female.	Cured.	Improved.	Unimproved.	Died.	Died within 24 hours.	Remaining.	Total.
INJURIES AND DISEASES OF BONES AND JOINTS—									
Fracture, Astragalus.....	3	2	1	1	1	1	1	1	3
" Clavicle.....	5	4	1	1	1	1	1	1	5
" Costal Cartilages.....	1	1	1	1	1	1	1	1	1
" Femur, compound.....	1	1	1	1	1	1	1	1	1
" " comm.....	1	1	1	1	1	1	1	1	1
" " Condyle, Int.....	16	9	18	2	5	25	1	1	1
" " simple, shaft.....	1	1	1	1	1	1	1	1	1
" " incomplete.....	4	3	5	1	1	7	1	1	1
" " neck.....	5	10	7	1	3	4	15	1	1
" " neck, Int. Cap.....	24	12	26	2	1	3	26	1	1
" Fibula.....	2	1	3	1	1	1	1	1	1
" " (Potts).....	3	2	1	1	1	1	1	1	1
" " Humerus, comp. comm.....	1	1	1	1	1	1	1	1	1
" " Condyle, Ex.....	1	1	1	1	1	1	1	1	1
" " Int.....	1	1	2	1	1	2	1	1	1
" " simple, shaft.....	1	1	2	1	1	2	1	1	1
" " neck.....	2	1	2	1	1	2	1	1	1
" " impacted.....	1	1	1	1	1	1	1	1	1
" Ilium, ant. sup. spine.....	1	1	1	1	1	1	1	1	1
" Maxilla Superior, compound.....	1	1	1	1	1	1	1	1	1
" " Inferior.....	3	2	1	1	1	3	1	1	1
" Metatarsus, simple.....	2	2	2	1	1	2	1	1	1
" Metacarpus, compound.....	1	1	2	1	1	2	1	1	1
" " simple.....	2	2	2	1	1	2	1	1	1
" Multiple.....	8	2	3	1	1	1	1	1	1
" Nose, compound.....	3	3	3	1	1	3	1	1	1
" Olecranon.....	1	1	1	1	1	1	2	1	1
" Patella.....	9	3	8	2	1	12	1	1	1
" Pelvis, compound.....	1	1	1	1	1	1	1	1	1
" " simple.....	1	1	1	1	1	1	1	1	1
" Ribs.....	3	1	3	1	1	1	4	1	1
" Radius, simple.....	3	1	3	1	1	1	4	1	1
" Radius and Ulna, compound.....	2	1	3	1	1	3	1	1	1
" " simple.....	2	1	3	1	1	1	4	1	1
" Skull, compound.....	3	1	3	1	1	1	4	1	1
" " depressed.....	7	1	6	1	1	2	8	1	1
" " comp. com. dep.....	1	1	1	1	1	1	1	1	1
" " simple.....	5	1	5	1	1	1	6	1	1
" " base.....	7	5	1	1	1	1	7	1	1
" Scapula.....	3	3	3	1	1	3	1	1	1
" Tarsal Bone.....	1	1	1	1	1	1	1	1	1
" Tibia.....	12	4	14	1	1	2	15	1	1
" " compound.....	2	1	3	1	1	3	1	1	1
" " Greenstick.....	1	1	1	1	1	1	1	1	1
" Tibia and Fibula, compound.....	12	2	10	1	1	12	14	1	1
" " comp. com.....	2	1	2	1	1	1	3	1	1
" " simple.....	20	8	26	1	1	12	28	1	1

*Refused Treatment. †Ruptured Lung. ‡One Died of Delirium Tremens.

ABSTRACT OF CASES—Continued.

SURGICAL CASES.	Male.	Female.	Cured.	Improved.	Unimproved.	Died.	Died within 24 hours.	Remaining.	Total.
Crush, Arm.....	1	1	1	1	1	1	1	1	1
" Body, general.....	2	2	1	1	1	1	1	1	1
" Foot.....	3	1	3	1	1	2	6	1	1
" Hand.....	6	8	1	1	1	1	6	1	1
" Leg.....	1	1	1	1	1	1	2	1	1
" Luxation, Calcicle.....	2	2	2	2	2	2	2	1	1
" Hip Joint.....	1	1	1	1	1	1	1	1	1
" Humerus.....	1	1	1	1	1	1	1	1	1
" Metacarpal bone.....	1	1	1	1	1	1	1	1	1
" Patella.....	1	1	1	1	1	1	1	1	1
" Radius and Ulna.....	1	1	1	1	1	1	1	1	1
" Semi-Lunar Cartilage.....	4	2	6	1	1	6	1	1	1
Anchylodis, Jaw.....	1	1	1	1	1	1	1	1	1
" Shoulder.....	2	1	1	1	1	2	1	1	1
Arthritis, Ankle.....	1	1	1	1	1	1	1	1	1
" Elbow.....	1	1	1	1	1	1	1	1	1
" Knee.....	2	2	2	1	1	1	4	1	1
" Shoulder.....	1	1	1	1	1	1	1	1	1
" Wrist.....	1	1	1	1	1	1	1	1	1
Burnitis, Elbow.....	2	2	2	1	1	2	1	1	1
" Knee.....	7	4	6	2	1	3	11	1	1
Charcots Disease.....	18	3	5	10	1	6	31	1	1
Genu Valgum.....	3	1	3	1	1	4	1	1	1
Extremum.....	4	3	4	1	1	3	7	1	1
" double.....	1	1	1	1	1	1	1	1	1
Necrosis, Facial Bones.....	6	3	6	1	1	2	9	1	1
" Femur.....	4	2	2	1	1	1	4	1	1
" Humerus.....	3	3	3	1	1	2	3	1	1
" Jaw, syphilitic.....	2	2	2	1	1	2	2	1	1
" Metatarsal bone.....	2	1	1	1	1	2	1	1	1
" Metacarpal.....	1	1	1	1	1	1	1	1	1
" Ribs.....	1	1	1	1	1	1	1	1	1
" Skull.....	1	1	1	1	1	1	1	1	1
" Tibia.....	7	1	6	1	1	2	8	1	1
Osteo Myelitis, gangrenous.....	1	1	1	1	1	1	1	1	1
Peritonitis, Tibia.....	2	2	2	1	1	1	3	1	1
Potts' Disease of Spine.....	3	1	3	1	1	1	4	1	1
Rachitis.....	2	1	1	1	1	2	2	1	1
Synovitis, Ankle.....	2	1	1	1	1	1	3	1	1
" Knee.....	26	1	24	2	1	1	27	1	1
Sprain, Ankle.....	24	6	30	1	1	3	30	1	1
" Knee.....	3	1	4	1	1	1	4	1	1
" Wrist.....	1	1	1	1	1	1	1	1	1
Hallux Equinus.....	1	1	1	1	1	1	1	1	1
Talipes.....	2	2	1	3	1	4	4	1	1
Talipes Varus.....	2	2	4	1	1	4	4	1	1
Violent union of bones.....	1	1	1	1	1	1	1	1	1

*Refused Treatment.

ABSTRACT OF CASES—Continued.

SURGICAL CASES.									
	Male.	Female.	Cured.	Improved.	Unimproved.	Died.	Died within 24 hours.	Remaining.	Total.
INJURIES AND DISEASES OF SOFT PARTS—									
Adenitis, Cervical.....	23	9	25	1	*1	.....	5	32	32
" Inguinal.....	27	2	24	2	.....	.....	2	29	29
Burn or Scald, Extremities.....	9	3	10	2	.....	.....	.....	12	12
" Face.....	7	.....	4	.....	.....	.....	.....	3	7
" General.....	10	11	6	.....	*1	8	5	1	21
" Trunk.....	8	3	2	.....	.....	3	.....	11	11
Contusion, Brain.....	9	1	7	.....	.....	1	1	1	10
Contusion, Extremities.....	21	9	34	3	.....	.....	.....	3	30
" General.....	13	3	14	2	.....	.....	.....	16	16
" Head.....	5	1	5	.....	.....	.....	.....	1	6
" Trunk.....	16	6	18	.....	.....	.....	.....	3	22
Cellulitis, Arm.....	9	1	10	.....	.....	.....	.....	10	10
" Foot.....	9	.....	9	.....	.....	.....	.....	9	9
" Hand.....	6	2	6	1	.....	1	.....	8	8
" Leg.....	6	4	7	2	.....	.....	.....	1	10
" Pelvis.....	1	1	1	.....	.....	.....	.....	1	1
" Scrotum.....	1	.....	.....	.....	.....	.....	.....	1	1
" Thigh.....	1	1	1	.....	.....	.....	.....	1	1
WOUNDS.									
Contused, Abdomen.....	1	.....	.....	.....	.....	11	.....	1	1
" Face.....	2	.....	2	.....	.....	.....	.....	2	2
Gunshot, Abdomen, penetr'v'g.....	3	.....	2	.....	.....	1	.....	3	3
" Back.....	2	.....	2	.....	.....	.....	.....	2	2
" Chest.....	4	.....	3	.....	.....	1	.....	4	4
" Extremities.....	12	1	10	2	.....	.....	.....	1	13
" Face.....	1	.....	1	.....	.....	.....	.....	1	1
" Groin.....	1	.....	.....	.....	.....	11	.....	1	1
" Head.....	1	.....	.....	.....	.....	1	.....	1	1
" Neck.....	1	.....	1	.....	.....	.....	.....	1	1
Incised, Arm.....	1	1	2	.....	.....	.....	.....	2	2
" Abdomen, penetr'v'g.....	4	1	4	.....	.....	1	.....	5	5
" Back.....	4	.....	4	.....	.....	.....	.....	4	4
" Chest.....	2	.....	2	.....	.....	.....	.....	2	2
" Chest and Abdomen.....	3	2	4	.....	*1	.....	.....	5	5
" Penetrat'g Lung.....	1	.....	.....	.....	.....	.....	.....	1	1
" Head.....	4	1	4	.....	.....	.....	.....	5	5
" Neck.....	5	.....	5	.....	.....	.....	.....	5	5
Lacerated, Extremities.....	25	2	23	2	.....	11	.....	1	37
" Head.....	22	3	22	3	.....	.....	.....	1	25
" Trunk.....	1	.....	1	.....	.....	.....	.....	1	1
Punctured, Eyeball.....	3	1	3	.....	.....	.....	.....	1	4
" Extremities.....	3	1	4	.....	.....	.....	.....	4	4
Poisoned.....	3	3	6	.....	.....	.....	.....	.....	6

*Refused treatment. †Died of delirium tremens. ‡Died of pneumonia. §Rupture of viscera.

ABSTRACT OF CASES—Continued.

SURGICAL CASES.									
	Male.	Female.	Cured.	Improved.	Unimproved.	Died.	Died within 24 hours.	Remaining.	Total.
DISEASES OF THE EYE AND EAR—									
Cataract.....	6	8	9	1	1	.....	.....	11	11
Conjunctivitis.....	3	3	5	.....	.....	.....	.....	2	5
Corneal Ulcer.....	1	.....	.....	1	.....	.....	.....	1	1
Deafness.....	1	.....	.....	.....	.....	.....	.....	1	1
Dislocation of Lens.....	1	1	1	.....	.....	.....	.....	1	1
Ectropion.....	1	.....	.....	.....	.....	.....	.....	1	1
Entropion.....	1	.....	.....	.....	.....	.....	.....	1	1
Glaucoma.....	3	3	2	1	.....	.....	.....	3	3
Gumma of Iris.....	1	.....	.....	.....	.....	.....	.....	1	1
Keratitis.....	3	1	3	.....	.....	.....	.....	1	4
Lachrymal fistula.....	1	1	1	1	.....	.....	.....	2	2
Ophthalmia.....	2	4	4	1	.....	.....	.....	1	6
Orbitis.....	4	.....	.....	.....	.....	.....	.....	1	4
Occlusion, external auditory meatus.....	1	1	1	.....	.....	.....	.....	1	1
Panophthalmitis.....	2	2	.....	.....	.....	.....	.....	2	2
Spont. Iritis.....	2	1	2	1	.....	.....	.....	3	3
Symblepharon.....	1	.....	.....	.....	.....	.....	.....	1	1
Trichiasis.....	1	1	1	1	.....	.....	.....	2	2
Trachoma.....	1	.....	.....	.....	.....	.....	.....	1	1
TUMORS—									
Aneurism.....	1	.....	1	.....	.....	.....	.....	1	1
Bonchocoele, Cystic.....	1	1	1	.....	.....	.....	.....	1	2
Carcinoma, Breast.....	1	6	4	1	.....	.....	.....	1	6
" Ear Lobe.....	1	.....	.....	1	.....	.....	.....	1	1
" Mesentery.....	1	.....	.....	.....	.....	1	.....	1	1
" Rectum.....	3	.....	1	1	1	.....	.....	3	3
" Stomach.....	1	.....	.....	.....	.....	1	.....	1	1
" Pylorus.....	2	.....	1	1	.....	.....	.....	2	2
" Stomach and Liver.....	1	.....	.....	.....	.....	.....	.....	1	1
" Uterus.....	4	.....	1	2	1	.....	.....	1	4
Cyst.....	2	2	.....	.....	.....	.....	.....	2	2
" Papillary.....	1	.....	.....	.....	.....	.....	.....	1	1
" Breast, multilocular.....	2	1	.....	.....	.....	.....	.....	1	2
" Ovarian.....	3	3	.....	.....	.....	.....	.....	1	3
Cysts, sub-maxillary.....	1	.....	.....	1	.....	.....	.....	1	1
Epulis.....	1	.....	1	.....	.....	.....	.....	1	1
Epithelioma, Face.....	4	.....	2	.....	.....	1	.....	1	4
" Tongue.....	1	.....	1	.....	.....	.....	.....	1	1
Fibroma of Breast.....	1	1	.....	.....	.....	.....	.....	1	1
" Back.....	1	1	.....	.....	.....	.....	.....	1	1
" Finger.....	1	.....	.....	.....	.....	.....	.....	1	1
Fibro Adenoma of Breast.....	1	1	.....	.....	.....	.....	.....	1	1
Fibroid Tumor of Uterus.....	1	5	3	1	.....	.....	.....	5	5
Gumma of Arm.....	1	.....	.....	.....	.....	.....	.....	1	1
" Thigh.....	1	.....	.....	.....	.....	.....	.....	1	1
Hematoma, Forehead.....	2	1	3	.....	.....	.....	.....	3	3

ABSTRACT OF CASES—Continued.

SURGICAL CASES.	Male.	Female.	Cured.	Improved.	Unimproved.	Died.	Died within 24 hours.	Remaining.	Total.
Hematoma, Scalp.....	1	1	1						2
Hematocoele.....	1	1	1						2
Keloid of Neck.....	1	1	1						2
" Ear.....	1	1	1						2
Lipoma.....	3	3	6						6
Osteo Sarcoma.....	1	1	2						2
Papilloma of Larynx.....	2	1							3
" Peritoneum.....	1	1	1						2
Ranula.....	1	1							2
Sarcoma, Abdominal.....	1	1	1						2
" Axillary.....	1	1	1						2
" Breast.....	1	2	1						3
" Inguinal.....	1	1	1						2
" Foot.....	1	1	1						2
" Mesentery.....	2	1	1						3
" Testicle.....	4	3	1						4
Unclassified, Tumor, Neck.....	1	1							2
" Breast.....	1	1							2
" Shoulder.....	1	1							2
DISEASES OF THE VASCULAR SYSTEM—									
Aneurism, Aortic, Abdominal.....	4	1		2		11	11	1	5
" Popliteal.....	1	1							2
Hemorrhoids, External.....	26	9	29	2					35
" Internal.....	3	1	3						4
Lymphangitis.....	1	1							2
Phlebitis.....	3	1	4						4
Varicose Veins.....	5	2	5	2					7
DISEASES OF THE URINARY ORGANS—									
Cystitis.....	8	1	6	2	1				9
Fistula, urethral.....	2	1	2	1					3
" vesico perineal.....	1	2							3
Floating Kidney.....	1	2	2						3
Pyo-Nephrosis.....	1	1							2
Retention of Urine.....	5	4							9
" with extravasation.....	1	1							2
Rupture of Urethra.....	1	1	1						2
Stricture.....	9	7	1	21					9
Tubercular, Kidney.....	1	1	1						2
Calculus, Vesical.....	1	1							2
DISEASES OF ORGANS OF GENERATION—									
Balanitis.....	1	1							2
Chancroid.....	3	3							6
Endometritis.....	13	11	1						13
" Septic.....	3	2							5
Epididymitis.....	8	7		21					8

*Acute Sub-maxillary Abscess. †Rupture of Aneurism. ‡Refused Treatment.

ABSTRACT OF CASES—Continued.

SURGICAL CASES.	Male.	Female.	Cured.	Improved.	Unimproved.	Died.	Died within 24 hours.	Remaining.	Total.
Erosion of Cervix.....	1	1							2
Extra Uterine Pregnancy.....	1	1							2
Gonorrhea.....	4	4							8
Hydrocele.....	9	7							16
Hypospadias.....	1			1					2
Laceration of Cervix.....	11	9							20
" Perineum.....	9	6	2						15
Metritis.....	7	6							13
Metrorrhagia.....	1	1							2
Orchitis.....	14	13	1						27
Phimosis.....	16	14	1						30
Paraphimosis.....	6	6							12
Prostate, Hypertrophy of.....	2	1							3
Pyo Salpinx.....	6	3							9
Pyo Salpinx, Double.....	5	5							10
Perimetritis.....	1	1							2
Prolapse, Uterine.....	4	2	1						7
" Ovarian.....	7	5	1						13
Retroflexion Uterus.....	1	1							2
Stenosis of Cervix.....	2	2							4
Salpingitis.....	28	30	4						58
Syphilis, Primary.....	1	1							2
" Hereditary.....	2	2							4
" Tertiary.....	3	3							6
Tubercular Testes.....	6	6							12
Undescended Testicle.....	1	1							2
Varicocele.....	11	10							21
DISEASES OF THE RECTUM AND ANUS—									
Fissure, Anal.....	4	2	4	1					7
Fistula in Ano.....	30	9	21	2	1				43
Superfate Rectum.....	1								1
Prolapse of Rectum.....	6	4	2						12
MISCELLANEOUS—									
Abscess, Abdominal Wall.....	1	3	3	1					5
" Alveolar.....	2	2	4						4
" Arm.....	4	1	5						5
" Axillary.....	2	4	5	1					6
" Buttock.....	1	1							2
" Brain.....	1	1							2
" Chest.....	1	1							2
" Groin.....	1	1							2
" Hand.....	2	2	4						4
" Head.....	4	4	8						8
" Hip.....	9	1	7	1					10
" Ischio Rectal.....	6	6							12
" Jaw.....	7	1							8
" Knee.....	1	1	2						4

*Refused Treatment.

SURGICAL CASES.									
	Male.	Female.	Cured.	Improved.	Unimproved.	Died.	Died within 24 hours.	Remaining.	Total.
Class of Animals.	1	1							2
Ear.	1	1							2
Foot.	6	1	5	1	1			1	10
Face, rostrum.	1	1							2
Leg.	11	5	14	2					16
Mouth, syphilitic.	1	1							2
Penis.	1	1							2
	1071	458	1125	120	34	60	26	120	1520

ABSTRACT OF CASES.

MEDICAL CASES.	Male.	Female.	Cured.	Improved.	Unimproved.	Died.	Died within 24 hours.	Remaining.	Total.
GENERAL DISEASES—									
Addison's Disease.....	1	1	1						1
Anemia.....	2	1	1						1
" Pernicious.....	1	1	1						1
Chlorosis.....	13	10	2					1	13
Convulsions.....	1	1	1						1
Debility.....	2	2	1	2				1	4
" Scutella.....	1			1					1
Delirium Tremens.....	4	2			1	1			4
Erysipelas.....	14	7	19					2	21
Epistaxis.....	2	2	4						4
Fever, Malarial.....	53	3	50	3				2	55
" Simple, continued.....	4	2	4					2	6
" Typhoid.....	104	45	124	1		14	1	9	149
" Typhoid.....	22	6	30			7	1		38
Gout, Arthritic.....	1		1						1
Heat Exhaustion.....	6		6						6
Influenza.....	28	9	33					4	37
Lead Poisoning, Chronic.....	9		4	3	1			1	9
Migraine.....	2	1	3						3
Malingering.....	3	1	4						4
Menses.....	1		3					1	1
Opium Habit.....	3		3						3
Raynaud's Disease.....	1		1						1
Rheumatism, Acute.....	34	31	50	8				7	63
" Sub-acute.....	4	6	7	2				1	10
" Chronic.....	9	3	6	5				1	12
" Gonorrheal.....	1	2	2	1					3
" Muscular.....	4	2	5	1					6
Scurbutus.....	3		3						3
Septicemia.....	2	2							2
Uremia.....	5	1				1	5		6
DISEASES OF THE SKIN—									
Chloasma.....	1		1						1
Dermatitis.....	2		1	1					2
Herpes Zoster.....	1		1						1
Lupus.....	1	2		1					2
Psoriasis.....	1		1						1
POISONING—									
Alcohol, acute.....	1					1			1
Arsenical.....	2	2							2
Ammonia.....	2	2							2
Carbolic Acid.....	2								2
Coal Oil.....	1	1							1
Chloral.....	1	1							1
Fish Poisoning.....	2	2							2
Lead, Acute.....	16		15					1	15

ABSTRACT OF CASES—Continued.

MEDICAL CASES.	Male.	Female.	Cured.	Improved.	Unimproved.	Died.	Died within 24 hours.	Remaining.	Total.
Nitroline.....		1	1						1
Oxalic Acid.....	1		1						1
Opium.....	2	2					1	1	5
Rhus.....	2		2						2
Toad Stool.....	1		1						1
DISEASES OF RESPIRATORY ORGANS—									
Asthma.....	12	5	14	3					17
Bronchitis, Acute.....	15	15	27	2		1			39
" Chronic.....	3	4	4	3					7
Congestion of Lungs.....	6	1	7						7
Coryza, Acute.....	1	1	2						2
Croup, Spasmodic.....	2		1	1					3
Empyema.....	3	1	4						4
Emphysema.....	1								1
Hemoptysis.....	3	1	2	1			1		4
Laryngitis.....	3		3						3
" obstructive.....	2	1	3				1		3
" Pulmonalis.....	14	8	12	2	7	1			22
Pleurisy, Acute.....	11	4	13	1					15
" with Plethid.....	2						1		2
" with effusion.....	4	1	5						5
Pleurisy.....	1		1						1
Pneumonia, Crupous.....	42	20	45	1		7	5	4	62
" Catarrhal.....	66	26	60	4		12	8	8	92
" Pleuro.....	4	1	4						5
" Tubercular.....	1					1			1
Pyo-pneumothorax.....	1		1						1
Tuberculosis, Miliary.....	1								1
DISEASES OF THE DIGESTIVE ORGANS—									
Atrophy of Liver, acute yellow.....	1					1			1
Appendicitis.....	24	10	25	1	1	5	2		34
Cholera Infantum.....	1	1				1			1
Colitis, Tubercular.....	1					1			1
Constipation.....	4	6	9	1					10
Cholelithiasis.....	1	1							1
Cirrhosis of Liver.....	7	2	3			5			9
Diarrhea, Acute.....	4		4						4
" Chronic.....	1		1						1
Dysentery.....	5	2	6	1					7
Dyspepsia.....	2	1	2	1					3
Enteritis, Acute.....	3	3	6						6
Enterocolitis.....	2		2						2
Fecal Impaction.....	1	1	2						2
Gastralgia.....	1		1						1
Gastritis, Acute.....	12	14	23	3					26
" Chronic.....	5	2	5	2					7

*One Refused treatment.

ABSTRACT OF CASES—Continued.

MEDICAL CASES.	Male.	Female.	Cured.	Improved.	Unimproved.	Died.	Died within 24 hours.	Remaining.	Total.
Gastro-enteritis.....	13	1	14	2	.....	.....	.....	.....	14
Gastric Ulcer.....	2	3	3	1	*1	.....	.....	.....	5
Inanition.....	1	.....	.....	.....	.....	1	.....	.....	1
Intestinal Colic.....	2	.....	2	1	.....	.....	.....	.....	3
" Paralysis.....	1	1	.....	.....	.....	.....	.....	.....	2
" Obstruction.....	1	1	.....	.....	.....	.....	.....	.....	2
Jaundice, Catarrhal.....	11	3	12	2	.....	.....	.....	.....	14
Obstruction of Bile duct.....	1	.....	.....	.....	.....	.....	.....	.....	1
Marasmus.....	1	1	.....	.....	.....	.....	.....	.....	2
Peritonitis, Acute.....	3	1	1	.....	.....	3	.....	.....	4
" Septic.....	1	3	.....	.....	.....	3	.....	.....	4
" Tubercular.....	1	1	.....	.....	.....	2	.....	.....	2
Perityphlitis.....	1	3	4	.....	.....	.....	.....	.....	4
Stomatitis, Ulcerative.....	3	3	5	.....	.....	.....	.....	.....	6
Tonsillitis.....	18	9	26	.....	.....	.....	.....	.....	27
Tenias.....	1	2	3	.....	.....	.....	.....	.....	3
DISEASES OF THE NERVOUS ORGANS—									
Aphonia, hysterical.....	.....	1	1	.....	.....	.....	.....	.....	1
Cerebral Embolism.....	1	.....	.....	.....	.....	1	.....	.....	1
" Congestion.....	3	1	.....	.....	.....	1	1	1	4
" Hemorrhage.....	7	2	.....	3	1	5	.....	.....	9
Chorea.....	2	2	4	.....	.....	.....	.....	.....	4
Crutch Palsy.....	1	.....	.....	.....	.....	*1	.....	.....	1
Epilepsy.....	3	3	4	1	.....	.....	.....	.....	6
Hysteria.....	3	2	3	2	.....	.....	.....	.....	5
Insanity, Traumatic.....	1	.....	.....	.....	.....	1	.....	.....	1
Mania, acute.....	1	.....	.....	.....	.....	1	.....	.....	1
Meningitis.....	7	4	3	2	.....	4	1	1	11
" Tuberculous.....	4	4	2	1	.....	5	.....	.....	8
Monoplegia, facial.....	.....	1	.....	.....	.....	.....	.....	.....	1
Myelitis.....	3	.....	.....	2	.....	.....	.....	.....	3
Neuralgia and Neuritis.....	2	5	5	2	.....	.....	.....	.....	7
Neurothemia.....	3	14	12	4	1	.....	.....	.....	17
Paralysis.....	1	.....	.....	.....	.....	.....	.....	.....	1
Pachymeningitis.....	1	.....	.....	.....	.....	.....	.....	.....	1
Paralysis of Vocal Cords.....	1	.....	.....	.....	.....	.....	.....	.....	1
Sciatism.....	3	1	2	.....	.....	.....	.....	.....	4
Tetany.....	1	.....	.....	.....	.....	.....	.....	.....	1
DISEASES OF THE VASCULAR SYSTEM—									
Angina Pectoris.....	1	.....	1	.....	.....	.....	.....	.....	1
Atherosclerosis.....	2	.....	2	.....	.....	.....	.....	.....	2
Endocarditis.....	13	19	.....	24	.....	5	.....	3	32
Myocarditis.....	1	.....	1	.....	.....	.....	.....	.....	1
Pericarditis.....	1	2	.....	2	.....	.....	.....	.....	3
Valvular Heart Disease.....	14	7	.....	14	.....	5	2	.....	21
" congenital.....	1	.....	.....	.....	.....	.....	.....	.....	1
Fatty degeneration of Heart.....	1	.....	.....	.....	.....	.....	.....	.....	1

*Refused treatment.

ABSTRACT OF CASES—Continued.

MEDICAL CASES.	Male.	Female.	Cured.	Improved.	Unimproved.	Died.	Died within 24 hours.	Remaining.	Total.
DISEASES OF THE URINARY ORGANS—									
Diabetes.....	1	.....	.....	.....	.....	1	.....	.....	1
Nephritis, Acute.....	3	4	1	2	.....	.....	.....	.....	10
" Chronic Interstitial.....	2	4	.....	4	.....	.....	.....	.....	6
" Parenchymatous.....	15	6	.....	10	.....	.....	.....	.....	21
" with Heart Disease.....	2	2	.....	.....	.....	1	4	.....	5
Uteritis.....	1	.....	.....	1	.....	.....	.....	.....	1
Urethritis.....	2	.....	2	.....	.....	.....	.....	.....	2
THE DISEASES OF THE GENERATIVE ORGANS—									
Abortion.....	13	12	.....	.....	.....	.....	.....	1	13
Amorrorhea.....	1	1	.....	.....	.....	.....	.....	.....	1
Dysmenorrhea.....	1	1	.....	.....	.....	.....	.....	.....	1
Hemorrhagia.....	6	6	.....	.....	.....	.....	.....	.....	6
Ovaritis, Cirrhotic.....	1	1	.....	.....	.....	.....	.....	.....	1
Ovaritis.....	8	6	1	.....	.....	.....	.....	.....	1
Paraperal Septicemia.....	1	1	.....	.....	.....	.....	.....	.....	1
Retained Placenta.....	8	8	.....	.....	.....	.....	.....	.....	1
Threatened Abortion.....	1	1	.....	.....	.....	.....	.....	.....	1
Various Menstruation.....	1	.....	.....	.....	.....	.....	.....	.....	1
MISCELLANEOUS—									
Infants Born.....	2	4	5	.....	.....	.....	1	.....	6
" Admitted with Mothers.....	3	3	5	.....	.....	.....	.....	.....	6
Labor.....	7	7	.....	.....	.....	.....	.....	.....	3
Undiagnosed.....	2	1	.....	*1	.....	.....	.....	.....	3
	892	470	858	169	30	121	40	64	1372

*Refused treatment. (No post mortem exam. obtained.)

DIAGNOSIS.

[illegible][illegible][illegible]

OPERATIONS.—Continued.

OPERATIONS.	DIAGNOSIS.		Total.	Remaining.	Died within 24 hours.	Died.	Unimproved.	Improved.	Cured.	Male.	Female.
	Male.	Female.									
HISTORICAL—											
Radical Cure	11	1	12	3	1	1	1	1	1	1	1
"	"	"	"	"	"	"	"	"	"	"	"
"	"	"	"	"	"	"	"	"	"	"	"
"	"	"	"	"	"	"	"	"	"	"	"
"	"	"	"	"	"	"	"	"	"	"	"
INCISIONS FOR ABSCESSES—											
Abdominal Wall	1	1	2	1	1	1	1	1	1	1	1
Axilla	1	1	2	1	1	1	1	1	1	1	1
Breast	1	1	2	1	1	1	1	1	1	1	1
Hip	1	1	2	1	1	1	1	1	1	1	1
Hand	1	1	2	1	1	1	1	1	1	1	1
Rectal region	1	1	2	1	1	1	1	1	1	1	1
Jaw	1	1	2	1	1	1	1	1	1	1	1
Knee	1	1	2	1	1	1	1	1	1	1	1
Leg	1	1	2	1	1	1	1	1	1	1	1
Arm	1	1	2	1	1	1	1	1	1	1	1
Shoulder	1	1	2	1	1	1	1	1	1	1	1
Neck	1	1	2	1	1	1	1	1	1	1	1
Scapular	1	1	2	1	1	1	1	1	1	1	1
Thigh	1	1	2	1	1	1	1	1	1	1	1
Ischio-Rectal	1	1	2	1	1	1	1	1	1	1	1

OPERATIONS.	DIAGNOSIS.		Total.	Remaining.	Died within 24 hours.	Died.	Unimproved.	Improved.	Cured.	Male.	Female.
	Male.	Female.									
INCISION—											
Radical Cure	11	1	12	3	1	1	1	1	1	1	1
"	"	"	"	"	"	"	"	"	"	"	"
"	"	"	"	"	"	"	"	"	"	"	"
"	"	"	"	"	"	"	"	"	"	"	"
"	"	"	"	"	"	"	"	"	"	"	"
INCISIONS FOR ABSCESSES—											
Abdominal Wall	1	1	2	1	1	1	1	1	1	1	1
Axilla	1	1	2	1	1	1	1	1	1	1	1
Breast	1	1	2	1	1	1	1	1	1	1	1
Hip	1	1	2	1	1	1	1	1	1	1	1
Hand	1	1	2	1	1	1	1	1	1	1	1
Rectal region	1	1	2	1	1	1	1	1	1	1	1
Jaw	1	1	2	1	1	1	1	1	1	1	1
Knee	1	1	2	1	1	1	1	1	1	1	1
Leg	1	1	2	1	1	1	1	1	1	1	1
Arm	1	1	2	1	1	1	1	1	1	1	1
Shoulder	1	1	2	1	1	1	1	1	1	1	1
Neck	1	1	2	1	1	1	1	1	1	1	1
Scapular	1	1	2	1	1	1	1	1	1	1	1
Thigh	1	1	2	1	1	1	1	1	1	1	1
Ischio-Rectal	1	1	2	1	1	1	1	1	1	1	1

[illegible][illegible]

TABLE OF CASES TREATED IN THE RECEIVING WARDS
BUT NOT RETAINED IN THE HOUSE.

	M.	F.	Tot.		M.	F.	Tot.
Abortion.....	0	2	2	BURNS AND SCALDS—Con.			
Abrasions.....	40	6	46	Eye.....	6	5	11
Alphonia.....	2	2	4	Face.....	24	18	42
Amnesia.....				Fingers.....	13	10	23
Abdominal Wall.....	6		6	Foot.....	11	9	20
Alveolar.....	2	1	3	Forearm.....	2	1	3
Antrum.....	1	1	2	Hand.....	57	38	95
Ankle.....	1	1	2	Leg.....	13	15	28
Axillary.....	5	4	9	Neck.....	4	3	7
Arm.....	16	3	19	Scalp.....	1	2	3
Breast.....	3	3	6	Shoulder.....	1	3	4
Back.....	1	1	2	Trunk.....	1		1
Ear.....	2	1	3	Brisk Burns.....	104	19	123
Eye.....	1	3	4	Buritis.....	18	3	21
Foot.....	13	8	21	Bubo.....	9	2	11
Finger.....	39	29	68	Cancer of Rectum.....	1		1
Face.....	10	6	16	Carcinoma of Breast.....	1		1
Groin.....	2	2	4	Cellulitis of Arm.....	5	2	7
Hand.....	16	2	18	Buttock.....	1	1	2
Hip.....	1	1	2	Foot.....	11	5	16
Isthmus.....	4		4	Face.....	1	3	4
Jaw.....	25	12	37	Hand.....	16	5	21
Knee.....	1	2	3	Head.....	2		2
Leg.....	10	4	14	Leg.....	4	2	6
Neck.....	9	8	17	Neck.....	1		1
Opened.....	1	1	2	Phalanx.....	6	2	8
Perineal.....	2	3	5	Vulva.....	2		2
Palm.....	9	2	11	Cholera Infantum.....	11	11	22
Rib.....	1	1	2	Clavus.....	1	7	8
Scalp.....	1	2	3	Conjunctivitis.....	15	10	25
Toes.....	2	1	3	Cystitis.....	6	2	8
Thigh.....	3	1	4	Cyst of Arm.....	1		1
Valva.....	1	1	2	Face.....	5		5
Adenitis.....	31	22	53	Hand.....	1	1	2
Anemia.....	8		8	Neck.....	2	1	3
Anchylosis of Jaw.....	1		1	Scalp.....	3		3
Angina.....	2	2	4	Cephalalgia.....	10	4	14
Anorexia.....	1	1	2	Carboncle.....	1		1
Asphyxia.....	9	5	14	Coxalgia.....	2		2
Arthritis of Knee.....	5	1	6	Cramps, Abdominal.....	32	10	42
Asthma.....	13	2	15	Cataract.....	1		1
Alcoholism.....	76	25	101	Concussion.....	1		1
Avulsion of Nail.....	3	1	4	Chancroids.....	4	1	5
Bites, Human.....	77	22	99	Constipation.....	16	14	30
Animal.....	120	54	174	Chill.....	4	1	5
Bromidrosis.....	1		1	Constricting Cloatrix.....	1		1
Bronchitis.....	51	28	79	Colic.....	12	7	19
BURNS AND SCALDS—				Coryza.....	1		1
Of Abdomen.....	3	2	5	CONTUSIONS—			
Arm.....	21	26	47	Of Abdomen.....	19	10	29
Buttock.....	4		4	CONTUSIONS—			
Chest.....	2	3	5	Ankle.....	18	6	24

	M.	F.	Tot.		M.	F.	Tot.
CONTUSIONS—Con.				FOREIGN BODIES—Con.			
Arm.....	58	54	112	Eye.....	109	9	109
Back.....	34	14	48	Finger.....	37	27	64
Chest.....	15	6	21	Foot.....	11	22	33
Elbow.....	46	29	75	Hand.....	11	9	20
Eye.....	65	22	87	Head.....	1	1	2
Ear.....	1	1	2	Leg.....	4	1	5
Face.....	43	33	76	Nose.....	1	17	18
Foot.....	56	13	69	Throat.....	17	38	55
Forearm.....	13	1	14	FRACTURES, SIMPLE—			
Forehead.....	31	33	64	Clavicle.....	12	10	22
General.....	21	14	35	(Greenstick).....	2	2	4
Groin.....	4	1	5	Elbow.....	3	2	5
Hand.....	118	21	139	Fibula.....	2	1	3
Hip.....	16	7	23	(Potts).....	1	2	3
Jaw.....	13	20	33	Humerus.....	7	13	20
Knee.....	57	35	92	(Greenstick).....	2	4	6
Leg.....	51	28	79	Condyle.....	4	3	7
Nose.....	17	17	34	Jaw.....	1		1
Neck.....	3	3	6	Malleolus.....	4		4
Penis.....	1		1	Maxilla, Superior.....	1	1	2
Perineum.....	1		1	Inferior.....	1	1	2
Phalanges.....	124	30	154	Metacarpus.....	20	4	24
Scalp.....	54	23	77	Malar Bone.....	4	1	5
Shoulder.....	89	44	133	Nose.....	15	2	17
Side.....	96	28	124	Olecranon Process.....	2	1	3
Thigh.....	10	4	14	Phalanx.....	25	6	31
Testicle.....	7		7	Ribs.....	9	4	13
Wrist.....	25	6	31	Radius.....	11	10	21
Dermatitis.....	5	3	8	(Colles).....	26	37	63
Diphtheria.....	10	7	17	Styloid Process.....	3	4	7
Dropsy.....	5		5	Radius and Ulna.....	2	2	4
Dysentery.....	3	3	6	Tibia and Fibula.....	1		1
Dysenteria.....	1	1	2	Ulna.....	5	4	9
Eczema.....	28	30	58	(Greenstick).....	3	6	9
Endometritis.....	5	2	7	FRACTURES, COMPOUND—			
Enteritis.....	5	5	10	Maxilla, Inferior.....	2		2
Enteritis.....	5	5	10	Metacarpus.....	1	2	3
Enteritis.....	2	2	4	Nose.....	1	1	2
Epididymitis.....	4		4	Phalanx.....	3	3	6
Epididymitis.....	24	6	30	Radius (Greenstick).....	1	4	5
Erythema.....	1	3	4	Radius and Ulna.....	1	2	3
Erythema.....	1	1	2	Skull.....	3	1	4
Erythema.....	15	16	31	Tibia and Ulna.....	2	2	4
Erysipelas.....	5	1	6	Follicular Tonsillitis.....	34	25	59
Erythema.....	74	6	80	Ganglion.....	2	4	6
Erysipelas.....	2	1	3	Gangrene, Hand.....	10	2	12
Felon.....	6	3	9	Gastric Catarrh.....	27	21	48
Felon.....	1	1	2	Chronic.....	12	15	27
Furuncle.....	11	3	14	General Debility.....	17	14	31
Putrid in Ano.....	12	1	13	Genu-Varum.....	1		1
Foot Rite.....	1	1	2	Gonorrhea.....	40	3	43
(Gonorrhea).....	3	2	5	Hare Lip.....	2		2
FOREIGN BODIES—				Hemorrhoids.....	16	3	19
In Arm.....	5	3	8	Hemorrhoids.....	2		2
Esophagus.....	1	1	2	Hemorrhoids.....	18	4	22
Buttock.....	4	10	14				
Ear.....							

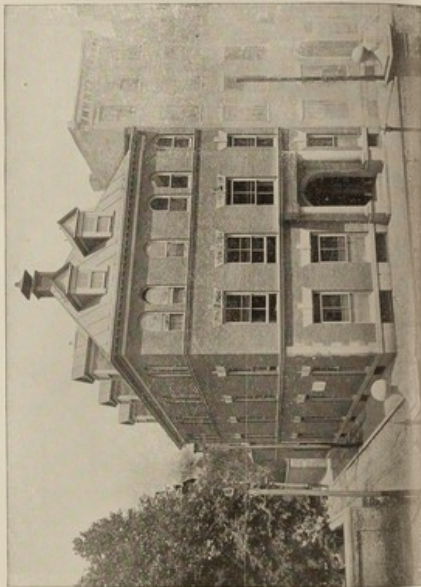
	M.	F.	Tot.		M.	F.	Tot.
Hernia.....	32	17	49	Nasal Septum Displaced..	1	2	3
Herpes.....	4	2	6	Nephritis.....	10	10	20
Hidradenoma.....	1	1	2	Neuritis.....	10	12	22
Hypoplasia.....	3	3	6	Orchitis.....	18	15	33
Hysteria.....	4	8	12	Otitis Media.....	9	5	14
Heart Disease.....	34	3	37	Neurasthenia.....	9	4	13
Hydrocele.....	6	3	9	Oedema of Foot.....	1	1	2
Heat Exhaustion.....	29	8	37	" Leg.....	2	2	4
Hemotoma.....	3	1	4	" Vulva.....	1	1	2
Incurvation of Nail.....	10	5	15	Ophthalmia (Purulent).....	2	2	4
Inflamed Face.....	2	1	3	Ovaritis.....	4	4	8
Infantile Paralysis.....	3	3	6	Parditis.....	1	1	2
Influenza.....	10	1	11	Paresis, Arm.....	1	1	2
Intertrigo.....	1	1	2	Parotitis.....	3	1	4
Jamulice.....	1	1	2	Pelvic Adhesions.....	1	1	2
Keloid.....	1	2	3	Pertussis.....	1	2	3
Keratitis.....	1	1	2	Pharyngitis.....	4	4	8
Laryngeal Obstruction.....	1	1	2	Phthisis.....	51	12	63
Laryngitis.....	5	6	11	Pleurisy.....	11	11	22
Lead Palsy.....	5	5	10	Pneumonia.....	9	1	10
Leucorrhoea.....	5	5	10	Pneumonia.....	7	11	18
Lipoma.....	1	1	2	Pregnancy.....	15	15	30
Lumbago.....	23	1	24	Paronychia.....	5	6	11
Lupus of Nose.....	2	2	4	Prolapse of Rectum.....	2	4	6
LUXATIONS—				Psoriasis.....	2	2	4
Of Clavicle.....	11	4	15	Papilloma of Forearm.....	1	2	3
Elbow.....	4	3	7	Quinry.....	1	1	2
Humerus.....	6	3	9	Rachitis.....	2	2	4
Maxilla, Inferior.....	2	5	7	Racilla.....	2	2	4
Phalanx.....	4	2	6	Referred to Other Depts.....	68	30	98
Radius.....	2	1	3	Rhus Poisoning.....	17	4	21
Semi-lunar Cartilage.....	3	1	4	Ring Worm.....	1	1	2
Ulna.....	4	1	5	Retention of Urine.....	54	7	61
Wrist.....	1	1	2	Ruptured Tympanum.....	4	4	8
Malaise.....	2	2	4	" Extensor Tendons.....	4	4	8
Malaria.....	21	4	25	Rheumatism.....	96	33	129
Malignant.....	3	2	5	Rothein.....	1	1	2
Marsupium.....	7	7	14	Salpingitis.....	3	3	6
Mastitis.....	1	1	2	Sarcoma of Arm.....	1	1	2
Measles.....	1	4	5	" Bread.....	1	1	2
Meningitis.....	2	2	4	Scarlet Fever.....	2	2	4
Menopause.....	1	1	2	Sinus of Face.....	1	1	2
Menorrhagia.....	1	1	2	" Hip Joint.....	1	1	2
Milium.....	1	1	2	Specie.....	4	4	8
Morphine Habit.....	2	1	3	SFRAINS—			
Phlebitis.....	2	2	4	Of Ankle.....	117	45	162
Periostitis of Tibia.....	4	4	8	Arm.....	10	12	22
Piles.....	3	1	4	Back.....	28	2	30
Pott's Disease.....	1	1	2	Elbow.....	18	13	31
Phimosis.....	17	17	34	Foot.....	9	6	15
Paraphimosis.....	10	10	20	Forearm.....	2	2	4
Poisoning.....	13	18	31	Groin.....	1	1	2
Necrosis of Clavicle.....	1	1	2	Hip.....	2	2	4
" Femur.....	3	3	6	Hand.....	43	8	51
" Humerus.....	1	1	2	" Haw.....	1	1	2
" Jaw.....	3	3	6	" Knee.....	27	5	32
" Phalanx.....	2	2	4	" Leg.....	5	1	6
" Tibia.....	1	1	2	" Neck.....	3	2	5

	M.	F.	Tot.		M.	F.	Tot.
SFRAINS—Con.				ULCERS—			
Phalanx.....	72	16	88	Of Arm.....	1	1	2
Shoulder.....	15	16	31	Brist.....	3	3	6
Side.....	3	1	4	Corns.....	3	3	6
Wrist.....	149	60	209	Face.....	1	1	2
SFRAINS—				Foot.....	1	1	2
Of Arm.....	3	2	5	Hand.....	3	1	4
Back.....	7	7	14	Hip.....	1	1	2
Leg.....	2	2	4	Leg.....	43	28	71
Neck muscles.....	6	1	7	Penis.....	2	2	4
Phalanx.....	1	1	2	Shoulder.....	1	1	2
Shoulder.....	1	1	2	Stomach.....	1	1	2
Side.....	3	1	4	Tongue.....	1	1	2
Wrist.....	4	4	8	Undiagnosed.....	55	44	99
Stomatitis.....	1	5	6	Urethritis.....	1	1	2
Stricture of Urethra.....	13	13	26	Vaginitis.....	1	1	2
" Esophagus.....	2	2	4	Vaccination Sores.....	1	2	3
" Knee.....	14	9	23	Varicose Veins.....	6	5	11
" Wrist.....	4	3	7	" Ruptured.....	1	1	2
Sciatica.....	4	1	5	Varicocoele.....	9	2	11
Sclerous Cysts.....	5	5	10	Vertigo.....	4	1	5
Schabies.....	1	1	2	Warts, Fingers.....	3	1	4
Syncope.....	1	1	2	" Nose.....	1	1	2
Typhoid.....	19	8	27	WOUNDS—			
Teno Synovitis.....	9	3	12	Amputating.....	46	9	55
Torticollis.....	5	2	7	Contused and Lac'd.....	200	87	287
Tumor.....	9	6	15	Crush.....	191	29	220
Torticoollis.....	3	2	5	Gunshot.....	38	4	42
Tongue Tie.....	1	1	2	Incised.....	271	85	356
Toothache.....	6	1	7	Lacerated.....	1482	519	2001
				Poisoned.....	135	55	190
				Punctured.....	191	43	234
				Stab.....	61	8	69

OUT-PATIENT DEPARTMENT.

REPORT OF CASES TREATED IN THE SURGICAL
OUT-PATIENT DEPARTMENT.WALTER D. GREEN, M. D.
ROBT. G. LE CONTE, M. D.JOSEPH M. SPELLISSY, M. D.
JOHN H. GIBBON, M. D.

	M.	F.	Tot.		M.	F.	Tot.
Abrasions—				Abscess—Continued.			
Abdomen.....	4	2	6	Nose.....	4	2	6
Ankle.....	4	1	5	Palmar.....	15	6	21
Arm.....	5	3	8	Parotid.....	1	...	1
Back.....	4	2	6	Perineal.....	6	6	12
Elbow.....	6	3	9	Post-aural.....	2	4	6
Face.....	7	4	11	Rectal.....	1	1	2
" and Hands.....	4	1	5	Scalp.....	...	1	1
Finger.....	10	4	14	Thigh.....	12	4	16
Foot.....	8	3	11	Tonsillar.....	4	1	5
Fore-arm.....	4	2	6	Unclassified.....	7	8	15
General.....	7	4	11	Vulva.....	1	1	2
Hand.....	8	3	11	Wrist.....	1	1	2
Knee.....	6	3	9	Acne.....	2	...	2
Leg.....	15	4	19	Adenitis—			
" poisoned.....	4	1	5	Axillary.....	10	7	17
Neck.....	3	3	6	Cervical.....	24	18	42
Nipple.....	1	1	2	Inguinal.....	12	5	17
Side.....	4	2	6	Mammary.....	5	3	8
Shoulder.....	3	3	6	Sub-maxillary.....	4	3	7
Toe.....	3	4	7	Tubercular.....	5	2	7
Unclassified.....	5	4	9	Unclassified.....	9	6	15
Abscess—				Adherent Prepuce.....	4	...	4
Abdomen.....	5	3	8	Amputations—			
Alveolar.....	10	3	13	Breast, convalescent.....	2	2	4
Arm.....	8	4	12	Finger.....	4	1	5
Axillary.....	9	6	15	" convalescent.....	3	2	5
Breast.....	7	13	20	Fore-arm.....	4	...	4
Buttock.....	5	3	8	Leg.....	3	...	3
Cervical.....	3	...	3	".....	2	2	4
Ear.....	4	3	7	Anchylitis—			
Elbow.....	5	4	9	Elbow.....	5	2	7
Face.....	8	3	11	Unclassified.....	7	3	10
Finger.....	39	10	49	Wrist.....	4	3	7
Foot.....	11	4	15	Angioma Back.....			
Fore-arm.....	4	3	7	Arthralgia.....	4	...	4
Forehead.....	5	3	8	Arthritis.....	7	2	9
Gluteal.....	5	2	7	" tubercular.....	3	2	5
Groin.....	1	...	1	Atrophy, shoulder.....	6	...	6
Hand.....	12	4	16	Avulsion of Nail.....	6	3	9
Hip.....	7	3	10	Palanitis.....	13	1	14
Inguinal.....	5	2	7	Bites—			
Ischio Rectal.....	2	...	2	Cat, of arm.....	4	3	7
Jaw.....	9	5	14	" finger.....	5	3	8
Knee.....	6	3	9	" hand.....	7	4	11
Neck.....	16	11	27	Dog, " arm.....	10	3	13



OUT-PATIENT BUILDING—SPRING STREET.

	M.	F.	Tot.		M.	F.	Tot.
<i>Elites—Continued.</i>				<i>Bursitis—</i>			
Dog, of finger.....	9	4	13	Elbow.....	4	1	5
" " foot.....	4	2	6	Patella.....	10	3	13
" " hand.....	12	5	17	Unclassified.....	7	5	12
" " leg.....	17	5	22	Calculus, vesical.....	4	...	4
" " lip.....	4	2	6	Cancer of Breast.....	4	6	6
" " thigh.....	5	1	6	Carbuncle.....	3	1	4
" " unclassified.....	7	5	12	Cellulitis—			
Horse, of arm.....	5	1	6	Ankle.....	4	2	6
" " shoulder.....	4	1	5	Arm.....	8	2	10
Human, of arm.....	5	4	9	Buttock.....	4	1	5
" " brow.....	4	1	5	Elbow.....	1	...	1
" " ear & nose.....	5	2	7	Face.....	5	3	8
" " finger.....	8	4	12	Finger.....	20	4	24
" " foot.....	4	2	6	Foot.....	11	3	14
" " hand.....	12	4	16	Hand.....	19	4	23
Insect, of hand.....	6	3	9	Leg.....	9	4	13
" " face.....	5	4	9	Lip.....	5	2	7
" " unclassified.....	6	4	10	Neck.....	4	2	6
Itch, of hand.....	4	2	6	Thigh.....	5	2	7
" " finger.....	10	7	17	Toe.....	4	3	7
Itch, of hand.....	10	7	17	Unclassified.....	5	4	9
Itch, of hand.....	10	7	17	Wrist.....	4	...	4
Itch, of hand.....	10	7	17	Chancroids.....	25	...	25
Inguinal, gonorrhoeal.....	12	...	12	Chlorosis.....	5	...	5
" " sympathetic.....	4	...	4	Cicatrices—			
Inguinal, syphilitic.....	11	...	11	Contracted (burn).....	3	...	3
Itch, of hand.....	12	11	23	Painful.....	2	...	2
Itch, of hand.....	12	11	23	Unmolested.....	3	...	3
Itch, of hand.....	12	11	23	Claws.....	1	...	1
Itch, of hand.....	12	11	23	Contusions—			
Itch, of hand.....	12	11	23	Abdomen.....	6	4	10
Itch, of hand.....	12	11	23	Ankle.....	4	4	8
Itch, of hand.....	12	11	23	Arm.....	11	3	14
Itch, of hand.....	12	11	23	" and thigh.....	2	1	3
Itch, of hand.....	12	11	23	Back.....	14	4	18
Itch, of hand.....	12	11	23	Chest.....	9	2	11
Itch, of hand.....	12	11	23	" and shoulder.....	3	1	4
Itch, of hand.....	12	11	23	Elbow.....	12	5	17
Itch, of hand.....	12	11	23	Eye.....	9	2	11
Itch, of hand.....	12	11	23	Eye-lid.....	4	3	7
Itch, of hand.....	12	11	23	Face.....	11	6	17
Itch, of hand.....	12	11	23	Finger.....	31	6	37
Itch, of hand.....	12	11	23	Fore-arm.....	4	3	7
Itch, of hand.....	12	11	23	Forehead.....	10	4	14
Itch, of hand.....	12	11	23	Foot.....	6	2	8
Itch, of hand.....	12	11	23	General.....	8	3	11
Itch, of hand.....	12	11	23	Groin.....	5	2	7
Itch, of hand.....	12	11	23	Hand.....	21	5	26
Itch, of hand.....	12	11	23	Head.....	6	3	9
Itch, of hand.....	12	11	23	" and neck.....	2	1	3
Itch, of hand.....	12	11	23	Hip.....	11	3	14
Itch, of hand.....	12	11	23	Jaw.....	3	4	7
Itch, of hand.....	12	11	23	Knee.....	13	5	18
Itch, of hand.....	12	11	23	Labial.....	3	...	3
Itch, of hand.....	12	11	23	Lip.....	11	3	14
Itch, of hand.....	12	11	23	" and shoulder.....	5	1	6
Itch, of hand.....	12	11	23	Lip.....	3	1	4
Itch, of hand.....	12	11	23	Nose.....	7	2	9
Itch, of hand.....	12	11	23				

	M.	F.	Tot.		M.	F.	Tot.
Sprains—Continued.				Wounds—			
Side	3	...	3	Contused :—Continued.			
Thigh	6	4	10	Face	8	5	13
Toe	3	5	8	Fingers	20	8	28
Wrist	81	28	109	Fore-arm	9	3	13
Stomatitis				Foot	14	5	19
Stricture—	6	3	9	Hand	15	6	21
Urethral	14	...	14	Knee	12	5	17
" with retention	8	...	8	Leg	25	7	32
Stuttering	4	3	7	Lip	3	3	6
Suppurating bursa	1	1	2	Scalp	11	2	13
Synovitis—				Toe	8	4	12
Arm	5	2	7	Contused & Lacerated			
Elbow	7	3	10	Ankle	5	3	8
Finger	6	2	8	Arm	4	2	6
Foot	5	3	8	Brow	5	4	9
Knee	14	7	21	Elbow	6	4	10
Wrist	5	2	7	Eyelid	8	5	13
Tenosynovitis—				Face	8	5	13
Wrist	8	1	9	Finger	5	4	9
Unclassified	10	3	13	Fore-arm	4	2	6
Syphilis—				Hand	5	3	8
Primary	16	...	16	Scalp	9	6	15
Secondary	7	1	8	" and face	5	2	7
Tertiary	5	...	5	Toe	7	4	11
Tongue-tie	6	2	8	Contused & Punctured			
Torticollis	1	...	1	Foot	5	3	8
Tuberculosis	7	5	12	Thigh	4	4	8
Thieitis	6	1	7	Guns—			
Tumors—				Ankle	3	...	3
Fibroma	5	...	5	Arm	7	1	8
Fibroma of ear	4	...	4	Finger	8	1	9
Papilloma	3	...	3	Hand	8	2	10
Unclassified	7	5	12	Neck	4	...	4
Ulcers—				Incised—			
Arm	5	1	6	Ankle	5	1	6
Face	3	2	5	Anus	1	1	2
Foot	10	3	13	Arm	9	8	17
Hand	4	2	6	Brow	8	7	15
Leg	27	11	38	Chest and Back	4	6	10
" syphilitic	6	2	8	Clit	5	7	12
" varicose	9	5	14	Elbow	4	4	8
Lip	6	2	8	Face	15	6	21
Tongue	4	3	7	Finger	43	13	56
Toe	5	1	6	Foot	8	5	13
Urethral	4	...	4	Fore-arm	9	5	14
Veneral	2	...	2	Hand	18	9	27
Undescended testicle	9	...	9	Head	3	1	4
Undiagnosed	31	10	41	Knee	5	4	9
Unthrills	36	8	44	Leg	4	6	10
Vaccination sores	3	...	3	Neck	5	5	10
Varicose	6	...	6	Penis	3	...	3
Varicose veins	7	10	17	Scalp	9	7	16
Varroca	2	2	4	Side	5	2	7
Wounds—				Thigh	10	5	15
Contused :	7	3	10	Toe	6	4	10
Ankle	11	2	13	Wrist	8	5	13
Arm	7	3	10	Lacerated—			
Brow	7	3	10	Ankle	5	4	9

	M.	F.	Tot.		M.	F.	Tot.
Wounds—				Wounds, Poisoned—Con.			
Lacerated :—Continued.	5	3	8	Hand	23	15	38
Back	6	4	10	Head	6	2	8
Buttock	34	14	48	Leg	8	7	15
Brow	13	10	23	Lip	6	5	11
Clit	9	5	14	Scalp	7	4	11
Ear	29	8	37	Shoulder	6	5	11
Elbow	28	12	40	Thigh	7	6	13
Eyelid	154	68	222	Toes	1	1	2
Face	7	6	13	Unclassified	10	7	17
Fingers	28	7	35	Punctured—			
Fore-arm	76	18	94	Arm	8	5	13
Foot	37	21	58	Back	6	5	11
Hand	25	5	30	Brow	7	6	13
Knee	15	10	25	Chest	5	6	11
Leg	6	5	11	Elbow	1	...	1
Neck	7	7	14	Finger	8	7	15
Nose	137	58	195	Foot	14	11	25
Scalp	8	3	11	Hand	24	7	31
Thigh	9	7	16	Knee	7	5	12
Toe	18	7	25	Leg	8	4	12
Unclassified	4	...	4	Lip	5	4	9
La. ut Totus Divid—				Scalp	5	4	9
Hand	2	...	2	Shoulder	6	5	11
Wrist, section ulnar	9	5	14	Thigh	8	5	13
nerve and flexor	1	...	1	Wrist	12	6	18
carpi ulnaris	2	...	2	Stab—			
Wounds, Poisoned—				Abdomen	7	5	12
Arm	9	5	14	Arm	5	1	6
Back	1	...	1	Back	8	4	12
Brow	6	4	10	Chest	6	3	9
Ear	1	1	2	Chest	4	3	7
Finger	32	14	46	Leg	7	5	12
Foot	20	8	28	Shoulder	...	...	...
Referred to other Departments				Refused treatment	93	55	148
Refused treatment					16	11	27

REPORT OF CASES TREATED IN THE MEDICAL
OUT-PATIENT DEPARTMENT.

HENRY M. FISHER, M. D.

JOSEPH LEIDY, M. D.

FREDERICK A. PACKARD, M. D.

J. ALLISON SCOTT, M. D.

	M.	F.	Tot.		M.	F.	Tot.
Abdominal Cramps.....	2	1	3	Dilation of Stomach.....	1	1	2
Abrasion of Leg.....	1	1	2	Dentition.....	5	3	8
Abscess, Facial.....	1	1	2	Dermatitis.....	6	1	7
" Hepatic.....	1	1	2	" Venenata.....	1	1	2
Acne.....	6	2	8	Diabetes Mellitus.....	1	1	2
" Rosacea.....	4	1	5	Diarrhoea, Acute.....	9	8	17
Adenitis.....	4	4	8	" Chronic.....	2	2	4
Alcoholism.....	9	2	11	Delirium Tremens.....	1	1	2
Alkalina.....	1	1	2	Diphtheria.....	5	2	7
Alopecia Areata.....	1	1	2	Dropsy.....	1	1	2
Amenorrhoea.....	1	2	3	Dysentery.....	3	3	6
Anaemia.....	6	26	32	Dyspepsia, Gastric.....	25	19	44
Anchyloplegia.....	1	1	2	" Intestinal.....	5	6	11
Angina.....	1	1	2	Eczema.....	1	1	2
Angina Pectoris.....	1	1	2	Eczema.....	80	27	107
Aneurism.....	7	2	9	Emphysema.....	5	1	6
Anthraxosis.....	2	2	4	Endocarditis.....	3	3	6
Appendicitis.....	1	1	2	Enteritis.....	4	2	6
Arterio Sclerosis.....	1	1	2	" Enteritis.....	14	11	25
Ascites.....	1	1	2	Enterocolitis.....	20	27	47
Arthritis.....	1	1	2	Ectropion.....	1	1	2
Asthma.....	12	3	15	Ectropion.....	8	1	9
Atheroma.....	1	1	2	Epilepsy.....	2	1	3
Athropsia.....	3	1	4	Erysipelas.....	2	2	4
Atrophy of Liver (Acute)	1	1	2	Erythema.....	6	1	7
Yellow.....	1	1	2	Favus.....	2	2	4
Bell's Palsy.....	6	6	12	Febricula.....	2	2	4
Bromidrosis.....	1	1	2	Fever, Malarial.....	4	2	6
Bronchitis, Acute.....	61	33	94	" Typhoid.....	5	3	8
" Chronic.....	27	18	45	Flat Foot.....	1	1	2
" Sub-acute.....	5	8	13	Floating Kidney.....	1	1	2
Cancer of Stomach.....	2	2	4	Furunculosis.....	8	5	13
Caries of Jaw.....	1	1	2	Gangrene of Leg.....	1	1	2
Cellulitis of Foot.....	2	2	4	Gastritis, Acute.....	10	3	13
Cephalalgia.....	15	17	32	" Chronic.....	25	9	34
Chlorosis.....	3	9	12	" Catarrhal.....	2	2	4
Cholera Infantum.....	1	1	2	Gastro-enteritis.....	6	2	8
Cholera Morbus.....	1	1	2	Gingivitis.....	3	1	4
Chorea.....	1	7	8	Glossitis.....	1	1	2
Comedones.....	1	1	2	Gout, Exophthalmic.....	4	4	8
Concussion of Brain.....	1	1	2	Gonorrhoea.....	7	7	14
Congestion of Liver.....	7	3	10	Gout.....	4	1	5
Conjunctivitis.....	1	1	2	Hematuria.....	1	1	2
Constipation.....	31	24	55	Heat Exhaustion.....	5	1	6
Convulsions.....	1	1	2	Heart, Dilatation of.....	5	1	6
Coryza.....	11	2	13	" Puffy Degeneration.....	2	1	3
Croup.....	2	2	4	" Hypertrophy of.....	3	5	8
Cystitis.....	9	9	18	" Irritable.....	10	5	15
Debility.....	24	14	38	" Valvular Disease of.....	20	10	30

	M.	F.	Tot.		M.	F.	Tot.
Hæmorrhoids.....	3	1	4	Plenrodynia.....	1	1	2
Hæmiplegia.....	4	4	8	Plumbism.....	5	5	10
Hæmiplegia.....	5	3	8	Pneumonia, Croupous.....	7	3	10
Hepatitis.....	16	17	33	" Catarrhal.....	7	4	11
Hernia.....	1	1	2	Poisoning by Rhin.....	32	6	38
Herpes.....	13	7	20	Pregnancy.....	5	5	10
Hydrocephalus.....	3	1	4	Pressure Palsy.....	7	7	14
Hypochondriasis.....	1	1	2	Pruritis.....	8	1	9
Hysteria.....	3	4	7	Psoriasis.....	1	1	2
Indigestion.....	63	47	110	Pyæmia.....	5	5	10
Impetigo.....	7	1	8	Rachitis.....	1	1	2
Insomnia.....	14	4	18	Referred to Other Depts.....	124	75	199
Intestigo.....	1	1	2	Renal Calculus.....	1	1	2
Jandies, Catarrhal.....	7	1	8	Rheumatism, Acute.....	80	36	116
Laryngitis, Acute.....	10	2	12	" Sub-Acute.....	28	17	45
Lead Poisoning.....	10	1	11	" Chronic.....	15	8	23
Leucorrhoea.....	1	1	2	" Gonorrhoeal.....	19	3	22
Lichen.....	5	2	7	Rickets.....	1	1	2
Lithæmia.....	5	10	15	Sarcoma of Kidney.....	1	1	2
Locomotor Ataxia.....	1	1	2	Scabies.....	7	2	9
Lumbago.....	24	4	28	Sciatica.....	14	2	16
Lumbicoides.....	2	2	4	Semifala.....	1	1	2
Lupus.....	1	1	2	Scleroderma.....	7	6	13
Malaria.....	10	2	12	Softening of Brain.....	1	1	2
Mammas.....	1	1	2	Spinal Exhaustion.....	1	1	2
Mastitis.....	1	1	2	Spinal Sclerosis, multiple.....	1	1	2
Masturbation.....	2	2	4	Sprain of Back.....	1	1	2
Meades.....	2	2	4	Stammering.....	1	1	2
Measles.....	1	1	2	Stomatitis.....	1	7	8
Measles' Disease.....	1	1	2	Stone in Bladder.....	1	1	2
Meningitis.....	3	3	6	Strain of Chest.....	1	1	2
Mucous Disease.....	1	1	2	Stricture of Esophagus.....	1	1	2
Nephritis.....	28	11	39	Syphilis.....	22	8	30
Nephritis, Acute.....	7	3	10	Syphilis (Tertiary).....	2	2	4
" Chronic.....	7	3	10	Tabs Dorsalis.....	1	1	2
Neuralgia.....	17	10	27	Tape-worms.....	1	1	2
" Sciatic.....	2	2	4	Tachycardia.....	1	1	2
Nervæsthenia.....	17	9	26	Teething.....	1	1	2
Nephritis.....	9	1	10	Tenonovitis.....	2	2	4
Nephritis, Acute.....	1	1	2	Tetany.....	2	2	4
Nephritis, Chronic.....	1	1	2	Thrombosis.....	1	1	2
Nephritis, Acute.....	1	1	2	Thrombosis.....	1	1	2
Nephritis, Chronic.....	1	1	2	Tinea Circinata.....	4	3	7
Nephritis, Acute.....	1	1	2	" acron.....	7	7	14
Nephritis, Chronic.....	1	1	2	" tonsaurans.....	3	3	6
Nephritis, Acute.....	1	1	2	Tobacco Heart.....	60	28	88
Nephritis, Chronic.....	1	1	2	Tonsillitis.....	3	3	6
Nephritis, Acute.....	1	1	2	Torsion Liver.....	2	2	4
Nephritis, Chronic.....	1	1	2	Torticollis.....	3	3	6
Nephritis, Acute.....	1	1	2	Trachitis.....	2	2	4
Nephritis, Chronic.....	1	1	2	Tuberculosis.....	1	1	2
Nephritis, Acute.....	1	1	2	Tumor of Lung.....	1	1	2
Nephritis, Chronic.....	1	1	2	" Spleen.....	1	1	2
Nephritis, Acute.....	1	1	2	Typhoid Fever.....	6	1	7
Nephritis, Chronic.....	1	1	2	Ulcer, Gastric.....	1	1	2
Nephritis, Acute.....	1	1	2	" of Leg.....	1	1	2
Nephritis, Chronic.....	1	1	2				

	M.	F.	Tot.
Ulcerated Mouth	1	1	2
Urethritis	1	1	2
Urticaria	5	2	7
Undiagnosed	200	121	321
Vaccination Sores	1	1	2
Vaginitis	3	3	6
Varicose Veins	4	8	12
Varicella	1	1	2

	M.	F.	Tot.
Vaso-Motor Ataxia	3	1	4
Veruca	2	1	3
Vertigo	3	1	4
Vicarious Menstruation	1	1	2
Vitiligo	1	1	2
Vomiting of Pregnancy	1	2	3
Whooping Cough	1	4	5

REPORT OF CASES TREATED IN THE GYNÆCOLOGICAL DEPARTMENT.

T. HEWSON BRADFORD, M. D.
Resigned December 26th, 1896.

J. MONTGOMERY BALDY, M. D.

Amenorrhœa	3
Abortion, sequela of	9
Bubo	1
Cervical Stenosis	4
Chancroids	7
Chlorosis	4
Cancer of Breast	1
Condylomata	7
Cystitis	11
Constipation	6
Dysmenorrhœa	1
Endometritis	36
Epithelioma of Cervix	3
Erosion of Cervix	1
Eczema of Labia	1
Eczema of Nipples	1
Epithelioma of Vulva	1
Fibroid Uterus	3
Laceration of Perineum	15
" " Cervix	10
" " and Perineum	15
Metroorrhagia	3
Menopause	16
Metritis	4
Neurasthenia	1

Ovarian Abscess	2
Ovaritis	11
Ovarian Cyst	2
Puberty	1
Pregnancy	43
Prolapsus uteri	5
Prolapsed Ovary	10
Papilloma of Ovary	1
Perineal Abscess	1
Recto-displacement	10
Syphilis, secondary	7
Traumatic Peritonitis	1
Threatened Abortion	1
Subinvolution	6
Salpingitis	30
Sterility	5
Sarcoma of Uterus	1
Vaginitis	18
Vulvo-vaginitis	2
Vulvo-vaginal Abscess	1
Ventral Hernia	4
Ventral Fistula	1
Number of New Cases	296
Total Number of Visits	1222

REPORT OF CASES TREATED IN THE EYE AND EAR DEPARTMENT.

GEORGE C. HARLAN, M. D.

P. N. K. SCHWENK, M. D.

EYE.

Milium	2
Blepharitis	48
Rodentium	2
Edema of Lids	3
Abscess of Lid	8
Burn of Lid	4
" Eyeball	1
Echymosis of Lids	4
Erythema of Lids	1
Emphysema of Lids	1
Carcinoma of Lid	1
Chalazion	18
Trichiasis	1
Distichiasis	1
Entropion	4
Ectropion, Cicatricial	3
Dermoid Cyst	2
Lacerated Wound of Lid	1
" " "	1
Podiculis Ciliaris	1
Cicatricial Contraction of Orbital Tissues	2
Lachrymal Obstruction	5
" " Fistula	1
Dacryocystitis	6
Strabismus, Convergent	12
" Divergent	3
Conjunctivitis, Acute Catarrhal	167
" " Chronic	55
" " Phlyctenular	26
" " Granular	21
" " Neonatorum	5
" " Purulent	1
" " Traumatic	5
" " Trachomatous	2
Granuloma	1
Foreign Body in Conjunctiva	2
Lacerated Wound of Conjunctiva	2
Ophthalmoplegia Externa	5
Penetrating Wound of Conjunctiva	2
Paralysis of Accommodation	1
" " Superior Rectus Muscle	1
Insufficiency of Internal Recti Muscles (Exophoria)	6
Paralysis of External Recti Muscles	2
Paralysis of Levator Palpebrarum, (Ptosis)	2
Lag Ophthalmos	5
Hyperphoria	1
Hypermetropia	84
Hypermetropic Astigmatism simple	16
" " compound	171
Myopia	16
Myopic Astigmatism, compound	28
" " simple	11
Mixed	20
Anisometropia	8
Keratitis, Phlyctenular	10
" " Sloughing	5
" " Ulcerative	19
" " Marginal	1
" " Vascular (Pannus)	3
" " Interstitial	1
" " Traumatic	11
" " Bullous	2
Foreign Body in Cornea	21
Abscess of Cornea	4
Macula of Cornea	17
Lacerated Wound of Cornea	1
Leucoma, Adherent	4
" " Total	3
Iritis, Specific	11
Irido-cyclitis	2
Occlusion of Pupil	1
Panophthalmitis	4
Detachment of Retina	2
Retinitis, Albuminuric	2
" " Hemorrhagic	2
" " Exudative	1
" " Pigmentous	1
Tobacco Amblyopia	3
Chromiditis Macula	2
" " Disseminated	1
Glaucoma, simple	4
Optic Atrophy	12
" " Neuritic	3
Vitreous Opacities	5
Cataract, Incipient	7
" " Ripe	9
" " Congenital	2
" " Capsular	1
Dislocated Lens	3
Improper Case	3

EAR.

Acute Purulent Otitis Media...	85	Aural Polypus.....	7
Chronic " " ".....	68	Eczema of Auricle.....	4
Acute Catarrhal " ".....	94	Mastoiditis.....	2
Chronic " " ".....	71	Cinchonism.....	1
Otitis Externa.....	15	Abscess of Auricle.....	2
Otalgia.....	5	Ulcer of Auricle.....	1
Impacted Cerumen.....	53	Foreign Body.....	2
Paronychia.....	15	Epithelioma of Auricle.....	2
Myringitis.....	22	Nervous Deafness.....	2
" Traumatic.....	3		

OPERATIONS.

Abscess of Brow, opened.....	1	Removed Foreign body from	
" Lid, incised.....	3	Anterior Chamber.....	1
Tenotomy of Internal Rectus...	7	Inserted Style.....	1
" External ".....	1	" Lead Wire.....	3
Incision of Lachrymal Canal....	5	Iridectomy, Preliminary.....	2
Chalazion Excised.....	12	" for Glaucoma.....	3
Entropion (Hotz operation)....	1	Cataract, Simple.....	2
Granuloma of Lid.....	4	" with Iridectomy.....	2
Tarsorrhaphy.....	1	Capsulotomy.....	1
Plastic Operation of Lid.....	2	Emucleation of Eye Ball.....	2
Canthoplasty.....	3	Canterization of Corneal Ulcer..	10
Demoid Cyst, opened.....	1	Enucleation of Eye Ball.....	2
Lachrymal Abscess, opened.....	6	Mastoid Operations.....	2
Arlt's Operation on Lid.....	1	Aural Polypus Excision.....	4
Pterygium.....	1	Wildes Incision.....	2
Foreign Bodies Removed from		Removal of Epithelioma of	
Cornea.....	20	Auricle.....	1
Abscision of Prolapsed Iris....	1	Foreign Bodies Removed from	
		Ear.....	3

REPORT OF CASES TREATED IN THE NOSE AND
THROAT DEPARTMENT.
ALEXANDER W. MACCOY, M. D.

NOSE AND ACCESSORY CAVITIES.

Abscess of Frontal Sinus.....	1	Lupus of Nose.....	1
Aene of Nose.....	1	Nasal Polyp.....	11
Anosmia.....	1	Obstruction of Nasal end of	
Antrum, Catarrh of.....	1	Lachrymal Duct.....	1
" Tumor of.....	1	Papillomatous Tumor in Nasal	
Contusion of Nose.....	3	Cavity.....	1
Eczema of Nasal Vestibule.....	24	Rhinitis, Acute.....	21
" External Nose.....	7	" Chronic.....	35
Epistaxis, Systemic.....	3	" Atrophic.....	23
" from Ulceration.....	7	" Hypertrophic.....	56
Ethmoidal Cells, Necrosis of....	6	" Chronic Vaso-motor.....	5
" Tumor of.....	1	" Membranous.....	1
Fibroid Tumor of Nose.....	1	" Paralytic.....	23
Foreign Body in Nose.....	2	" Specific.....	6
Furuncle of Nose.....	1	Sebaceous Cyst on Nose.....	1

NOSE AND ACCESSORY CAVITIES.—Continued.

Septum Nasi, Perforation of..	1	Septal Outgrowth, Bony.....	4
" " Specific Perfora-		" " Cartilaginous	3
tion of.....	4	Traumatic Dislocation of Tri-	
Septum, Deviation of Cartilagi-		angular Cartilage of Septum	1
nous.....	4	Verrucous Growth on Nose....	1
Septum, Deviation of Osseocar-			
tilaginous.....	5		

MOUTH, NASO-PHARYNX AND OESOPHAGUS.

Atrophic Disease of Pharyngeal		Pharyngitis, Sub-acute.....	4
Vault.....	2	" Chronic.....	1
Cyst of Palate.....	2	" " Rheumatic.....	11
Cyst of Palatal Tonsil (retention)	1	" " Syphilitic.....	2
Delayed Dentition.....	1	" " Sarcoid.....	2
Foreign body in Pharynx.....	4	Specific Ulceration of Pharynx..	5
" " Oesophagus.....	1	" " Tongue.....	2
Gingivitis.....	1	Stomatitis, Membranous.....	2
Hypertrophy of Palatal Tonsil..	32	" Ulcerative.....	2
" " Lingual Tonsil.....	4	Sublingual Cyst.....	1
" " Third Tonsil.....	11	Specific Ulceration of Tonsils..	5
Mucous Patches in Mouth.....	4	" Tonsillitis.....	2
Necrosis of Bones of Hard Palate		Tonsillitis, Acute.....	24
(specific).....	1	" Acute Follicular.....	26
Naso-pharyngitis, Sub-acute.....	5	" Acute Interstitial.....	3
" Chronic.....	16	" Sub-acute ".....	2
" " Specific.....	1	" Chronic.....	4
Pharyngitis, Acute.....	2	Peritonsillar Abscess.....	4

LARYNX.

Adductor Paralysis of Larynx..	6	Laryngitis, Sub-acute.....	26
Adhesion of Vocal Cords (cica-		" Chronic.....	20
tricial).....	1	" Syphilitic.....	1
Aphonia, Functional.....	5	" Tubercular.....	8
Bilateral Recurrent Laryngeal		Papilloma of Vocal Cords.....	2
Paralysis.....	1	Sensory Paralysis of Larynx....	1
Cyst of Epiglottis.....	1	Ulcer of Epiglottis, Specific....	1
Laryngeal Cough (gastric reflex)	1		

MISCELLANY.

Adenitis, Sub-maxillary.....	1	Goitre.....	3
Asthma, Bronchial.....	1	Hemoptysis.....	1
Brucella.....	22	Influenza.....	4
Cephalalgia.....	1	Neurasthenia.....	1
Consultation.....	2	Parotiditis.....	2
Difficulty in Articulation.....	2	Phthisis.....	2
Diphtheria.....	1	Referred to Other Departments..	34
Facial Erysipelas.....	1	Unclassified.....	2
Globus Hystericus.....	2		

Total number of new cases... 613
" " " visits..... 2410

OPERATIONS.

Abcess of Soft Palate Incised	1	Faucial Tonsil Amputated	1
Avalsion of Nasal Papilloma	1	" Tonsils Cauterized	10
Bony outgrowth of Septum removed	5	" " Scarified	1
Cartilaginous outgrowth of Septum removed	2	Hypertrophied Nasal Tissue removed	3
Cyst of Palate Incised	1	Nasal polypi removed	17
" Faucial Tonsil Incised	1	Total	43

OPERATIONS PERFORMED IN THE HOUSE.

Tonsillotomy	4	Straightening Septum	2
" double	2	Removal of Adenoids	1

ORTHOPÆDIC DEPARTMENT.

T. S. K. MORTON, M. D.

Bow Legs, Double	12	Hallux Valgus	1
Contraction, Circumferential of Hand	1	Knock-knee, Single	1
Club Foot—		" Double	2
Equino-varus, Double	2	Neuritis	1
Equino-valgus, Single	1	Pott's Disease	8
Varus, Single	2	Pigeon Toe	1
Coxalgia, Single	5	Referred	7
" Double	1	Sprain of Ankle	1
Curvature, Lateral of Spine	5	" " Back	1
Flat Foot	3	Synovitis	1
Fracture of both Patellae	1	Wry-neck	1
Fracture Deformity, Potts of Ankle	1	Total	61
Functional Affection of Ankle	2	Total number of visits	140

MENTAL AND NERVOUS DISEASES.

New Cases	23
Revisits	73
Referred	12
Total	108

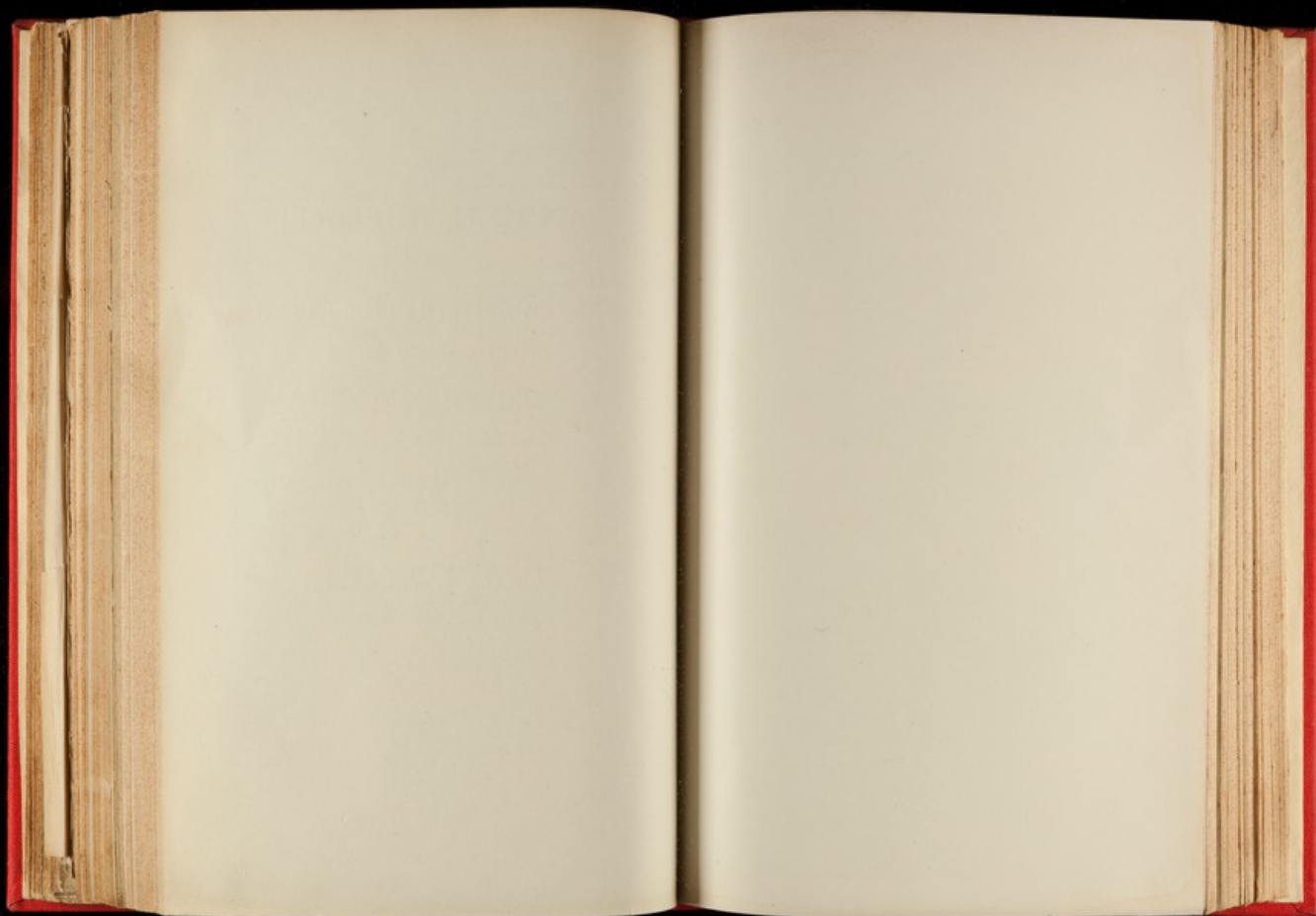
New Cases:	
Hemiplegia	1
Imbecility	2
Mania, Sabacutic	2
" Chronic	4
Melancholia	3
Neurasthenia	8
Paranoia	1
Senile Dementia	2
Total	23

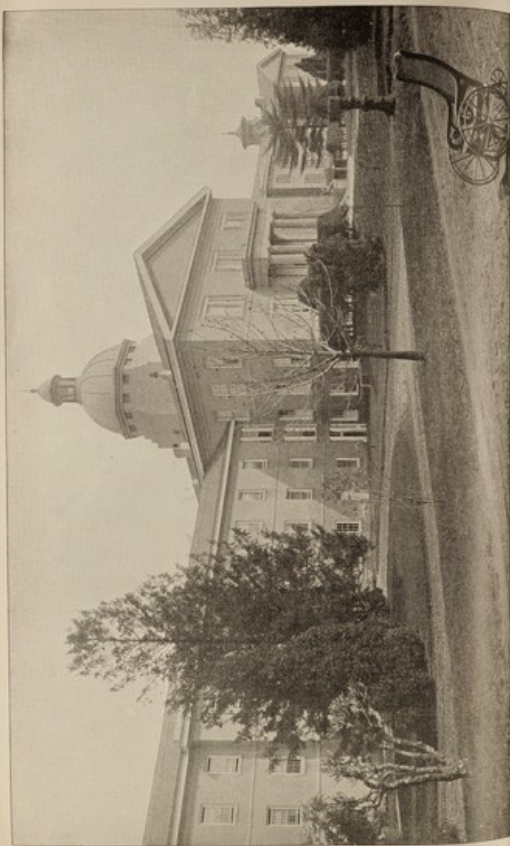
THE
ANNUAL REPORT
OF THE
DEPARTMENT FOR THE INSANE
OF THE
PENNSYLVANIA HOSPITAL.

FOR THE YEAR ENDING FOURTH MONTH 22ND, 1897.

PRESENTED TO THE 140TH ANNUAL MEETING
OF THE MANAGERS OF THE PENNSYLVANIA HOSPITAL,
BY JOHN B. CHAPIN, M. D.,
PHYSICIAN-IN-CHIEF AND SUPERINTENDENT.

PHILADELPHIA:
1897.





Pennsylvania Hospital for the Insane.

OFFICERS OF THE INSTITUTION.

MANAGERS.

BENJAMIN H. SHOEMAKER,	JOHN W. BIDDLE,
ALEXANDER BIDDLE,	JOHN T. LEWIS, JR.,
T. WISTAR BROWN,	JOHN S. JENKS,
CHARLES HARTSHORNE,	JOSEPH E. GILLINGHAM,
JAMES T. SHINN,	EFFINGHAM B. MORRIS,
JOHN B. GARRETT,	JAMES P. TOWNSEND,

BENJAMIN H. SHOEMAKER, *President.*
JAMES T. SHINN, *Secretary.*

TREASURER,
HENRY HAINES.

PHYSICIAN-IN-CHIEF AND SUPERINTENDENT,
JOHN B. CHAPIN, M. D.

Department for Men.

SENIOR ASSISTANT PHYSICIAN,
A. R. MOULTON, M. D.
SECOND ASSISTANT PHYSICIAN,
HORACE PHILLIPS, M. D.

STEWARDS,
GEORGE JONES.

NATROV,
HANNAH J. SAEGER.

Department for Women.

ASSISTANT PHYSICIAN,
H. B. NUNEMAKER, M. D.
SECOND ASSISTANT PHYSICIAN,
ELI E. JOSSELYN, M. D.

STEWARDS,
GEORGE JONES.

RESIDENT PHYSICIANS.

J. NORMAN HENRY, M. D.
CLARENCE F. M. LEIDY, M. D. ROBERT N. DOWNS, JR., M. D.

CONSULTING GYNÆCOLOGIST,
A. VICTORIA SCOTT-HAENSLE, M. D.



REPORT

OF THE

PHYSICIAN-IN-CHIEF AND SUPERINTENDENT OF
THE DEPARTMENT FOR THE INSANE OF
THE PENNSYLVANIA HOSPITAL.

TO THE MANAGERS OF THE PENNSYLVANIA HOSPITAL:

The following report of the Department for the Insane for the year ending Fourth Month 22nd, 1897, is herewith presented:

The number of patients in the Hospital 4th Mo.	Men.	Women.	Total.
23rd, 1896.....	181	232	413
*Admitted during the year.....	79	73	152
Whole number treated.....	260	305	565
Discharged.....	78	72	150
Remaining 4th Mo. 22nd, 1897.....	182	233	415
Daily average during the year.....	180	231	411

RESULTS OF THE YEAR.

	Men.	Women.	Total.
Recovered.....	16	25	41
Much Improved.....	5	8	13
Improved.....	11	14	25
Stationary.....	10	13	23
Died.....	21	12	33

RESULTS SINCE THE OPENING OF THE NEW HOSPITAL IN 1841.

	Men.	Women.	Total.
Recovered.....	2283	2304	4587
Improved.....	1376	1417	2793
Stationary.....	1017	534	1551
Died.....	914	694	1608
Not Insane.....	2	—	2
Total.....	5592	4949	10541

*Of the number admitted during the year, fourteen were cases of alcohol and opium habit. They do not appear in the Table of Results.

PENNSYLVANIA HOSPITAL.

ATTENDING MANAGERS.

1897-98.

1897.	5th month,	{ CHARLES HARTSHORNE;
	May.	{ JOHN T. LEWIS, JR.; 121 S. Fifth Street.
	6th month,	{ JOHN T. LEWIS, JR.;
	June.	{ JOHN S. JENKS; 328 Chestnut St.
	7th month,	{ JOHN S. JENKS;
	July.	{ JAMES P. TOWNSEND; 709 Walnut Street.
	8th month,	{ JAMES P. TOWNSEND.
	August.	{ JAMES T. SHINN; 313 South 41st Street.
	9th month,	{ JAMES T. SHINN;
	September.	{ JOHN W. BIDDLE; 119 S. Fourth Street.
	10th month,	{ JOHN W. BIDDLE;
	October.	{ T. WESTAR BROWN; 235 Chestnut Street.
	11th month,	{ T. WESTAR BROWN;
	November.	{ JOHN B. GARRETT; 228 S. Third Street.
	12th month,	{ JOHN B. GARRETT;
	December.	{ JOS. E. GILLINGHAM; 400 Chestnut Street.
1898.	1st month,	{ JOS. E. GILLINGHAM;
	January.	{ BENJ. H. SHOEMAKER; 205 N. Fourth Street.
	2nd month,	{ BENJ. H. SHOEMAKER;
	February.	{ EFFINGHAM B. MORRIS; Girard Life & Trust.
	3rd month,	{ EFFINGHAM B. MORRIS;
	March.	{ ALEXANDER BIDDLE; 1307 Walnut Street.
	4th month,	{ ALEXANDER BIDDLE;
	April.	{ CHARLES HARTSHORNE; 228 S. Third Street.

The Attending Managers visit the Pine Street Hospital every Fourth Day (Wednesday) at 9 A. M., and the Departments for the Insane every Seventh Day (Saturday) at half-past one P. M.

It has been a practice for many years to present a brief notice of some of the facts relating to patients discharged during the year.

Of the patients discharged "recovered," ten were residents of the Hospital not exceeding three months; fifteen between three and six months; eleven between six months and one year; and three for more than a year.

Of those discharged "much improved," four were under treatment less than three months; five between three and six months; five between six months and one year; and one for more than one year.

Of those who died, four were in the house less than one month; four between three and six months; three between six months and one year; and twenty-two for a period longer than a year. One had been a resident of the Hospital continuously forty years; and one had been treated for insanity at various times, and for long periods, since 1837.

The operations of the year, so far as they are presented in the statistical tables, show a slight falling off in the admissions, and also in the number discharged recovered. That the financial distress of the past few years has had an effect to reduce the number of admissions is undoubtedly true, although the number of applications has not materially diminished. The Managers have also been called upon to act upon an unusual number of applications for reductions in the weekly charge for the care of patients. These appeals have in all cases been made for the reason that income had shrunk, or that the bread-winner was without any occupation. The distress which has come upon many deserving families from sickness, has been added to by the worry of serious financial embarrassment. These distressing cases come to our attention through personal representation, and do not often come to the knowledge of the public, except as their existence is announced in public reports. No human affliction is more sad to contemplate than the loss of reason in all its direct and indirect relations to the family and to the community, or one that so strongly appeals to human sympathy for means for its alleviation. The resources of the Hospital have been strained to meet the demands of cases that are presented, many of which are tragic in their details. Although it cannot be expected that the causes of insanity will cease to operate upon the human race and produce their legitimate results, it is to be hoped that some of the distress-



ing incidents that attend it may be mitigated in some degree with the return of business prosperity.

As the number of admissions has diminished, as compared with previous years, so it appears that there has been a falling off in the number of recoveries, which is to be accounted for on the ground that a smaller proportion of recoverable and acute cases have been received.

No calamity, or case of suicide, has occurred. We have had the good fortune to escape any evil accident to any of our patients, or to the property of the institution, to which we always consider ourselves particularly liable to experience.

The Steward reports the total receipts for the year for board and medical attendance to be, \$200,596.29; interest from legacies and other sources, \$4,934.55; total, \$205,530.84. The total expenditures for maintenance, wages, furnishing, etc., was, \$205,815.35. The average weekly cost for the year was, \$9.62. This is the basis for fixing the charge for care and maintenance. When a higher rate is charged, the patient is expected to receive an equivalent in liberal accommodations and special attendance. The total expenditure supports a standard of care which approximately meets the average needs of our community. The amount expended on the charitable work of the Hospital was \$58,120.40.

The medical service has been regularly and faithfully performed throughout the year. The four assistant physicians make two regular visits to all the wards in their respective divisions, daily. The physician superintendent, if not interrupted, makes visits daily to one or more of the several divisions in rotation, in company with the assistant physician, for the purpose of conference and consultation.

On the admission of a fresh case it is essential to determine as far as practicable whether the manifestations of mental disease are due to a disordered functional condition, or to organic changes of the brain. Sixty per cent. of our admissions may be said to belong to the first division, and can be placed in a recoverable class. The remainder, while a proportion may improve and their condition be improvable, do not recover their normal mental condition.

The percentage of recoveries for the year calculated upon the admission, was twenty-nine. While the results vary from year to year, the average for seven years has been thirty-two per cent.

The average duration of hospital treatment of those discharged recovered—

In 1891 was.....	36 weeks.
" 1892 "	30 "
" 1893 "	29 "
" 1894 "	21 "
" 1895 "	21 "
" 1896 "	26 "

The reduction of hospital residence of those discharged recovered has been quite marked.

Whatever advances have been made in the pathological study of brain changes, no suggestions have yet come from those investigations to aid the treatment of insanity. The disordered manifestations of a functional character that accompany acute mental disease, following and accompanying neurasthenia, are not shown to depend on any changes yet discovered after death. The most rational and obvious course of treatment is suggested from the impoverished state of the blood, the loss of body-weight, and a history of general invalidism—conditions that are found to exist in the largest proportion of cases. The liberal and systematic administration of food and tonics; the promotion of sleep; and medical attention to the physical conditions that are essential to assimilation and nutrition—whatever, indeed, will restore the loss and make good the waste, are the obvious principles that must continue to guide the medical treatment of the insane in the present state of our knowledge.

At a period when the researches of the laboratory have done so much to enrich every department of medical knowledge, it may be a pertinent thought to what extent this Hospital, with others, should enter a special field of investigation so fair, so promising of important benefits to mankind, and yet unexplored. That the secret of the nature of vital force and the complex operations of the human mind may be yielded by an exploration is perhaps beyond expectation, but the conditions under which these forces act, and may be best restored when impaired, are within the scope of proper scientific inquiry. That they are subject to some rules of action, or law, may be assumed by analogy, but the revelation of the hidden laws cannot be made manifest except through patient work on many lines, by investigations of the most technical character. It is not to be expected that any one center of

investigation will solve the intricate problems that are presented. It is the history of every scientific advance and discovery that it is finally rendered possible only by reason of a great accumulation of knowledge, the result of the work of many observers.

NEW WARDS.—The new wards at the Department for Women, erected in 1895, and completed in the spring of 1896, were opened for public inspection on the 16th of May of that year. On this occasion, a company composed of the Managers, Contributors, several of the judges of the courts, men and women distinguished for their interest in philanthropic work, and friends of this Hospital, inspected the new wards, the baths and swimming pool, and visited other wards of both departments. On the 20th of May, the new wards were occupied, and the use of the one-story wards for patients was discontinued. It is the purpose to convert the abandoned wards to other uses. The plan of the new wards was sufficiently described in the annual report for last year. We have now to report that their use has proved that they answer all the requirements of the class for which they are intended. It can be stated further that the increased superficial space, the abundance of light, the better supervision of patients, have produced the most favorable results. There has been a marked reduction of excitement, and whatever manifestations in this respect are quite remote from our quiet patients. In all of the appointments of these wards the patients who require the greatest attention by reason of their helplessness and other conditions, have now accommodations which are in no respect inferior to that which we have to offer to any class.

The detached block, known as the North Museum building, has been occupied during the year by a group of women under the leadership of one of the patients' companions, three afternoons each week, alternating with the meetings of the pottery class in the South Museum building. The room is attractively furnished and is supplied with a number of magazines and pictorials. It affords facilities for many quiet hours spent outside of the wards, in an agreeable, home-like manner, with some of the accompaniments of social life commonly observed outside of a hospital. Every afternoon and evening of the week our hospital-life has a fixed arrangement and opportunity for diversion, occupation, or instruction.

At the Department for Men, the swimming-pool and baths, of which mention has been made in a previous report, is a place of daily resort for the pleasure and refreshment it affords. The

special baths are frequently prescribed by the physicians, and have come to have a place for the medical treatment of melancholia, nervous exhaustion, and toxic conditions. The number of baths given weekly averages 300.

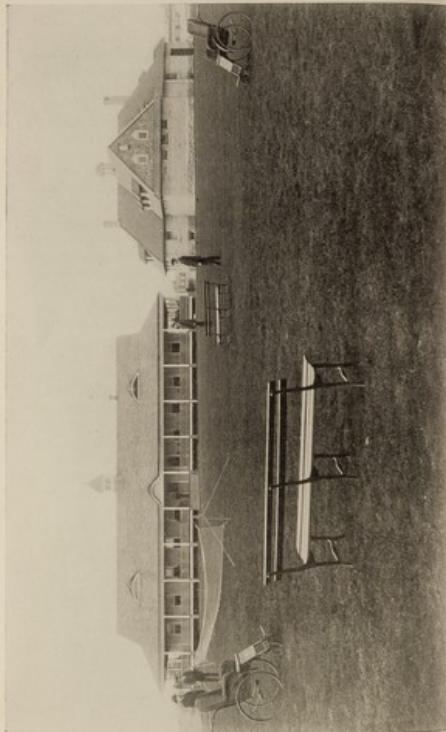
The farm-house, on the Delaware County farm, was occupied three months in the summer of 1896. Eighty-one patients spent a week or more at the farm, and eighty-four made a visit for a day, had a dinner, and returned the same evening.

There has been no suspension of the regular assemblages every evening at both Departments, such as have been described in previous reports.

Of the visits to patients, it may be stated that they are not encouraged unless in exceptional cases, nor are they discouraged. The restrictions are so limited that the question rests often with the relatives of patients. Visits obviously followed by injurious consequences should not be repeated with impunity, and as a rule, every sensible person willingly acquiesces in restrictions their own judgment approves. It has been the opinion that freedom of visitation to patients by their relatives has done much to remove unfounded suspicion about the care of the insane. An actual count made during a month not usually attractive, and when our grounds are not at their best, showed that 1388 visits were made to patients in the Hospital by their relatives or, at the rate of 16,856 annually. Whatever may be said or suspected of the conduct of hospitals for the care of the insane, it is hardly probable that grave abuses should ever occur and continue without coming to the knowledge of the watchful friends of patients, and the officers of the institution.

Whoever regularly peruses the annual reports of this Hospital, may perhaps note the fact that there is a certain uniformity or resemblance in them from year to year. It is true the nature of our hospital work does not vary; that the exactions upon its service do not change, but rather increase; that the experimental stage has so far passed that we must adhere to that which has been established by experience; that if in the past the report of a year's operations has been perused with satisfaction by any Contributor, or friend of the Hospital, so it is hoped that the reader may experience renewed gratification that its service of help and healing are going on in the lines on which it was projected.

I have again to express my thanks to my associate officers, Dr. Moulton, Dr. Nunemaker, Dr. Josselyn, Dr. Phillips, and Mr. George Jones, for their valuable aid and co-operation, and for the



NATATORIUM.

GYMNASTIC PAVILION.

fidelity and good work of all engaged in the performance of various duties and offices connected with the Hospital.

In the death of Joseph B. Townsend, which occurred during the year, the Hospital has lost a friend, a wise counselor, and devoted Manager. In this office he served twenty-seven years. So intimately did he seem identified with the affairs of the Hospital, and with the welfare of patients and all connected with it, that his death seemed a personal loss.

We acknowledge with thanks on behalf of our patients the following gifts and remembrances, viz: to Benjamin H. Shoemaker, for the Christmas holidays, \$50; to T. Wistar Brown, for the Christmas holidays, \$100; to Joseph E. Gillingham, for the Christmas holidays, \$100; to Walter Tomkins, for the Christmas holidays, \$15; to Mrs. M. A. Hoar, \$10; to Benjamin H. Shoemaker, for a large mirror; to Mrs. H. M. Kerr, for a case of surgical instruments; to Henry A. Dreer, for two hundred bulbous roots for greenhouse; to D. Landreth & Sons, for thirty-one dozen bulbous roots for greenhouse; to Isaac Taylor & Son, for a set of pool balls; to Miss A. E. Kelton, for a chair; to The Avil Publishing Company, for "The Telephone" for one year; to Mrs. Duling, for a bundle of periodicals; to the "King's Daughters," of Ardmore, for periodicals; to Harry J. Abbott, for several books for the library; to George Onimus, for a book for library; to Leonard Myers, for a bundle of magazines; to "The Church Periodical" of Ardmore, Pa., for magazines and periodicals; to Captain J. L. Wilson, for two volumes of engravings; to Mrs. Anna M. Kelley, for a volume of illustrations of Paris; to Miss E. P. Lewis, for sheet music; to Mrs. John Sowden, for a collection of magazines; to Mr. L. P. Powell, for a lecture with illustrations on Washington and Lincoln; to Mrs. Thomas Miles, for a china dish for reading-room; to Mrs. Spencer Miller, for Christmas cards; to "The Caledonian Club" (Scot.) for an entertainment; to Mrs. Wistar Morris, for magazines; to Mr. W. J. Jeffrey and friends, for a concert.

I have to thank the Board for their interest in all the concerns of the Hospital, and the kindly consideration of all matters submitted for their advice and direction.

JOHN B. CHAPIN.

*Pennsylvania Hospital for the Insane,
Philadelphia, Penna.,
4th Mo. 22, 1897.*

STATISTICS.
DEPARTMENT FOR THE INSANE.

STATISTICAL TABLES.—The following statistical tables embrace all the patients received into the Department for the Insane since its opening in its present location on the first day of 1841.

TABLE I.—*Showing the forms of disease for which 11,041 patients were admitted.*

	Previously Reported.		1896-97.	
	M.	F.	M.	F.
Mania	2066	2065	5	5
" acute	137	148	2	8
" sub-acute	86	79	10	8
" chronic	66	81	2	4
" circulaire	2	1		
" hysterical	1	5		1
" recurrent	36	60		2
" puerperal	31			
" with epilepsy	6	6	2	
" with alcoholism			1	1
Melancholia	1397	1680	27	33
" chronic	22	69		1
Dementia	1015	430	3	6
" with epilepsy	5	17		
" senile	28	38		1
Delirium	35	17		
Imbecility	13	4	1	1
Monomania	740	449		
Paranoia	123	19	3	2
Not insane	2		1	
Disease of nervous system and threatened insanity	8	13	1	1
Alcohol and opium habit	114	27	14	

TABLE II.—*Showing the form of disease of those discharged as recovered since Fourth Month 23rd, 1896.*

	Men.	Women.	Total.
Mania	2	4	6
" acute	1	4	5
" sub-acute	3	3	6
" puerperal			
" recurrent			
Melancholia, acute	9	12	21
Dementia		1	1
Disease of nervous system and threatened insanity	1		1
	16	24	40



PARLOR—DEPARTMENT FOR WOMEN.



PARLOR—DEPARTMENT FOR MEN.

TABLE III.—Showing the duration of disease before admission of those discharged as recovered since Fourth Month 23rd, 1896.

	Men.	Women.
Under 1 month.....	3	9
Between 1 and 2 months.....	3	4
“ 2 and 3 “.....	1	1
“ 3 and 4 “.....	1	2
“ 5 and 6 “.....	3	4
“ 8 months and 1 year.....	3	3
“ 12 and 18 months.....	4	3
“ 18 and 24 “.....	1	1
Two years and over.....	1	1
Duration unascertained.....	1	1

TABLE IV.—Showing the duration of the disease at the time of admission in 11,041 patients.

	Previously Reported.		1896-97.		Total.
	M.	F.	M.	F.	
Not exceeding 3 months.....	2399	2312	17	33	4761
Between 3 and 6 months.....	333	220	5	11	1069
“ 6 and 1 year.....	730	609	16	8	1363
“ 1 and 2 years.....	785	862	8	7	1662
“ 2 and 3 “.....	402	236	5	5	648
“ 3 and 4 “.....	239	157	2	2	391
“ 4 and 5 “.....	132	100	1	1	234
“ 5 and 10 “.....	235	194	4	2	435
“ 10 and 15 “.....	95	77	1	2	174
“ 15 and 20 “.....	42	39	1	2	84
“ 20 and 25 “.....	40	24	1	1	65
“ 25 and 30 “.....	23	15	1	1	38
“ 30 and 35 “.....	9	9	1	1	18
“ 35 and 40 “.....	6	1	1	1	7
“ 40 and 45 “.....	5	6	1	1	11
“ 45 and 50 “.....	2	1	1	1	4
“ 50 and 60 “.....	1	1	1	1	1
“ 60 and 70 “.....	1	1	1	1	1
Congenital.....	8	1	2	1	12
Chronic, duration unascertained.....	7	5	1	1	1
Not insane.....	1	1	1	1	1
Disease of nervous system and threatened insanity.....	6	10	1	1	17
Cases of alcohol and opium habit.....	114	11	14	1	139

TABLE V.—Showing the supposed causes of insanity in 11,041 cases.

	Previously Reported.		1896-97.		Total.
	M.	F.	M.	F.	
Apoplexy	2				2
Business cares and perplexities	409	86	3	1	499
Convulsions	3				3
Cerebral hemorrhage	6	1			7
Congenital defect	12	2	2		16
Domestic trouble	55	135			190
Disappointment	1	4	1		6
Epilepsy	9	10	3		22
Excessive use of tobacco	17	2			19
Excessive study	51	20			71
Exposure in army	9				9
Engagement in duel	1				1
Fright	20	64			84
Grief	92	342			434
Heredity	35	59	2		96
Ill health of various kinds	1156	1137	17	35	2345
Ill health from over-work, exposure or loss of sleep	210	294	13	3	520
Injuries to the head	145	15		1	161
Infantile convulsions	1				1
Intemperance	934	78	6		1018
Influenza	1	21			22
Imprisonment during war	1				1
Lead poisoning	2				2
Menstrual derangement	9				9
Menopause	7				7
Meningitis	234	402			636
Mental anxiety	1	11			12
Nostalgia	29	31	1		61
Opium habit	1				1
Organic disease of the brain	363	3			366
Puerperal state	2				2
Prolonged lactation	15				15
Progressive spinal sclerosis	1				1
Privation	27	34	1		62
Paralysis following injury	94	5			99
Senility	1				1
Stroke	1				1
Shock	1				1
Scatole rheumatism	4				4
Syphilis	5				5
Uterine disease	1967	1852	11	21	3871
Uncertain	122	16			138
Vicious habits and indulgences	10	7	3	4	24
Worry			1		1
Not disease					
Disease of nervous system and threatened insanity	6	12	1	1	20
Cases of alcohol and opium habit	114	11	14		139

TABLE VI.—Showing the causes of death from Fourth month 23rd, 1896 to Fourth month 22nd, 1897.

	M.	F.	Total.
Alcoholism and convulsion	1		1
Debility of old age		4	4
Disease of heart and dropsy		1	1
Epilepsy	1		1
Exhaustion from melancholia	5		5
" " chronic melancholia	1	2	3
" " acute mania and delirium	1		1
" " senile dementia	2		2
" " fracture of the spine	1		1
Fatty degeneration of the heart	1		1
Pneumonia	1	1	2
Periculous anaemia	1		1
Paresis	6	2	8
Phthisis pulmonalis and pneumonia	1		1
Tuberculosis	1		1
	21	12	33

TABLE VII.—Showing the state of 10,625 patients who have been discharged or died, and the form of disease for which they were admitted.

	Previously Reported.										Total.
	Recovered.	Most Improved.	Improved.	Stationary.	Not.	Recovered.	Most Improved.	Improved.	Stationary.	Not.	
Mania	2275	617	583	445	502	119	21	28	15	20	494
" acute	44	17	20	15	2	8	1	2	1	1	114
" sub-acute	18	28	41	37	2	1	2	9	3	1	135
" chronic	8	1	2	9	2	1	2	2	2	1	15
" epileptic	27	12	10	6	2	1	2	2	2	1	62
" hysterical	25	1	2	2	2	1	2	2	2	1	31
" recurrent	25	1	2	2	2	1	2	2	2	1	31
" puerperal	25	1	2	2	2	1	2	2	2	1	31
" with Alcoholism	1394	345	508	341	407	119	21	28	15	20	2965
Melancholia	113	13	13	13	9	15	1	2	1	1	60
" chronic	143	69	298	449	447	1	1	1	1	1	1402
Dementia	1					1					1
" senile	23	2	1	2	24	1					55
Delirium	1					1					1
Insanity	1					1					1
Monomania	502	95	258	186	25	1	2	2	2	1	1128
Paria	2	11	28	92							129
Disease of nervous system and threatened insanity.	9	6	2	1							20
Alcohol and opium habit	114	11	14								139
	4528	909	1857	1309	1371	92	16	28	15	20	10625

TABLE VIII.—*Showing the ages of 11,041 patients at the time of their admission.*

	M.	F.	T.		M.	F.	T.
Under 10 years.....	2	2	5	Between 55 and 60....	287	246	533
Between 10 and 15....	23	24	47	" 60 and 65....	216	173	389
" 15 and 20....	277	269	546	" 65 and 70....	123	121	244
" 20 and 25....	749	657	1406	" 70 and 75....	101	90	191
" 25 and 30....	797	771	1568	" 75 and 80....	47	42	89
" 30 and 35....	782	727	1509	" 80 and 85....	11	20	31
" 35 and 40....	825	643	1468	" 85 and 90....	4	7	11
" 40 and 45....	611	589	1200	" 90 and 95....	2	2	4
" 45 and 50....	529	473	1002	Unascertained.....	11	1	12
" 50 and 55....	417	360	777	".....	.....	.....	11

TABLE IX.—*Showing the ages at which insanity first appeared in 11,041 patients.*

	M.	F.	T.
Under 10 years.....	24	11	35
Between 10 and 15 years.....	85	85	170
" 15 and 20.....	530	477	1007
" 20 and 25.....	929	473	1402
" 25 and 30.....	948	479	1427
" 30 and 35.....	732	723	1455
" 35 and 40.....	821	540	1361
" 40 and 45.....	523	483	1006
" 45 and 50.....	369	468	837
" 50 and 55.....	296	468	764
" 55 and 60.....	269	195	464
" 60 and 65.....	159	112	271
" 65 and 70.....	73	60	133
" 70 and 75.....	43	49	92
" 75 and 80.....	22	14	36
" 80 and 85.....	6	19	25
" 85 and 90.....	1	3	4
" 90 and 95.....	.....	1	1
Congenital.....	10	1	11
Age not ascertained.....	10	7	17
Unascertained.....	.....	.....	371
Not insane.....	1	.....	1
Disease of nervous system and threatened insanity.....	6	16	16
Cases of alcohol and opium habit.....	128	7	135

TABLE X.—Showing the occupation of 5,833 men.

Architects.....	2	Engineers.....	46
Authors.....	4	Errand Boys.....	5
Apprentices.....	5	Farmers.....	585
Artists.....	29	File-cutter.....	1
Attendants.....	3	Firemen.....	3
Auctioneers.....	3	Glass-blowers.....	5
Bakers.....	30	Gardeners.....	34
Bank Officers.....	8	Gold-beaters.....	2
Beam Founders.....	2	Glove-makers.....	3
Blacksmiths.....	55	Grocers.....	30
Bricklayers.....	21	Hair-dressers.....	5
Brewers.....	4	Hatters.....	13
Brick-makers.....	12	Hotel-keepers.....	22
Brokers.....	32	Ice-dealers.....	2
Boat-builders.....	1	Insurance Agents.....	10
Book-binders.....	20	Iron-masters.....	4
Book-keepers.....	12	Jewellers.....	39
Book-agents.....	1	Journalists.....	4
Business Managers.....	5	Laborers.....	374
Brush-makers.....	3	Lawyers and Judges.....	153
Bottler.....	1	Liquor Dealers.....	3
Carvers.....	7	Locksmiths.....	5
Carpenters.....	171	Livery-stable Keepers.....	4
Chair and Cabinet Makers.....	43	Machinists.....	115
Capitalists.....	2	Masons.....	35
Chenille Cutter.....	1	Manufacturers.....	124
Clerks.....	656	Milk-driers.....	4
Clergymen.....	89	Millers.....	23
Chemists.....	8	Mill-hands.....	2
Cigar-makers.....	7	Miners.....	6
Civil Engineers.....	7	Merchants.....	567
Civil & Mechanical Engineers.....	4	Musicians.....	9
Coschmen.....	11	No Occupation.....	805
Cosch-makers.....	10	Nurses.....	2
Cosch-trimmers.....	2	Officers of the Army.....	12
Cosch-maker.....	1	Officers of the Navy.....	18
Conveyancers.....	17	Painters.....	49
Contractors.....	12	Planters.....	34
Collectors.....	3	Plane-maker.....	1
Confectioners.....	16	Plasterers.....	23
Coppersmith.....	1	Paper-hangers.....	11
Copers.....	5	Peablers.....	22
Cook.....	1	Physicians.....	148
Carriers.....	2	Printers.....	63
Court Officers.....	1	Print-cutters.....	2
Devilists.....	13	Police Officers.....	14
Drivers.....	3	Photographers.....	3
Drovers.....	8	Potters.....	3
Designer.....	1	Public Officers.....	13
Dressists.....	57	Publishers.....	5
Dyers.....	4	Plumbers.....	12
Editors.....	12	Pattern-maker.....	1
Engravers.....	9	Railroad Conductors.....	10
Electricians.....	7	Ranchman.....	1



TABLE X.—Continued.

Reporters.....	4	Tailors.....	56
Rope-makers.....	3	Tanners.....	9
Saddlers.....	21	Trader.....	1
Sail-makers.....	7	Teachers.....	63
Salesmen.....	59	Telegraph Operators.....	9
Station Agents.....	3	Theatrical Manager.....	1
Stair-builders.....	3	Timmen.....	33
Seamen and Watermen.....	83	Tobaccoists.....	32
Second-hand Dealers.....	4	Type-caster.....	1
Stenographers.....	5	Type-founders.....	3
Silversmiths.....	3	Umbrella-makers.....	12
Shipper.....	1	Undertaker.....	1
Shipwrights.....	5	Upholsterers.....	4
Soap-maker.....	1	Victuallers.....	26
Shoemakers.....	119	Watch-makers.....	2
Soldiers, U. S. A.....	30	Watchmen.....	13
Steward.....	1	Waiters.....	5
Stove-makers.....	3	Weavers.....	53
Stone-cutters.....	5	Wheelwrights.....	8
Students.....	110	Whip-maker.....	1
Students of Law.....	17	Wire-worker.....	2
Students of Medicine.....	27	Unascertained.....	24
Students of Divinity.....	14		

TABLE XI.—Showing the occupation of 5208 women.

Attendants in Stores.....	49	Daughters of Bricklayers.....	2
Artists.....	6	" Bakers.....	9
Artresses.....	2	" Brickmakers.....	1
Box-maker.....	1	" Butlers.....	1
Book-sewer.....	1	" Blacksmiths.....	2
Cigar-makers.....	5	" Builders.....	1
Clerks.....	32	" Carpenters.....	30
Domestics.....	398	" Carriers.....	33
Engraver.....	1	" Coachmakers.....	4
Factory-girls.....	31	" Contractors.....	5
Hair-dressers.....	2	" Caterers.....	2
Milliners.....	15	" Civil Engineers.....	2
Music Teachers.....	8	" Clerks.....	53
Nurses.....	44	" Clergymen.....	39
Photographer.....	1	" Chairmakers.....	2
Physicians.....	2	" Druggists.....	8
Seamstresses or Mantuamakers.....	2	" Dentists.....	2
Storekeepers.....	30	" Electricians.....	2
Sisters of Charity.....	5	" Editors.....	7
School Girls.....	8	" Engineers.....	5
Stenographers.....	3	" Farmers.....	256
Teachers.....	158	" Glass-makers.....	2
Of the single women not pursuing an occupation were—		" Grocers.....	2
Daughters of Auctioneers.....	1	" Hatters.....	21
" Authoress.....	2	" Hotel-keepers.....	3
" Artists.....	6	" Laborers.....	61
" Bank Officers.....	14	" Lawyers.....	51
		" Librarians.....	1
		" Merchants.....	352

TABLE XI.—Continued.

Daughters of Miners.....	2	Wives of Confectioners.....	6
" Masons.....	6	" Contractors.....	9
" Millers.....	2	" Civil Engineers.....	3
" Machinists.....	9	" Carpenters.....	63
" Manufacturers.....	27	" Coopers.....	2
" Musicians.....	3	" Collectors.....	5
" Officers of Army.....	2	" Cabinet-makers.....	20
" Officers of Navy.....	3	" Clergymen.....	63
" Paper-makers.....	3	" Druggists.....	32
" Physicians.....	33	" Dentists.....	8
" Plasterers.....	33	" Dyers.....	1
" Plumbers.....	1	" Editors.....	11
" Publishers.....	1	" Engineers.....	34
" Painters.....	18	" Farmers.....	297
" Public Officers.....	27	" Gardeners.....	12
" Roofers.....	1	" Gold-beaters.....	2
" Real Est. Dealers.....	1	" Grocers.....	28
" R. R. Officers.....	1	" Hair-dressers.....	7
" Sea Captains.....	8	" Hucksters.....	3
" Saddlers.....	1	" Hatters.....	3
" Ship-builders.....	4	" Inn-keepers.....	58
" Shoemakers.....	6	" Insurance Agents.....	3
" Teachers.....	17	" Iron-masters.....	6
" Timmen.....	7	" Jewellers.....	3
" Tailors.....	9	" Livery-keepers.....	4
" Tanners.....	8	" Lawyers and Judges.....	70
" Victuallers.....	8	" Laborers.....	260
" Weavers.....	20	" Lithographers.....	3
" Watchmakers.....	1	" Monitors.....	4
" Watermen.....	3	" Machinists.....	47
Of the married, similarly situated, were—		" Masons.....	9
Wives of Agents.....	3	" Manufacturers.....	85
" Architects.....	1	" Musicians.....	8
" Artists.....	1	" Millers.....	14
" Barbers.....	16	" Merchants.....	338
" Brass-founders.....	4	" Officers of Army.....	5
" Bank Officers.....	19	" Officers of Navy.....	17
" Book-binders.....	4	" Opticians.....	1
" Book-keepers.....	1	" Painters.....	14
" Brokers.....	8	" Planters.....	19
" Blacksmiths.....	23	" Paper-hangers.....	18
" Bakers.....	10	" Peddlers.....	8
" Brewers.....	4	" Plumbers.....	4
" Butchers.....	5	" Public Officers.....	21
" Brick-layers.....	4	" Perfumers.....	1
" Brick-makers.....	8	" Police Officers.....	18
" Brush-makers.....	2	" Plasterers.....	5
" Billiard-room keeper.....	1	" Paper-makers.....	3
" Clerks.....	171	" Physicians.....	47
" Cutlers.....	1	" Porters.....	3
" Coachmen.....	9	" R. R. Conductions.....	10
" Coppersmiths.....	1	" R. R. Agents.....	5
" Conveyancers.....	9	" Saddlers.....	8

TABLE XI.—Continued.

Wives of Stage-owners	2	Widows of Clergymen	8
Ship-builders	1	Coopers	3
Steel-polishers	1	Druggists	9
Silversmiths	1	Dentists	2
Seamen	16	Engravers	2
Shoemakers	50	Engineers	9
Sea Captains	6	Farmers	7
Salesmen	13	Hotel-keepers	83
Teachers	31	Interpreters	1
Tanners	15	Lawyers	19
Tobaccoists	14	Laborers	53
Tailors	38	Merchants	116
Teamsters	4	Manufacturers	26
Timmen	7	Machinists	9
Upholsterers	1	Masons	2
Vietualiers	15	Musicians	1
Walters	5	Photographers	1
Watch-makers	7	Physicians	24
Weavers	23	Public Officers	13
Of the Widows, similarly situated, were—		Planters	6
Widows of Army Officers	2	Painters	4
Brick-layers	3	Plasterers	1
Blacksmiths	4	Printers	2
Bakers	5	Peddlers	1
Barbers	1	R. R. Conductors	1
Brick-makers	1	Seamen	10
Brewers	1	Silversmiths	1
Bankers	8	Shoemakers	27
Butchers	4	Sea Captains	8
Carpenters	11	Surveyors	1
Clerks	20	Tanners	2
Confectioners	1	Teachers	3
Coal Operators	1	Tailors	1
Coachmen	2	Timmen	1
Carriage-makers	3	Tobaccoists	1
Contractors	1	Watchmakers	1
Conveyancers	1	Weavers	1
		Unascertained	364

TABLE XII.—Showing the civil condition of 11,041 patients.

	Men.	Women.	Total.
Single	2799	2184	4983
Married	3712	2363	6075
Widowers .....	.....	642	642
Widows	314	.....	314
Unascertained	2	.....	2
	.....	.....	25

TABLE XIII.—Showing the nativity of 11,041 patients.

Alabama	20	Maine	34
Austria	13	Maryland	331
Bermuda	3	Massachusetts	119
Barbadoes, W. I.	4	Missouri	26
Brazil	2	Mississippi	18
Belgium	2	Michigan	7
Buenos Ayres	1	Martinique, W. I.	1
British Honduras, C. A.	1	Mexico	2
Born at sea	2	New Jersey	479
Bavaria	5	North Carolina	83
Connecticut	53	New Hampshire	16
California	3	New York	392
Canada	26	Nova Scotia	3
Columbia, S. A.	1	Norway	4
Cuba, W. I.	24	New Brunswick, B. A.	1
Costa Rica	2	Ohio	86
China	1	Pennsylvania	5955
Ceylon	1	Peru	1
Delaware	295	Poland	10
District of Columbia	33	Prussia	18
Denmark	4	Russia	3
England	103	Rhode Island	24
Florida	8	South Carolina	68
France	31	Sicily	1
Georgia	45	Scotland	68
Germany	578	Switzerland	13
Guadaloupe	1	St. Domingo, W. I.	4
Holland	6	St. Croix, W. I.	1
Hungary	1	St. Thomas, W. I.	3
Indiana	23	Spain	4
Indian Territory	2	Sweden	3
Iowa	3	St. Kitts, W. I.	2
Illinois	23	Tennessee	38
Ireland	1269	Texas	7
Ile of Madeira	1	Unknown	352
Ile of Man	1	Virginia	137
Italy	8	Vermont	12
Jamaica, W. I.	2	Venezuela, S. A.	2
Japan	1	West Virginia	11
Kansas	1	Wisconsin	7
Kentucky	47	Wales	2
Louisiana	41		

TABLE XIV.—Showing the residence of 11,041 patients.

Arizona.....	1	Missouri.....	45
Alabama.....	24	Massachusetts.....	32
Arkansas.....	4	Maine.....	3
Barbadoes, W. I.....	4	Minnesota.....	11
Brazil.....	3	Montana.....	2
Connecticut.....	20	Mexico.....	4
California.....	10	New Jersey.....	283
Colorado.....	9	North Carolina.....	74
Cuba.....	17	New Hampshire.....	1
Costa Rica.....	2	New York.....	276
Canada.....	11	Nebraska.....	2
Delaware.....	209	Nova Scotia.....	1
District of Columbia.....	63	Norway.....	2
England.....	12	Ohio.....	75
France.....	1	Oregon.....	1
Florida.....	11	Pennsylvania.....	8943
Georgia.....	48	Prince Edward Island.....	1
Germany.....	5	Rhode Island.....	10
Illinois.....	33	South Carolina.....	49
Indiana.....	39	St. Croix, W. I.....	1
Iowa.....	9	St. Thomas, W. I.....	4
Isle of Madeira.....	1	Sandwich Islands.....	1
Italy.....	2	Tennessee.....	34
Jamaica, W. I.....	2	Texas.....	17
Japan.....	1	Virginia.....	90
Kentucky.....	32	Vermont.....	5
Kansas.....	8	Venezuela, S. A.....	2
Louisiana.....	58	West Virginia.....	12
Maryland.....	260	Wisconsin.....	6
Mississippi.....	16	Uncertain.....	1
Michigan.....	12		

TABLE XV.—Showing the number of attacks in 11,041 cases.

	M.	F.	T.		M.	F.	T.
First attack	4347	3705	6052	10th, 11 m., 7 f.; 11th, 5 m., 5 f..	16	12	28
Second "	773	870	1643	12th, 4 m., 4 f.; 13th, 3 m., 2 f..	7	6	13
Third "	255	311	566	14th, 3 m., 3 f.; 15th, 1 m., 1 f..	4	4	8
Fourth "	137	128	265	16th, 1 m.; 17th, 2 m.; 18th, 4 m.	7	....	7
Fifth "	69	66	135	19th, 2 m.; 20th, 1 m., 1 f.....	3	1	4
Sixth "	71	33	106	21st, 1 m., 1 f.; 22nd, 1 m., 1 f....	2	2	4
Seventh "	36	15	51	23rd, 24th, 25th and 26th, each 1 f..	4	4	4
Eighth "	14	15	29	27th, 2 f.; 29th, 1 f.....	2	3	3
Ninth "	10	9	19	30th, 32nd and 33rd, each 1 f.....	3	3	3
Not insane.	61	7	68	Uncertain.....	1	....	33

RECEIPTS AND PAYMENTS
OF
GEORGE JONES, STEWARD
OF THE
PENNSYLVANIA HOSPITAL FOR THE INSANE
DEPARTMENT FOR MEN,
FROM FOURTH MONTH 25th, 1896, TO FOURTH MONTH 24th, 1897.

PAYMENTS.

MEDICAL DEPARTMENT.

Medicines.....	\$927 04	
Ale, Wine and Spirits.....	669 68	
Instruments.....	15 20	
		\$1,611 92

HOUSEHOLD EXPENSES.

Meat, 98,126 lbs.....	\$8,957 02
Fish and Oysters.....	1,632 40
Poultry.....	2,706 23
Eggs, 6,000 doz.....	1,030 80
Milk, 82,265 qts.....	4,113 25
Butter, 16,976 lbs.....	4,106 16
Cheese, 671 lbs.....	71 67
Fruit.....	3,429 99
Vegetables.....	648 20
Potatoes, 1,919 bus.....	739 89
Flour, 396 bbls.....	1,645 55
Meal.....	240 85
Macaroni.....	55 58
Rice, 1,200 lbs.....	77 05
Salt.....	36 65
Spices, Olive Oil and Vinegar.....	174 55
Tea, 949 lbs.....	335 00
Coffee, 6,661 lbs.....	1,361 34
Chocolate.....	10 92
Farina, Corn Starch, etc.....	105 93
Sugar, 22,660 lbs.....	1,056 84
Molasses.....	74 99
Lard, 2,294 lbs.....	143 21

Bread.....	\$ 43 15	
Ice Cream.....	155 26	
Ice.....	513 86	
Yeast.....	219 45	
		\$33,685 79
Furniture.....	1,839 73	
Bedding, etc.....	1,776 66	
Carpeting.....	539 03	
Gas and Candles.....	1,610 19	
Coal, 1,503 tons.....	4,696 11	
Charcoal.....	66 24	
Soap, Starch and Indigo.....	553 41	
		11,081 37

LIVE STOCK, CARRIAGES, ETC.

Horseshoeing.....	\$179 75	
Fodder.....	1,210 26	
Making and Repairing Harness.....	62 70	
Repairs to Carriages and Wagons.....	231 85	
Services of Veterinary Surgeon.....	15 00	
		1,699 56

GARDEN AND GROUNDS.

Wages of Gardeners and Laborers.....	\$3,017 40	
Seeds and Plants.....	216 41	
Manure.....	768 00	
Labor at Newtown Square Farm.....	67 33	
Hot-bed Sash.....	43 20	
Lawn Mowers.....	56 77	
		4,169 11

WAGES.

Attendants for the Patients.....	\$14,003 35	
Watchmen.....	504 00	
Housekeeper and Seamstresses.....	615 00	
Baker and Assistant.....	780 00	
Cooks, Housemaids and Laundresses.....	455 74	
Jobber.....	176 00	
Cochman.....	264 00	
Housecleaners.....	266 80	
Engineer and Firemen.....	1,380 00	
Gatekeeper.....	240 00	
Storekeeper.....	300 00	
		23,085 89

REPAIRS AND IMPROVEMENTS.

Carpentry.....	\$540 00
Lumber.....	614 17
Painting and Glazing.....	720 00
Paints, Oil and Turpentine.....	449 84
Hardware.....	133 41
Stone, Lime and Cement.....	141 90
Repairs to Clocks.....	17 80
Laundry Supplies.....	70 70
Steam and Gas Fitting.....	342 86
Belting.....	90 19
Repairs to Bake Oven.....	18 75
Mason Work and Material.....	358 66
Repairs to Roofs.....	8 84
Wire Screens.....	31 29
Drain Pipe.....	4 59
Awnings.....	24 88
Grate Bars, etc.....	66 70
Coffee Mill.....	26 67
Brick Laying and Material.....	444 90
Stoves, etc.....	12 50

\$4,118 65

MISCELLANEOUS.

Stationery.....	\$268 56
Library.....	173 17
Carriage Hire.....	289 00
Water Tax.....	128 78
Printing Annual Report.....	190 34
Amusements.....	676 69
Telephone Rent.....	19 50
Incidentals.....	125 00

\$1,871 04

Clothing, etc., purchased for the patients,	\$3,754 70
Amount paid Henry Haines, Treasurer,	4,500 00

\$8,254 00

\$89,578 03

Balance due the Hospital, Fourth	
Month 24th, 1897.....	2,911 13

\$92,489 16

RECEIPTS.

Balance due the Hospital, Fourth	
Month 24th, 1896.....	\$ 1,000 67
Board and Medical Care of Patients...	84,625 38

ARTICLES SOLD.

Empty Barrels.....	\$53 95
Rags.....	14 00
Second Crop Hay.....	15 00
Empty Bottles.....	10 30
Garbage.....	50 00
Wood.....	25 00
	168 25
Interest on Bank Deposits.....	\$65 96
" " Legacies and Donations...	2,302 67
	2,368 63
Clothing, etc., furnished Patients.....	4,326 23
	\$92,489 16

Examined and found correct, Fifth Month 1st, 1897.

T. WISTAR BROWN.
CHARLES HARTSHORNE.
JAMES T. SHINN.
JOHN B. GARRETT.

RECEIPTS AND PAYMENTS
OF
GEORGE JONES, STEWARD
OF THE
PENNSYLVANIA HOSPITAL FOR THE INSANE,
DEPARTMENT FOR WOMEN,
FROM FOURTH MONTH 25th, 1896, TO FOURTH MONTH 24th, 1897.

PAYMENTS.

MEDICAL DEPARTMENT.

Medicines.....	\$1,152 00	
Wine, etc.....	551 08	
Instruments, etc.....	99 19	
		\$1,802 27

HOUSEHOLD EXPENSES.

Meat, 191,227 lbs.....	\$16,855 18
Fish and Oysters.....	3,307 57
Poultry.....	5,260 80
Eggs, 14,080 doz.....	2,375 50
Milk, 145,720 qts.....	7,284 90
Butter, 19,595 lbs.....	4,731 49
Cheese, 1,160 lbs.....	131 39
Fruit.....	5,045 93
Vegetables.....	1,770 50
Potatoes, 1,691 bus.....	623 45
Flour, 418 bbls.....	1,779 25
Meal.....	418 33
Cake.....	225 21
Rice, 1,941 lbs.....	124 74
Chocolate.....	150 19
Coffee, 10,878 lbs.....	2,241 22
Sugar, 33,616 lbs.....	1,593 55
Salt.....	27 40
Molasses.....	34 93
Spices, Olive Oil and Vinegar.....	342 14

Lard, 3,400 lbs.....	\$ 212 32	
Corn Starch.....	261 13	
Ice Cream.....	662 32	
Ice.....	1,198 08	
Tea, 3,215 lbs.....	1,243 00	
		\$57,900 52
Furniture.....	3,293 97	
Bedding, etc.....	1,488 07	
Carpeting.....	560 98	
Gas and Candles.....	2,359 35	
Coal, 2,046 tons.....	7,031 13	
Charcoal.....	126 29	
Soap, Starch and Indigo.....	881 60	
		15,741 39

LIVE STOCK, ETC.

Horseshoeing.....	\$251 50	
Fodder.....	1,337 58	
Repairing Carriages, etc.....	672 52	
Horse.....	175 00	
		2,436 60

GARDEN AND GROUNDS.

Wages of Gardener and Laborers.....	\$3,014 74	
Plants and Seeds.....	494 83	
Lawn Mowers Repaired.....	35 23	
Manure.....	309 93	
Flower Pots.....	94 58	
		3,949 31

WAGES.

Attendants for Patients.....	\$18,259 02	
Seamstresses.....	948 00	
Jobber.....	264 00	
Cooks, Housemaids and Laundresses.....	7,087 30	
Coachmen.....	937 00	
Gatekeepers.....	480 00	
Engineers and Firemen.....	1,550 00	
Watchman and Watchwoman.....	492 00	
Housecleaning.....	547 00	
		30,564 32

REPAIRS AND IMPROVEMENTS.

Mason-work and Materials.....	\$723 21	
Carpentry.....	730 00	
Boiler for Greenhouse.....	94 10	
Painting and Materials.....	2,056 01	
Hardware.....	279 40	
Steam and Gas Fittings.....	593 77	
Roofs and Spouts.....	192 98	
Lumber.....	377 94	
Furnaces.....	172 30	
Freight.....	84 75	
Covering Pipes.....	377 00	
		5,681 46

MISCELLANEOUS.

Printing Annual Report.....	\$167 34	
Stationery.....	346 41	
Amusements.....	1,168 07	
Water Rent.....	179 90	
Library.....	32 43	
Carriage Hire.....	20 00	
		1,914 15
Clothing Purchased for Patients.....	\$119,990 02	
Balance due the Hospital, Fourth Month 25th, 1897.....	7,594 10	
		3,422 73
		<u>\$131,006 85</u>

RECEIPTS.

Balance due the Hospital, Fourth Month 25th, 1896.....	\$ 3,579 24
Board and Medical Care of Patients...	118,368 58

ARTICLES SOLD.

Old Iron, etc.....	\$55 00	
Garbage.....	50 00	
		105 00

Interest on Legacies and Donations...	\$2,292 67
Interest on Bank Deposits.....	61 16
	<u>\$124,406 65</u>
Clothing, etc., furnished Patients.....	6,600 20
	<u>\$131,006 85</u>

Examined and found correct, Fifth Month 1st, 1897.

T. WISTAR BROWN.
CHARLES HARTSHORNE.
JAMES T. SHINN.
JOHN B. GARRETT.

APPENDIX.

ADMISSION OF PATIENTS

INTO THE

PENNSYLVANIA HOSPITAL FOR THE INSANE,*

AT

PHILADELPHIA.

ALL classes of insane persons, without regard to the duration of the disease or its curability, are admitted into this Institution. Idiots, however, it may be stated, are not received; and for the epileptic, a special agreement should be made.

Cases of Delirium Tremens are not received into this Hospital; but into that at Eighth and Pine Streets, *exclusively*.

Preparatory to the reception of a patient, it is necessary to arrange the rate of weekly charge with a member of the board of Managers,† and to furnish a certificate of the patient's insanity from two physicians, both of whom must be residents of Pennsylvania, who shall have examined the patient within one week of its date, and the certificate shall bear date within two weeks of the admission of the patient, and the same shall be acknowledged and sworn or affirmed to before some magistrate or judicial officer, as required by an Act of the Legislature of Pennsylvania, approved 1883. An "Order for the reception of a patient" must be signed by a near relative or friend. Full and complete answers should also be given to questions in "Statement."

For the payment of board, and removal of a patient when discharged, security is always required from some responsible resident of the city of Philadelphia. Payment for board is always

*This is the only title of this institution, and the only proper direction for letters, etc. Other names, occasionally used, are liable to make confusion, by confounding it with another institution in the same vicinity.

†The names of these gentlemen will be found in the front of this Report, and their places of residence can be learned, on application at the Hospital, on Eighth Street, between Spruce and Pine, Philadelphia, where blank forms for physicians' certificates, bonds, etc., can always be obtained.

to be made quarterly in advance; and if the patient is removed *uncured*, before the expiration of the first three months, and contrary to the advice and consent of the Superintending Physician, board is required for thirteen weeks; otherwise the charge is only for the time actually passed in the Hospital, provided that time is more than four weeks.

Interest will be charged on bills not paid till after the expiration of the quarter.

Large chambers and private attendants can always be supplied, if desired by the friends of the patients.

A patient who is not a resident of this State, and other emergency cases manifestly insane, may be brought direct to the Hospital, where they may be received and remain till the necessary medical certificates and the approval of the Managers can be procured, provided this be done within forty-eight hours.

The following are the forms for Physician's certificates, order for the reception of a patient, and the Bond that is to be executed before the order of admission is given:

ORDER FOR THE RECEPTION OF A PATIENT.

I, _____, the undersigned, hereby request you to receive _____, an insane person, as a patient into the Pennsylvania Hospital for the Insane, believing that such detention is necessary for _____ benefit. Subjoined is a statement respecting the said _____.

Occupation, _____.

Degree of relationship (if any) or other circumstances of connection with the patient. _____.

Dated this _____ day of _____ one thousand eight hundred and ninety _____.

To the Board of Managers of the Pennsylvania Hospital for the Insane, Philadelphia, Pa.

CERTIFICATE OF PHYSICIANS.*

We, the undersigned, residents of Pennsylvania, hereby certify that we have, within one week prior to the respective dates herein-after mentioned, at _____, in the county of _____, separately examined _____ of _____, and do verily believe that the said _____ is insane, and that the disease is of a character of which, in our opinion, requires that the person shall be placed in a hospital or other establishment where the insane are detained for care and treatment.

We further certify that we have been actually in the practice of medicine for at least five years, and that we are not related by blood or marriage to the said _____, nor in any way connected as a medical attendant or otherwise with the Pennsylvania Hospital for the Insane or other establishment in which it is proposed to place the aforesaid.

_____, M. D.

Dated this _____ day of _____, one thousand eight hundred and ninety _____.

_____, M. D.

Dated this _____ day of _____, one thousand eight hundred and ninety _____.

CERTIFICATE OF JUDGE OR MAGISTRATE.†

I, _____, a _____ of _____ county, of the State of Pennsylvania, do certify that the foregoing certificate was duly _____ to before me, by the above-named _____, and _____ on this _____ day of _____ 189____, that the signatures thereto are genuine, and that the signers are physicians of good standing and repute.

[L. S.]

OBLIGATION.‡

In consideration of _____ being admitted as a patient into the "Pennsylvania Hospital for the Insane," established and

*As required by the law of Pennsylvania, approved 1883.

†Certificate of a Notary Public will not be accepted.

‡Sworn, or affirmed.

§This obligation is to be signed by a responsible person. The surety to be a resident of the city of Philadelphia.

maintained by "The Contributors to the Pennsylvania Hospital," we do jointly and severally promise to pay to the steward of the said Hospital, or to his order, quarterly, in advance, _____ dollars _____ cents per week, for board, and to provide or pay for all requisite clothing and other things deemed necessary or proper for the health or comfort of said patient; to pay for all glass or furniture broken or destroyed by said patient; to remove _____ when discharged; and if taken away *uncured*, against the advice and consent of the Superintending Physician, before the expiration of three calendar months, to pay board for thirteen weeks, or if removed, or discharged, within four weeks, with his approbation, to pay board for four weeks.*

Witness our hands the _____ day of _____, 189____.
[L. S.]
[L. S.]

The above preliminaries having been complied with, an order is given by a Manager, authorizing the Physician of the Institution to receive the patient.

Letters relative to the admission of patients into the Department for the Insane may be addressed to any of the Managers, or to Dr. JOHN B. CHAPIN, Pennsylvania Hospital for the Insane, Forty-fourth and Market Streets, (West) Philadelphia, Penna., [or 4401 Market Street].

Entrance to "The Department for Men," on Forty-ninth Street, between Market and Haverford Streets.

Entrance to "The Department for Women," on Market Street, corner of Forty-fourth Street, or 4401 Market Street.

Out-Patient Department, of Pennsylvania Hospital, for Mental Disorders, corner of Spruce and Duponceau Streets, Mondays and Fridays, 3 to 4 P. M.

*If the patient recovers before the expiration of the period paid for, and leaves with the full approbation of the Physician, the excess is refunded, unless that time should be less than four weeks, for which period board is always required.

SUBSCRIPTIONS AND DONATIONS will be received by any member of the Board of Managers, or by HENRY HAINES, *Treasurer*, No. 512 Walnut Street, Philadelphia.

LEGACIES intended to promote the interests of the Pennsylvania Hospital should be given in its corporate name, viz.: "I hereby give and bequeath to 'THE CONTRIBUTORS TO THE PENNSYLVANIA HOSPITAL,' and their successors and assigns forever (if real estate) all that, etc. (if personal property), the sum of, etc.

LEGACIES intended for the Department for the Insane should specify in addition "to be devoted to extending or improving the accommodations, and for the care of the insane."

Contributions of books, periodicals, pictures, engravings, curiosities for the museums, and whatever can tend to interest or occupy the patients, are always thankfully received.

666 Every contribution or legacy of \$5,000 adds one FREE BED to the number already in use for indigent recent and supposed curable cases.

A CASE OF

AXILLARY ANEURYSM.

LIGATURE OF SUBCLAVIAN ARTERY—RECOVERY—
DEVELOPMENT OF ACUTE MANIA—SUBSEQUENT DEATH
FROM PULMONARY HÆMORRHAGE.

BY

HENRY RUNDLE, F.R.C.S.,

Surgeon to the Portsmouth Royal Hospital.



*Read at a Meeting of the South-East Han's District of the Southern Branch
of the British Medical Association, November 18th, 1890.*

Reprinted for the Author from the BRITISH MEDICAL JOURNAL, Dec. 12, 1890.

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PORTSMOUTH ROYAL HOSPITAL.

A CASE OF AXILLARY ANEURYSM—LIGATURE OF SUBCLAVIAN—
RECOVERY—DEVELOPMENT OF ACUTE MANIA—SUBSEQUENT
DEATH FROM PULMONARY HÆMORRHAGE.

T. B., aged 52, married, tall, strong, and well-developed, was admitted on April 23d, 1890, with a pulsating swelling extending from the right axillary space to the edge of the pectoral muscle, which measured 7½ inches laterally, and 7 inches from above downwards. The skin over it was glazed and discoloured. There was considerable œdema and infiltration of the forearm, and intense neuralgic pain with tingling of fingers, for which he had been directed to rub in a liniment; this had produced a superficial sore on the back of the hand. The temperature of the arm was natural. A distinct bruit was heard over the tumour. The pupils were dilated and unequal, the right responds to light slowly, the left is normal. The right radial pulse is feeble, left 70, normal. Palæstion in the tumour was stopped by pressure on the subclavian. He stated that he was a labourer and had done much heavy work. He had contracted syphilis at 29; and had been subject to winter cough for some years. On examining his chest it was found to be emphysematous, with rhonchus at the base of each lung. On August 19th, 1881, he was admitted into the Portsmouth Asylum as an epileptic; this was the first attack and was attributed to the fall of a heavy iron bucket on his shoulder six weeks previously. He was discharged on October 6th, 1881. Since January of this year he had suffered from loss of power, and pain, which he thought rheumatic, in the right arm; but was able to continue work up to April 4th, when he first noticed a swelling, about the size of a walnut, in the apex of the axilla. The great pain in the arm caused him to seek advice.

On admission he was ordered iodide of potassium and digitalis. Compression of the subclavian on the first rib was tried, but this could not be kept up, owing to the pain it caused the patient. It was therefore resolved to ligature the subclavian in the third part of its course. This was done, under chloroform, on April 26th. In addition to the usual incision over the clavicle, another was made along the outer border of the sterno-mastoid, which facilitated the passage of the needle round the artery, by giving much more space. There was but little venous hæmorrhage, the

external jugular being tied in two places and divided between. After the ligature, which was of catgut, had been applied, no pulsation could be felt either in the aneurysm or in the radial. The edges of the wound were sutured, and the arm and right side of the chest wrapped in cotton wool and flannel bandage. April 29th. He slept well during the night. Temperature 102.5°, left pulse 104, right not perceptible; respirations 28. Much less pain in forearm, but complains of numbness. Circumference of upper arm, 11½ inches; elbow, 11½ inches; wrist, 8½ inches.

April 30th. Good night. Temperature 100°, respirations 20, left pulse, 98. In good spirits, no pain.

May 1st. Wound dressed; a few drops of pus; temperature 99.4°; slight pulse felt at the right wrist. No perceptible pulsation in the tumour; the skin over it less angry looking.

May 5th. Going on well; wound nearly healed. Swelling of arm reduced; upper arm, 10½ inches; elbow, 11 inches; wrist, 7½ inches. No pain of any kind, but unable to raise his arm. Tumour harder and size reduced.

May 12th.—Sat up in ward; wound healed. Has more movement in right arm, and no pain in it.

May 24th. Has been restless at night, at times noisy, capricious regarding his food, and suspicious of those around him. Ordered potass. bromid., gr. xx; chloral hydrat., gr. x; *ter die*.

May 25th. More sleep, but very noisy and difficult to manage; gossamer, and has delusions as to wealth and on religious matters.

May 31st. In a state of simple mania, raving and shouting, and resisting all efforts to quiet him. He was therefore removed to the Portsmouth Borough Asylum.

June 7th. Has been noisy and difficult to manage since his admission; pulls off the bandage from his arm; became so violent that he was prescribed gr. ʒi of hyoscyamine hypodermically. Slept afterwards.

June 10th. Had a severe, sudden hemorrhage to-day from a small opening in the centre of the wound. Blood spouted out (arterial), and evidently from some large vessel. Controlled by pressure on the second part of the subclavian.

On June 14th, 15th, 17th, 20th, and on July 3rd, there were hemorrhages from the wound, generally occurring after attacks of violence. On some occasions they were alarming in character, but in each instance were controlled by pressure.

June 18th. Has tenderness over a point at the right sterno-clavicular articulation, which presents a small rounded swelling, with a sense of deep fluctuation. There is slight discharge of sanguino-purulent fluid from the wound.

July 6th. Very noisy and excitable, cannot be kept in bed; the swelling over the sternum is now red; takes nourishment; delusions continue.

July 10th. Had a noisy and restless night, quite beyond control. Swelling incised; the tissues were boggy and a small quantity of pus escaped—drained and dressed. The aneurysmal sac has contracted considerably, and the swelling in the arm and hand has disappeared.

July 11th. After spending a restless night, he was suddenly seized with violent hæmoptysis, bringing up about a pint of scarlet blood intermixed with frothy mucus. When seen at 6.30 A.M., he was dead, and presented all the appearances of death from syncope.

Post-mortem Examination made Nine Hours after Death.—Rigor mortis commencing; cadaveric lividity absent; body well

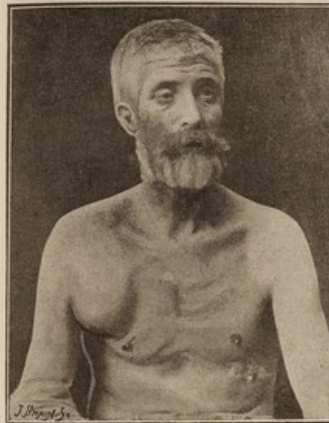


Fig. 1.
Aneurysm of right axillary artery, occupying the front wall of the chest, and involving about four inches of the length of the vessel.



Fig. 2.

Specimen of aneurysm of right axillary artery, after ligation of subclavian artery. The sac is nearly globular in form and is occupied by a firm coagulum. The innominate, right carotid, and right subclavian arteries are slightly dilated, the brachial artery is of small size. The brachial plexus of nerves is stretched and is closely united to the posterior wall of the sac.

The specimen is preserved in the Museum of the Portsmouth Royal Hospital.

nourished, no marks or bruises. The right axillary space was occupied by a rounded swelling, which was 7 inches from the centre of the clavicle to its centre, and 4 inches from the right nipple. The aneurysm with connecting arteries was removed entire, and was found to involve about four inches of the length of the vessel. The general form of the sac, which was occupied by a firm coagulum, was nearly globular, and measured five inches laterally. A firm coagulum about the size of an egg, fusiform in shape, occupied a portion of the artery between the point of ligature and the aneurysm.

There was some pus around the artery, and on the distal side of the point of ligature was a deposit of plastic matter, which seemed to have closed the coats of the vessel. Below the tumour the brachial artery was seen of small size. On reflecting the tissues from the chest, two small annular patches were seen, one over the right sterno-clavicular joint, and the other in the third intercostal space, from which pus was coming; they did not communicate with the chest cavity. On opening the chest, the cartilages of which were ossified, the right lung was occupying the central position, pushing the heart downwards and to the left. The left pleura was firmly adherent to the chest wall at the base and to the diaphragm, free at the apex. The left pulmonary artery was occupied by a large blood clot, which almost completely occluded it. The right lung was emphysematous throughout. The left lung was congested at the base, and emphysematous at the edges. The pericardium contained about 2 ounces of clear serum. The heart was enlarged, left ventricle firmly contracted.

On opening the trachea, it was found to be occupied by arterial blood intermixed with air. The left bronchus contained similar fluid. The right bronchus was clear and empty. The oesophagus also contained clotted blood, and there was a clot and some fluid blood mixed with air in the stomach; this had evidently been swallowed. The liver was enlarged, weight 63½ ounces, mottled on surface, fatty on section. The spleen was pulpy, weight 6½ ounces. Kidneys: left, weight 5½ ounces, congested, cortex diminished, capsule strips readily, cyst in cortex containing fluid; right, same as left, and also containing cyst.

REMARKS.—Cases of axillary aneurysm due to arterial disease are sufficiently uncommon to be worthy of record, and this case was associated with other conditions which makes it one of much interest. It confirms the observation¹ that axillary aneurysm occurs much more frequently in males than in females (12 to 1), and is more often met with on the right than the left side. I think that the operation may be regarded as a successful one. The tumour was free from pulsation, consolidated, and much smaller. If the subclavian had not been ligatured, it is probable that death would have occurred shortly from rupture of the sac. The skin was oedematous, and presented the appearance of an abscess beginning to point. In fact, the case had been sent to the hospital as one of abscess—an error which many experienced surgeons have made. All went on favourably until the mental complication commenced. The collateral circulation was well established, for the temperature of the arm was normal, and the pulse at the wrist quite distinct. The suppuration of the tissues in the neighbourhood of the ligature was limited. The hemorrhages, some of them to an alarming extent, were probably due to ulceration of the subclavian on the distal side of the ligature, but as these seemed to have ceased, there was a reasonable probability that he would have recovered.

¹ Heath's *Practical Surgery*, vol. i, p. 112.

had he not been handicapped by mental and accidental complications.

There cannot be much doubt that the immediate cause of death was hæmoptysis and syncope, consequent on a rupture of a branch of the left pulmonary artery, and communicating with the left bronchus. That the blood is usually of a bright red colour in cases of ruptured pulmonary artery or a branch is supported by the great experience of the late Dr. Hilton Fagge. He says: "A point of some importance in regard to cases of ruptured pulmonary artery or a branch, is that the blood is usually of a bright red colour. It is extremely rare for blood from the lungs to be dark coloured. The bright red arterial appearance depends upon the blood having become aerated after its expectoration, or while in the bronchial tubes, where it certainly is often exposed to the air, as is shown by the frothy state in which it reaches the mouth."

Mr. Barwell¹ has collected 17 cases of axillary aneurysm treated in six of the London hospitals. Of these, only 4 came to ligature, with 3 recoveries and 1 death from erysipelas. The results of the other forms of treatment employed were: 5 by pressure with 3 failures, 1 recovery, 1 death; 3 by amputation, with 3 deaths; 1 Valisava method, no benefit; 3 expectant measures or operation deferred, with 3 deaths; 1 old operation, recovery. There are several specimens of axillary aneurysm in the Museum of the Royal College of Surgeons, but I believe only two in which it is mentioned that the subclavian had been ligatured: one (No. 3,252), Mr. Liston's case, in which death occurred on the fifteenth day from hæmorrhage; the other (No. 3,253) presented by Mr. Gay, in which there was a double subclavio-axillary aneurysm. The right subclavian artery was tied after convalescence from bronchitis, which recurred and proved fatal a fortnight after the operation.

With reference to the insanity. In persons with a tendency to mental disturbance, there is a special likelihood after surgical operations for the mind to become affected. In some cases, as has been shown by Dr. Savage,² insanity may be the direct result of the administration of an anæsthetic of any kind, when it appears immediately. In this case there was an interval of three weeks. Possibly the ligature of a large vessel, like the subclavian, may have contributed, by altering the blood supply to the brain.

But, I think, the most likely explanation is that advanced by Mr. Dent,³ that just as "slight operations may lead to the development of a rash resembling that of scarlet fever all over the body when no anæsthetic has been given, so in some patients the evidence of such disturbance is not seen on the skin, but may spend its force more centrally. The mind may become affected, and we shall then recognise the connection by other senses in addition to sight." Whatever may be the exact cause, it seems certain that a neurotic inheritance or a previous attack of insanity does very materially affect the prognosis in surgical operations.

My thanks are due to Dr. Raw, of the Portsmouth Borough Asylum, for notes of the case whilst under care there, and of the post-mortem examination.

¹ *Præcise of Medicine*, vol. II, p. 218.

² *Addendum, Surgery*, vol. III, p. 491.

³ *BRITISH MEDICAL JOURNAL*, December 2nd, 1887.

⁴ *Journal of Mental Science*, April, 1888.



International Exhibition of 1876.

THE
Medical Staff of the United States Army,

AND
ITS SCIENTIFIC WORK.

AN ADDRESS

DELIVERED TO THE INTERNATIONAL MEDICAL CONGRESS
AT PHILADELPHIA.

WEDNESDAY EVENING, SEPTEMBER 6, 1876.

BY
SERGEON J. J. WOODWARD, U. S. ARMY,
IN CHARGE OF THE REPRESENTATION OF THE MEDICAL DEPARTMENT, U. S. A.

Philadelphia, 1876.

THE MEDICAL STAFF OF THE UNITED STATES
ARMY, AND ITS SCIENTIFIC WORK.

AN ADDRESS

DELIVERED TO THE INTERNATIONAL MEDICAL CONGRESS AT PHILADELPHIA,

BY

SURGEON J. J. WOODWARD, U. S. ARMY.

GENTLEMEN:

The Centennial Medical Commission having requested the Surgeon General of the Army to depute an officer of the Medical Staff to occupy an evening during the session of the International Medical Congress by giving some account of the scientific work of the Medical Department of the Army, the Surgeon General has designated me as the officer to undertake the task, and, in obedience to his commands, I am here to-night to comply with the invitation of the Commission.

In the discharge of this duty, I wish first of all to explain, as briefly as possible, how it happens that a certain class of scientific work, intimately connected in its nature and results with the progress of practical medicine and surgery, is undertaken by the Medical Bureau, and I hope to make it clear to you that the kind of work to which I refer is of national importance, and that it can be better and more economically done by the Medical Bureau of the Army than in any other way. I shall, then, endeavor to lay before you in a sketchy way, for a single evening will not suffice to go into any branch of my subject in detail, the character of the work already done, and of that actually in progress, with some hints as to matters which might profitably be undertaken in the future, did the means placed at our disposal permit.

It is the duty of the Surgeon General to provide for the maintenance of the health of the Army, as well as for the humane treatment of its sick and wounded. The first duty is, if possible, more important and

more delicate than the second, and both are rendered much more difficult to discharge efficiently than might be anticipated, in view of the small number of men in our little army, by the comparatively great number of separate military posts, and by the vast extent of the territory over which they are scattered.

The total strength of the Army, officers and men, is after all less than twenty-eight thousand, hardly the strength of an army corps of the army of the great German Empire, but it is broken up into little detachments, so that there are nearly two hundred permanent garrisoned posts, and almost half as many more detached parties, of variable strength, requiring medical care. I think it quite safe to affirm that the actual strength of the army might be increased ten-fold without materially increasing the labor of its medical administration, provided the number of posts and detachments remained the same as now.

These posts and detachments are scattered over all parts of our wide territory. They are most numerous in the great interior wilderness, remote from the comforts and facilities of more settled communities. Many of them on the southern coast and the Mexican frontier are exposed to frequent visits of epidemic yellow fever, the scourge of our southern seaboard, which, as late as 1867, destroyed in a single season nearly one per cent. of the whole strength of the army of that year. Moreover, the troops stationed on the Indian frontier are most of the time exposed to all the hardships and privations of a state of actual war. I know that a great statesman has recently declared that Indian conflicts are not war, and that it has been decided that gallantry in these bloody struggles shall no longer receive the poor reward of brevet rank; but the bullet wounds that are received are none the less dangerous because they are inflicted by a savage foe, and the privations and hardships of campaigns in the wilderness against a well-armed enemy who greatly outnumbered our little force, have precisely the same tendency to produce disease and death that the same conditions would exert could they exist in a war against a civilized foe. In a recent disaster, which is only too fresh in the memory of my hearers, about one per cent. of the whole strength of the army, among them two medical officers,* perished in a single day. Let us hope that such a catastrophe may never occur again; but similar incidents, though the total loss in each case was less, have happened before, and almost every year since the close of the civil war has had its share of victims fallen in obscure but bloody conflicts.

Now, it is self-evident that the officer charged with the medical and surgical care of any army must keep himself informed as to its sanitary

condition; as to the number and character of the cases of disease actually occurring, and the circumstances under which they are developed; as to the number and character of the wounds, and the circumstances under which they are sustained. This information would be indispensable to the intelligent action of the Surgeon General of the Army, even were he charged with no other duties than the assignment of the medical officers and the purchase and distribution of the medical supplies required for the treatment of the sick and wounded; it is still more necessary if he is expected to supervise the sanitary condition of the army with a view to the suppression, as far as possible, of all preventable diseases. In the army of every civilized nation in modern times, therefore, the medical officers actually serving with troops are required to keep a record of the cases of sickness and wounds under their care, and to report them at stated intervals to a central bureau. It is, furthermore, self-evident, that if these reports are at all numerous or voluminous, as they must be, either if the army is large or if it is scattered in numerous detachments, the Surgeon General will be physically unable to perform the task of personally examining them with any thoroughness, and must assign this duty to others, distributing it among a sufficient number of competent assistants, who must analyze the reports received, and bring to the attention of the Surgeon General such facts and deductions as require his official action. In other words, the Surgeon General of an army, to act efficiently, requires a personal staff of medical officers who enjoy his confidence, and who must be competent to analyze thoroughly the various reports assigned to them, and, if necessary, to advise intelligently on any matters as to which their opinions may be required by their chief.

In our own army, the system of reports established for the purposes just indicated is briefly as follows:

The medical officer of each post or station is required to keep a register of the sick and wounded under his care, in which each patient is entered by name, with the date at which he is taken on sick report; the diagnosis of his disease or injury, and the termination of the case, being subsequently entered in appropriate columns. From this register a monthly report of sick and wounded is prepared, and forwarded to the Surgeon General from each post or station. It contains a statistical statement of the number of cases of each kind of disease or injury under treatment at the commencement of the month, the number taken on sick report during the month, and the number of each recovered, died, discharged the service, or otherwise disposed of, and the number remaining under treatment at the close of the month. The report also includes a list of the deaths and discharges from the service on surgeon's certificate of

* Assistant Surgeon George E. Lord, U. S. Army, and Acting Assistant Surgeon James M. De Wolf.

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disability, giving in each case the name of the soldier and the cause of death or discharge, and has a place reserved for any necessary explanatory remarks.

These reports, consolidated and analyzed at the Surgeon General's Office, keep the Surgeon General constantly informed as to the health of each individual post, of each military department, and of the whole army; acquainting him with the actual amount of sickness, its nature, mortality, and relationship to strength, with the number of wounds and injuries, their character, mortality, and the localities at which they have occurred. The deaths and discharges for disability are recorded in alphabetical registers for convenient reference, and subsequently serve to give necessary information to the accounting officers of the Government, and especially to the Commissioner of Pensions, in case discharged soldiers, or the heirs of the deceased, make application for pensions or other allowances due under the laws of the land. The medical officer of each post or station is required, besides, to make special reports of interesting cases, giving the full histories of such as appear to him of sufficient importance, and in case of the outbreak of epidemic diseases, giving monthly, besides the usual statistical report, a list of all the soldiers attacked, with the date of attack and the date of recovery or death. In such epidemic outbreaks the medical officer is required to investigate the cause of the outbreak, to ascertain, if possible, the mode of introduction, if the disease is introduced from without, and to record the circumstances under which it has originated if it appears to have resulted from local causes. These investigations serve as the basis of a special report, which is required of the medical officer in charge of any post or detachment in which an epidemic outbreak may occur.

As intimately connected with the question of the causes of disease, the medical officer in charge of each post is required to keep a meteorological register, a transcript of which must be furnished to the Surgeon General at the close of each month. Moreover, at the close of each year the medical officer of each post is required to make to the Surgeon General a general sanitary report on the health of the post, with remarks on the diseases which may have prevailed, and suggestions, if any occur to him, as to the improvements or changes which in his opinion may be advantageously introduced, with the view of improving the health of the garrison.

Injuries, wounds, and surgical operations are made the subject of separate special reports, giving the names of the soldiers, and the particulars of each case.

Medical officers examining recruits are obliged to record the name and physical description of each recruit examined, and in the case of

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rejected recruits, the cause of rejection. A transcript of this record is furnished to the Surgeon General at the close of each month.

Now, I think, it will be understood without argument, that such a mass of reports as I have just indicated, embracing annually the observations and experience of several hundred well-educated medical men, stationed at as many different places, must contain a great deal of information which, besides its administrative value, must have no little significance in connection with the interests of progress in scientific medicine and surgery. I wish, on the one hand, to insist that all these reports are indispensable from the mere administrative point of view. Without them, and especially, I may add, without their intelligent analysis, the Surgeon General of the Army, whatever his personal ability, would be but a figure-head, powerless for any efficient interference in behalf of the health of the army. On the other hand, I wish also to insist on the fact, that by a very small additional expenditure of labor, clerical force, and money, beyond what would be indispensable for the intelligent administrative use of the facts collected, they can be made to subserve a much wider purpose, and the usefulness of the work, which is indispensable to the army itself, for the sake of which primarily it is done, can be vastly extended so as to benefit the medical profession at large, and, through the medical profession, the sick and injured in every walk of life.

These considerations would afford a sufficient motive for much of the scientific work that has been done by the Medical Bureau in the past, and for much that is still in progress; but there are other circumstances to be considered of equal, indeed, as I think, of even greater significance.

A few years ago our country was convulsed by a great civil war which lasted for four long years. During this time about a million of men were constantly under arms in defence of the national flag; about two hundred thousand of them died of disease, about one hundred thousand of wounds. The Confederate armies, though somewhat smaller, were numerous enough to resist effectively till the very close of the struggle. Their losses can hardly have been much less than those of the national armies. After the close of the war the national armaments were disbanded; the great general hospitals, several hundred of which were in operation, were closed as rapidly as the patients under treatment could be provided for, and it became necessary, for administrative reasons, to order that as each was closed its books and records should be sent to the Surgeon General's Office in Washington. In that office there had also accumulated during the war a vast quantity of reports of sick and wounded, and other records which had been required for administrative purposes during the war. The records thus accumulated embraced over sixteen thousand folio volumes of manuscript record books,

and, I suppose, several tons of manuscript reports and papers. Urgent administrative reasons demanded that these records should be examined, classified for convenient reference, and, to a certain extent, that their contents should be analyzed. The pension laws of the United States are so framed that it became necessary, in almost every one of the hundreds of thousands of applications for pensions, to apply to the Surgeon General for the hospital history of the soldier concerned. Subsequently, liberal laws were adopted granting artificial limbs and other prosthetic apparatus to those who had lost limbs or been otherwise mutilated, and trusses to those who had been ruptured during the war. This bounty was to be dispensed under the direction of the Surgeon General, and again the records of his office came into requisition, both to protect the Government against fraudulent claims and to secure the rights of honest applicants. For all these strictly administrative purposes a vast amount of clerical work became necessary, and that this work might effect its end, it was absolutely necessary that it should be directed at every step by competent medical officers.

Now, it became evident from the very first, that by the expenditure of a comparatively small amount of additional labor in the supervision of this work, by a comparatively small increase of the clerical force, and other expenditures absolutely required for mere administrative reasons, results might be attained the publication of which would be beneficial to mankind, and it seemed as though it would have been indeed a great national crime to have lost this opportunity to utilize, in the service of humanity, the experience which it had cost so much blood and so many tears to acquire.

The work of analyzing these records for the double purpose just indicated was entrusted to the very same medical officers who have charge of the current work of the bureau to which I referred a little while ago. Even if no intention of publication had been entertained, these officers would have required for the efficient discharge of their duties, supposing them to have been limited to mere administrative ends, the use of a good consulting library; and if they had simply preserved for subsequent comparison the pathological specimens with which special medical and surgical reports were frequently accompanied, and without which these reports would often be only partially intelligible, an Army Medical Museum would have gradually been built up, however slow the process might have been.

At the time the war broke out nothing deserving the name of a Medical Library existed in Washington; and the incipient medical libraries in other cities, even at such great medical centres as Philadelphia, New York, and Boston, were exceedingly deficient in the very class of books

which were most frequently needed for consultation. Indeed, these medical libraries, built up by the voluntary contributions of a generous profession which numbers but few wealthy men in its ranks, were deficient in every direction, and, had the best of them been situated in Washington, it would but imperfectly have satisfied the necessities of the case. There was, therefore, no hope of supplying the want unless the Surgeon General's Office should be able to accumulate a library of its own. In like manner, the correct interpretation of many of the pathological specimens received implied the ability to compare them with others, such as ought to be found in a General Pathological Museum. But no considerable pathological museum existed in America. Small museums had indeed been created by the industry and liberality of the professors of several of the medical schools in the great northern cities, but these had been founded with special reference to the needs of the elementary instruction of medical students, and contained no wealth of accumulated material such as is often needed for purposes of comparison in arriving at the intelligent interpretation of an individual case. Such museums had been built up in the older civilized countries of Europe for the most part by Government aid, and without government aid it was and still is impossible that any considerable collection of the sort should ever grow up in America. It was evident, therefore, that if the officers on duty in the Surgeon General's Office were to enjoy the advantages of consulting such a collection, it must be created by the office itself. Now, here again, it was clear from the first that by a small additional expenditure beyond what would have been necessary to create such a library and museum as would be thoroughly efficient for the merely practical purposes of the Medical Bureau, a National Medical Library and a General Pathological Museum might be created, which would meet a want long felt by every medical man in America who has ventured into the domain of original research.

The considerations hitherto presented are, let me hope, sufficient to make it plain that it was the bounden duty of the Surgeon General's Office to undertake that scientific work of which enough has already been published to enable the medical profession throughout the world to form a judgment as to its character, and as to the fitness of the medical officers to whom it has been entrusted to accomplish the task which they have undertaken. The medical criticism of the Old World has already proclaimed its verdict as to both points in an outspoken manner, and I will not be deterred by any false modesty, on behalf of my colleagues or myself, from making the statement that the verdict has been altogether favorable. As for the medical profession of our own country, my fellow-citizens—so many of whom I see around me to-day—how

shall I find words to express my feelings? Your generous sympathy and encouragement has sustained us from the very first. Many of you served with us during the war, and aided in accumulating those vast stores of experience which we are now endeavoring to utilize. We were so fortunate as to secure your co-operation at the beginning, and your support has never failed us yet; I believe it never will, if we continue to deserve it. It is largely owing to your influence that the National Legislature has been induced to supply us with the funds, without which our work could not have been carried on; and however scanty these funds have appeared to some of us, when compared with the sums devoted by other civilized governments to similar purposes, we have never forgotten how liberal the appropriations have been when compared with any ever made before by our own National Government for any medical purpose. Not merely have you constantly strengthened our hands, and supported us in our endeavors to accomplish our work, but, ever since the close of the war, you have labored with the National Legislature to secure for the officers of the medical staff a reasonable share of rank and pay, and these efforts were at last, during the recent session of Congress, successful in securing legislation which, if it did not do for us all you had hoped, at least placed us on a better footing than we had ever hitherto enjoyed. It is, therefore, altogether an appropriate thing that I should explain, as I am now doing in your presence, the character of the work we are endeavoring to perform.

I have now to present to you, as briefly as possible, some details with regard to the nature and extent of the scientific work of which I have been speaking; but first, let me remark that the observations and reports which form the basis of this work are due to the intelligence and industry of the whole Medical Staff. This fact must never be lost sight of in estimating the character and importance of the work. It represents no mere individual observations and opinions, but the conjoined and systematic labor of a considerable body of trained and trustworthy medical men. The officers entrusted with the labor of digesting these observations, and preparing them for the press, have constantly endeavored, in all their publications, to give full credit to their brother officers at the various military posts, whose original labors are the foundation of all the scientific work that has been done, and of all that can be done at the Surgeon General's Office. I refer you confidently to any of our publications in illustration of this statement. This work of the officers of the Medical Staff deserves the appreciative recognition of all who are interested in the progress of Medical Science. Not merely have they made with alacrity the observations and reports required of them in the discharge of their military duties, but their voluntary labors have been

meritorious and important. Those of you who practise medicine in cities, and enjoy all the stimulus of converse with intelligent fellow-laborers and of competition for success, can hardly realize the difficulties under which most of the work of these medical officers is done, at remote and usually isolated stations, or amidst the hardships and perils of campaigns in the wilderness against the Indians, with no special stimulus to investigation except the love of science and desire for usefulness.

Next, I have to remind you that the work of analyzing these observations, comparing them with each other and with similar observations in other lands, preparing the results of these studies for publication, and seeing them through the press, has been from the beginning to the present time, with the exception of two or three publications, to which I will refer specifically hereafter, performed by but three medical officers; and it may be of interest to those who love to see economy in administration above all other things, for me to state that these three officers have received as remuneration for their labors during the last ten years nothing more than the modest emoluments belonging to the rank of Assistant Surgeons in the Army. One of them was, it is true, promoted to the grade of Surgeon a few months ago, but this was simply the accidental consequence of his place on the Army Register: the others remain as before. The three officers to whom I refer are my colleagues, Drs. Billings and Otis, and myself.

Now, it would not be just to these officers if I did not state that they have never been, and are not now, free to devote their whole time to the scientific work entrusted to their care—each is also charged with certain administrative duties which demand a portion of his time and attention.

Thus, my colleague, Dr. Billings, besides the charge of the Library and various special studies connected especially with the sanitary condition of barracks and hospitals, has always had to do a good deal of administrative work in connection especially with the parveying of medical supplies and the accountability of medical officers for supplies issued to them.

My colleague, Dr. Otis, besides his duties as Curator of the Army Medical Museum, as the officer in charge of its Surgical, Anatomical, and Miscellaneous sections, and as the officer entrusted with the preparation of the Surgical History of the Civil War, has had administrative work to do in the way of furnishing information from the Surgical records with regard to the numerous applications for artificial limbs and prosthetic apparatus, and other current work connected with the Division of Surgical Records.

For myself, besides the charge of the Medical, Comparative Anatomy, and Microscopical sections of the Museum, the Chemical Laboratory of

the Surgeon General's Office, and the preparation of the Medical History of the Civil War, I have had charge, since its organization, of the Record and Pension Division of the Surgeon General's Office, a purely administrative bureau, which for several years employed about one hundred clerks, and which still has thrust upon it ample work to employ the same number, although parsimony in legislation has reduced the force to less than half, so that the work is rapidly falling behindhand. Some notion of the responsibility attaching to this bureau can be formed when I state that, since 1865, the hospital histories of about three hundred thousand deceased or disabled soldiers have been traced through the record books and furnished to accounting officers of the Government, especially to the Commissioner of Pensions, and the insufficiency of the clerical force now authorized will be appreciated, when I state that between twelve and thirteen thousand such applications are lying unanswered on the table of my chief clerk as I speak these words.

Now, you will readily understand that the administrative duties to which I refer must not merely increase the responsibilities, but must necessarily occupy a portion of the time of the officers concerned, with the inevitable effect of diminishing the amount of scientific work which it is possible for them to perform. Yet my experience in the office has convinced me that it would not be wise to relieve these officers of this administrative responsibility and throw it upon a different set of officers. The same records are to be used both for administrative and scientific purposes, and the double work can be best performed under the same heads. The most economical, and at the same time the most efficient means of diminishing the burdens of these officers, and of increasing both the quantity and the value of the scientific work which it is possible for them to perform, would be to provide them with a really adequate clerical force, and with a sufficient number of competent assistants. I do not speak to-night in any complaining spirit, but it would be worse than useless to pretend that adequate clerical and other assistance has ever been supplied to us. This is a naked fact, which it is my duty to make known, and which you must constantly bear in mind in appreciating the amount of work which we have as yet published. That under the circumstances we should have been able to do as much as we have—that since the close of the war we should have been able to prepare for publication the various works with which you are acquainted—the publications of the Surgeon General's Office, edited by us and already issued, constituting over six thousand quarto pages*—could only have been achieved by tireless industry and a genuine devotion to our task.

* See Appendix.

Coming next to the details of this scientific work, I may remark, that a portion of the reports received at the Surgeon General's Office which are susceptible of scientific treatment, refer to the conditions under which the soldier lives. Here belong the meteorological reports and a large portion of the annual sanitary reports.

Prior to the civil war, the meteorological observations made by the medical officers of the army were published from time to time by the Surgeon General's Office, the greater portion having been edited by the lamented Coolidge. All students of the Climatology of the United States are familiar with these works, which long furnished the only reliable information with regard to the climate of our western territories, and, indeed, contain information with regard to many districts which is still the only information printed.

During the civil war the fierce necessities of the struggle caused the suspension of these observations, but they were resumed after its close, and, at the present time, observations of the temperature three times a day, the rain-fall, appearance of sky, and direction and force of the winds, are recorded under the direction of the medical officer of every permanent military post, and barometrical, and other special observations, at selected posts. Since the Signal Service has been conducting its extensive meteorological observations in the more settled portions of the country, however, it has been thought by the Surgeon General that the interests of science, as well as of economy, would be best subserved if he should discontinue the publication of the meteorological observations made by the medical officers of the army, and accordingly an arrangement has been made by which the monthly means and other portions of the meteorological reports needed for reference in the Surgeon General's Office are briefed in convenient books, and the original reports are then turned over to the Signal Office, for use in conjunction with the observations made under the supervision of that bureau.

The annual sanitary reports received from the several military posts, since the close of the war, have served as the basis for the preparation by my colleague, Dr. Billings, of two bulky volumes, which contain descriptions of the several military posts, their barracks and hospitals, embracing a good deal of new information with regard to the medical topography of many parts of our country, especially the western territories, and also containing abstracts, prepared under my own supervision, of the sickness and mortality, and of the meteorological conditions, of the various posts for several years.

Another portion of the reports contains information with regard to the physical characteristics of the men who become soldiers; I refer to the monthly reports of the officers entrusted with the physical exam-

ination of recruits. These reports contain the name, nativity, former occupation, age, social condition, height, weight, chest measurement, complexion, and color of eyes and hair of each recruit examined, and in the case of rejected recruits, the nature of the disability on account of which enlistment is refused. These reports, if subjected to scientific treatment at stated intervals, say every five or ten years, would give valuable hints as to the improvement, deterioration, or stability of the physical characteristics of our population. I know that a very great number of these recruits are of foreign birth, but, as this is carefully specified in each case recorded, there would be no difficulty in the way of the separate analysis of the facts with regard to the native born, and the total number of observations which have accumulated since the war is large enough to be of considerable importance. The two splendid volumes recently published by Colonel J. H. Baxter, U. S. A., recently Chief Medical Officer of the Provost Marshal General's Bureau, and now Chief Medical Purveyor of the Army, contain an analysis of a vast number of similar facts observed by the examining surgeons in the course of the several drafts made during the civil war. I am clearly of the opinion that the analysis of the subsequent observations would possess sufficient scientific value to warrant the comparatively small amount of labor and expense requisite to do the work and publish it; but I regret to say that the office has not yet been able to secure enough clerical aid to assign the necessary force to this work, and nothing has as yet been done in this direction. I must hope that it may be possible in the near future to undertake the analysis of the reports received during the last ten years.

Still another portion of the reports received contains information with regard to the diseases and injuries from which our soldiers suffer while in actual service. Here belong the monthly reports of sick and wounded, the special reports of cases, the reports relating to epidemic diseases, and the various reports of wounds and surgical operations.

The monthly reports of sick and wounded are analyzed and consolidated by districts as soon after their reception as possible, and constantly furnish information as to the actual condition of the health of the army. From the statistical tables produced by their consolidation the brief statements made by the Surgeon General in his annual reports are prepared. They have also furnished the data for the abstracts published in the volumes prepared by Dr. Billings, mentioned a few moments ago.

With these exceptions, these valuable statistical tables remain unpublished. I am decidedly of the opinion that they contain a great deal of information much too useful to be lost. Indeed, I think, if the Surgeon General's Office could obtain the necessary force of clerks and assistants

to make an annual publication of these reports, accompanied by the accounts of interesting medical and surgical cases received during each year, it would be an important contribution to medical science; but with the means at our disposal, and the other demands made upon us, this has been hitherto quite out of our power. The special reports upon epidemics have, however, been utilized to some extent in the publication of two works prepared by myself, on the Epidemic Cholera and Yellow Fever in the Army during the years 1866 and 1867, and my colleague, Dr. Otis, has prepared a large volume, published in 1871, containing a report of 732 surgical cases treated in the Army from the close of the war to the date of publication. Thus the material in question has at least been partially utilized, but I think that the portion which as yet remains unpublished fully equals in value, and certainly exceeds in quantity, that which has thus far been printed. In connection with the subject of epidemic diseases, just alluded to, I ought also here to mention the investigation of the Epidemic Cholera which in 1873 afflicted the civil population of the United States. By an act of Congress the Surgeon General was directed to detail a medical officer of the army for this investigation, and Assistant Surgeon (now Surgeon) Ely McClellan, U. S. Army, was designated for this purpose. This officer made an elaborate report, which was published as a Congressional document. With it was printed a bibliography of cholera, prepared at the Surgeon General's Office by Dr. Billings, which is, I believe, the most complete list of the works on this subject that has yet appeared.

Perhaps it would be most convenient, in this connection, to say a few words with regard to the Chemical Laboratory of the Surgeon General's Office. The creation of this Laboratory was one of the necessities of the civil war. Immense purchases of medical supplies were being made, and it very frequently happened that efforts of the most ingenious kind were employed to defraud the Government. Moreover, among the great number of medical officers in service, there were many who were inexperienced, and some who were ignorant, and complaints were often made as to the quality of the medical supplies issued which were not justified by the facts. Under these circumstances it was constantly necessary that the Surgeon General should have the opinion of a chemical expert on whose advice he could rely, and it was this that led to the organization of the Chemical Laboratory. Soon other bureaus, especially the Subsistence department, began to apply to the Surgeon General for advice in the matter of supplies purchased or about to be purchased, and it is safe to affirm that the Laboratory of the Surgeon General's Office was the means of saving hundreds of thousand of dollars to the Government. The Laboratory was established on the most

economical basis, its personnel never having exceeded two individuals, a chemist and an assistant, both employed as acting assistant surgeons. Their time has been almost exclusively occupied in the examination of supplies about to be purchased for the army, or of supplies already purchased, with regard to which complaints had been made. If this Laboratory could be more liberally provided for, it might have a much wider field of usefulness. Scientific questions of a chemical character constantly arise in connection with the medical service of the Army, which might then profitably be investigated.

I have next to present a few remarks with regard to the Medical and Surgical History of the late Civil War. The project of such a work was conceived early during the struggle, suggested, no doubt, by the volumes published by the British Government on the Medical and Surgical History of the War in the Crimea. As early as June 9, 1862, the intention to prepare such a work was announced to the Medical Staff by a circular from the Surgeon General's Office, and all medical officers were requested to co-operate in the undertaking by collecting details of cases, and other material for the work. The supervision of the work of collecting surgical material was assigned, by the same circular, to Dr. J. H. Brinton, at that time Surgeon U. S. Volunteers; that of collecting medical material was assigned to me. Dr. Brinton was relieved from this duty in October, 1864, and his place supplied by my present colleague, Assistant Surgeon Otis, U. S. Army, then Surgeon U. S. Volunteers, who, for the three years previous, had served continuously in the field as Surgeon of the 27th Mass. Regiment of Infantry. Both my colleagues and myself did our best to collect material for the work in view, and our efforts were constantly sustained and encouraged by the Surgeon General.

In November, 1865, the Surgeon General issued a document, now well known as Circular No. 6, which was accompanied by two somewhat detailed reports, prepared by Dr. Otis and myself, "On the extent and nature of the materials available for the preparation of a Medical and Surgical History of the Rebellion." The object of this circular was to acquaint the medical profession with the character of the materials collected, and to secure, if possible, favorable public opinion in behalf of the legislation necessary to provide means for preparing the work and completing its publication. This merely preliminary document was widely circulated, and effected the end for which it was designed. Congress, in July, 1866, making an appropriation for the preparation of plates and illustrations for "A first part of the Medical and Surgical History of the Rebellion;" but it was not until March 3, 1869, that

Congress at length authorized the actual printing of five thousand copies of the first part of the work.

Meanwhile, anxious that the information collected on some of the more important surgical points should be made public, the Surgeon General published, in 1867 and 1869, two important monographs prepared by Dr. Otis: the first on Amputations at the Hip-joint, the second on Excisions of the head of the Femur for shot injury.

The labor of preparing the first part of the Medical and Surgical History for publication had now so far advanced that it went to press soon after the necessary authority was obtained, and in December, 1872, the first part of the Medical and Surgical History was issued from the Government Printing Office. This part consisted of a medical volume, a surgical volume, and an appendix, the whole occupying 1800 pages quarto. The Medical volume, edited by myself, was devoted to the medical statistics of the war. Some necessary explanatory remarks were offered in the introduction to this volume, but detailed comments on the statistics were reserved for the second part of the work. The appendix consisted of the reports of the Medical Directors of armies and departments, and of other medical officers, which were believed to be of historical value. The Surgical volume, edited by Dr. Otis, contained a chronological summary of losses in battles and engagements, and a detailed discussion of the statistics and reports relating to special wounds and injuries of the head, face, neck, spine, and chest.

It was not until June, 1872, that legislation was obtained for continuing the publication of the work. Congress then passed an act for its completion and publication in two parts of eighteen hundred pages each, in addition to the parts already published.

In accordance with this legislation the publication of the second part of the work was commenced, and the Surgical volume of my colleague, treating of special wounds and injuries of the abdomen, the pelvis, the back, and the upper extremities, has, as you know, been brought successfully to its completion, and was issued from the Government Printing Office during the present summer. This volume contains 1024 pages quarto. I had hoped that its companion Medical volume, which will embrace a discussion of the symptoms, pathology, and treatment of those diseases which were the chief causes of the sickness and mortality among our soldiers during the war, would have appeared simultaneously. In this hope I was doomed to disappointment. In the winter of 1873 and '74 my health unexpectedly gave way, and for several months I was incapacitated for any literary work. For a long time subsequently, I was obliged, in accordance with the counsel of my medical advisers, to limit my hours of labor to a minimum, so that, with all my other duties,

I made during the two years which followed my first illness but little progress on the Medical History. I am thankful to say, however, that my health appears at length fully restored, and I trust, when my labors in connection with the Centennial come to a close, that I will be able to resume the printing of the volume and to bring it to a conclusion in a reasonable time.

The third part of the History is expected to consist, like the others, of two volumes. The Surgical volume will treat of the wounds and injuries of the lower extremities; of luxations and fractures from other causes than gunshot; of burns, scalds and frost-bites; of generalities on gunshot wounds, amputations, &c.; of the use of anesthetics; of the materia chirurgica, and of the transportation of the wounded. The Medical volume will treat of the hospital system inaugurated during the war, the system of medical supplies, and other kindred matters.

Before passing to another topic, I desire to say a word with regard to the work of my colleague, Dr. Otis, on the Surgical History. How painstaking and accurate it has been, how laboriously he has collected the former experience of other lands to throw light on our own and to aid in its interpretation, is well known to all of you who have looked into his volumes. But I wish to remind you, in connection with the statements I have made, as to the time required for the preparation of this work, of the extent of the data to be handled as compared with those of any former war. The previous surgical histories of wars, published under government auspices, were that prepared by Dr. T. P. Matthew on the Surgery of the English Army in the Crimean War, and those of M. Chenu on the Surgery of the French Army in the Crimea, and during the Italian War. Dr. Matthew had to deal with 12,166 surgical cases; Chenu with 40,586 for the Crimean, and 19,590 for the Italian war. The reporter for the American war had to deal with the reports of over 270,000 cases of wounds. Moreover, my colleague undertook a task comparatively new in military surgery, which certainly appears to me of the greatest importance. In the British and French reports, when a wounded man was invalided or pensioned his history was terminated. Dr. Otis attempted to trace all the more important cases down to the date of publication, and this the organization of the Pension Bureau enabled him to do successfully in the majority of instances. At the time this plan was determined upon, it was believed to be altogether new. It is now known, however, that Professor Hannover, of Copenhagen, had conceived a similar plan, and applied it in the case of the invalids of the war of 1864.

Similar investigations have since been made by Læffler, Mossakowsky,

and Berthold, though in connection with a much smaller number of cases than occupied my colleague.

I cannot dwell longer to-night on the Medical and Surgical History of the War of the Rebellion. I pass to a few remarks concerning the Library of the Surgeon General's Office. I have already indicated the reasons for the commencement of this Library. The first appropriation of money for the purpose was made by Congress not long after the close of the war. For two or three years ten thousand dollars, subsequently, however, only five thousand, were appropriated annually. This has been expended with great economy and discretion, under the supervision of my colleague, Dr. Billings. A great many books have also been acquired by exchange, or have been presented to the library. As a result, this library now contains about 40,500 bound volumes and 41,000 pamphlets. Although, for obvious reasons, under the charge of the Surgeon General, this library is essentially the Medical Section of the Library of Congress. For several years the Librarian of Congress has not purchased medical books, leaving that branch of the subject to the Surgeon General's Office. In 1874, the Government Printing Office issued a small edition of a Catalogue of Authors, prepared by Dr. Billings, which formed three quarto volumes of about 2,000 pages, similar in style to the Catalogue of the Congressional Library. This Catalogue is in the possession of every public medical library in the country, and is very useful, as far as it goes, to students who desire to avail themselves of the resources of the library in connection with medical researches of any kind. The library itself is thrown open to all medical men who choose to use it.

Although far from complete, this library is now one of the great medical libraries of the world; and right here I wish to say, that even double the money expended upon it would not have made it as valuable as it now is but for the generous assistance of the profession of this country. Many of our physicians have ransacked their own libraries to supply us with works which, in many instances, we could not otherwise have obtained, especially the older American books and journals. The extent to which this has been done is the best proof of the general desire of the medical profession of the United States that this library should speedily become a complete library of reference on medical subjects.

I know that a few individuals have objected that Washington is not the best place for a great medical library, and seem to think it a pity that it cannot be established in Philadelphia or New York, where the number of physicians is so much larger; but the usefulness of such a library is not to be measured by the number of casual readers, but by the number of original investigators who consult it in connection with their own work. It is only through the work of these men that a great library becomes

generally useful to the whole profession. These original investigators are comparatively few in any city, but almost every city has some of them. Wherever the National Medical Library might be, the majority of the medical investigators of the country would have to travel to consult it. Until very lately, such men had to travel to Europe for the same purpose. It is important that this should no longer be necessary. It is important that there should be in at least one place in our country a complete medical library, and this we will make at the Surgeon General's Office, if we can get the means. There is no probability that such a library will ever be built up in the United States except by Government aid. This is also what has happened in all other countries. If we could secure for the purposes of the library exclusively an annual appropriation of ten thousand dollars, we could in a very few years make this library the most complete in the world.

One point further I desire to mention. To give the library already collected the highest degree of usefulness, a subject catalogue is now imperatively demanded. Dr. Billings has undertaken such a work. With diligent industry he has not merely arranged the cards representing the separate treatises in the library according to their subjects, but he has undertaken to make separate cards for all the original essays contained in all the medical periodicals in the library. About 275,000 such cards have already been prepared. He now desires to obtain the authority to have the Government Printing Office publish a Subject Catalogue prepared from these cards. A specimen fasciculus of this catalogue has already been issued, and most of you who are specially interested in medical bibliography have already seen it. Dr. Billings estimates that the catalogue, if completed on the plan of this fasciculus, would make about five volumes of a thousand pages each. He is abundantly willing to undertake the labor if Congress can be induced to authorize the printing of the work. An appeal will be made to Congress on this subject at its next session, and if the medical profession of the country agree with me, that the publication of such a catalogue would be a work useful to every medical investigator in the land, I feel sure that by an expression of their views they can secure the success of the undertaking.

Lastly, I have to say a few words with regard to the Army Medical Museum. I have already indicated the circumstances under which it originated. It has now acquired very considerable extent, containing very nearly 19,000 specimens. The specimens collected during the civil war were almost all illustrations of military surgery and of camp diseases. But, since the war, it has begun to acquire a broader scope, and we now aim to make it a National Medical Museum. The collection now embraces, besides the Medical and Surgical sections, a Microscopical section,

sections of Human and Comparative Anatomy, and a Miscellaneous section.

The section of Comparative Anatomy is yet in its infancy, and almost all the specimens have been collected by medical officers of the army, so that it has cost altogether but a few hundred dollars. There are about 1500 skeletons and crania, almost all of American vertebrates, in this section. A check list of them, prepared by Dr. H. C. Yarrow, has recently been published in pamphlet form. Those interested in this special subject can obtain copies of it at the Hospital of the Medical Department of the Army at the Centennial grounds.

The section of Human Anatomy is chiefly remarkable for its collection of human crania, which now number about 1600. These chiefly represent the native American races, including the prehistoric mound-builders, and the various modern tribes, from the Esquimaux at the North to the Patagonians at the southern extremity of South America. The careful measurement of these crania, under the supervision of Dr. Otis, constitutes a genuine addition to the science of ethnology. An abstract of these measurements has been prepared by him, and recently published in pamphlet form. Ethnologists can obtain copies at our hospital on the Centennial grounds, or of the Surgeon General.

Catalogues of the Medical, Surgical, and Microscopical sections were published in 1867. That of the Surgical section was prepared by Assistant Surgeon A. A. Woodhull; that of the Medical section by myself; and that of the Microscopical section by Assistant Surgeon E. Curtis. Since these catalogues were published the collections have doubled in size. The publication of a catalogue of the additional specimens, or a revised catalogue of the whole, would be a useful work.

It gives me pleasure to state that the interest taken in this collection by the medical profession of the country is being annually more and more frequently displayed by the presentation of valuable medical and surgical specimens from all parts of the country. Such specimens are always acceptable, and especially, I may remark, that those which have served as the basis of original communications published in the medical journals have especial interest. You can all appreciate how useful it would be; how many misunderstandings would have been prevented if the actual specimens which have served for certain pathological descriptions could have been somewhere preserved and accessible to the criticism of subsequent investigation. But no medical museum that is not national in its character will ever serve as the central point for such a collection.

The actual appropriations of money for our Museum have never ex-

ceeded five thousand dollars a year. The sum is not a liberal one, and much more could be advantageously expended if it could be obtained.

The Centennial Medical Commission, in giving the invitation to which I have responded to-night, expressed the wish that I would endeavor to represent to your eyes in some way the character of some portion of our collection. In compliance with their request, I have naturally selected my illustrations from the Medical and Microscopical sections, which are under my own immediate direction. I have made use of photography for the purpose, and Mr. Edgerton, of J. W. Queen & Co., 924 Chestnut street, has kindly undertaken to exhibit the pictures on the screen. First, I exhibit a series of photographs, novel, I think, in character, representing certain pathological conditions of the intestinal canal.

[The lecturer here exhibited 25 lantern slides, representing pathological alterations of the intestinal mucous membrane, and briefly commented on each.]

My other illustrations are taken from the Microscopical section. This section was originally established for the purpose of preserving the specimens acquired in the study of the pathological anatomy of some of the diseases of soldiers. Sections of morbid growths, and other specimens sent to the Surgeon General's Office by the medical officers of the Army for an opinion as to their nature, have been added, with a certain number of other specimens, especially in the direction of normal and pathological histology. The collection now contains about 7,000 permanently mounted microscopical slides. A single assistant, paid as a clerk of the 1st class, constitutes, under my direction, the whole personnel available for the work.

The process by which the photographs I am about to exhibit were prepared, was, as most of you are aware, brought to its present state of perfection by my own original investigations. A complete misconception exists in certain quarters as to the time I am able to devote to work of this class. It has been simply my amusement—my relaxation from the daily routine and toil of the other labors which I have outlined to you to-night. For years all the work of this kind I have been able to accomplish has been done on Sundays and holidays.

A part of this work was undertaken for the sake of the Medical History of the War.

[Here the lecturer showed 12 photo-micrographs exhibiting perpendicular sections of diseased intestines, the magnifying power with which the slides were taken ranging from 50 to 200 diameters. This was multiplied by 50 by the lantern projection.]

Another portion represents incidental histological work.

[Here 15 micro-photographs were shown, including 9 of blood corpuscles, to demonstrate the impossibility of discriminating between the blood of man and certain other mammals. These slides were taken with 150 to 1000 diameters.]

Still another portion represents work undertaken in connection with the investigation of attempts to defraud the Government.

[Here 14 slides, each magnified 150 diameters, were exhibited, illustrating an investigation into the so-called "calf-hair goods," undertaken at the request of the Honorable Secretary of the Treasury.]

In connection with these investigations, the question of the scientific certainty of microscopical appearances has constantly been thrust upon me, and I have been forced to the conclusion that not unfrequently, especially when high powers are used, the false appearances resulting from diffraction and interference have been mistaken for real structure. This would be a melancholy conclusion, were I unable to point out how such misinterpretations may be avoided. It is impossible to do this in detail on such an occasion as this, but I will show you a few pictures in illustration of my meaning.

[The lecture was concluded by the exhibition of a series of slides representing the real and spurious appearances of certain diatoms often employed by microscopists as test objects, the slides being magnified from 500 to 2500 diameters, and this increased by the lantern fifty times.]

NOTE.—The lecturer's descriptions of the several slides would require for their clear understanding the reproduction of the pictures referred to. At the request of the lecturer, these descriptions are therefore omitted.

APPENDIX.

Publications of the Surgeon General's Office. 1863-1876.

Circular No. 9. War Department, Surgeon General's Office, July 1, 1863. *Consolidated Statement of Gunshot Wounds.* By Surgeon J. H. BENTON, U. S. Volunteers, 11 pp., 8vo.

Circular No. 15. War Department, Surgeon General's Office, Washington, September 8, 1863. *Sickness and Mortality of the Army during the first year of the War.* By J. J. WOODWARD, Assistant Surgeon, U. S. Army, pp. 8, 8vo, with 6 diagrams.

Circular No. 6. War Department, Surgeon General's Office, Washington, March 10, 1864. *Reflex Paralysis.* By Acting Assistant Surgeons S. WEIR MITCHELL, Geo. E. MOREHOUSE, and W. W. KEEN, Jr., pp. 17, 16mo.

Circular No. 1. War Department, Surgeon General's Office, Washington, June 10, 1868. *Report on Epidemic Cholera and Yellow Fever in the Army of the United States during the Year 1867.* By Brevet Lieutenant Colonel J. J. WOODWARD, Assistant Surgeon, U. S. Army, pp. 156, 4to.

Circular No. 2. War Department, Surgeon General's Office, Washington, January 2, 1869. *A Report on Evidences of the Head of the Femur for Gunshot Injury.* By Brevet Lieutenant Colonel G. A. ORRIS, Assistant Surgeon, U. S. Army, pp. 141, 4to.

Circular No. 3. War Department, Surgeon General's Office, Washington, August 17, 1871. *A Report on Surgical Cases treated in the Army of the United States from 1865 to 1871.* By Brevet Lieutenant Colonel G. A. ORRIS, Assistant Surgeon, U. S. Army, pp. 296, 4to.

Circular No. 4. War Department, Surgeon General's Office, Washington, December 5, 1870. *Report on Barracks and Hospitals, with Descriptions of Military Posts.* By Brevet Lieutenant Colonel J. S. BILLINGS, Assistant Surgeon, U. S. Army, pp. 194, 4to.

Circular No. 5. War Department, Surgeon General's Office, Washington, May 4, 1867. *Report on Epidemic Cholera in the Army of the United States during the Year 1866.* By Brevet Lieutenant Colonel J. J. WOODWARD, Assistant Surgeon, U. S. Army, pp. xviii, 65, 4to.

Circular No. 6. War Department, Surgeon General's Office, Washington, November 1, 1865. *Reports on the Extent and Nature of the Materials available for the preparation of a Medical and Surgical History of the Rebellion.* Medical Report by Brevet Major J. J. WOODWARD, Assistant Surgeon, U. S. Army; Surgical Report by Brevet Lieutenant Colonel G. A. ORRIS, Surgeon, U. S. Volunteers, pp. 166, 4to.

Circular No. 7. War Department, Surgeon General's Office, Washington, July 1, 1867. *A Report on Amputations at the Hip-joint in Military Surgery.* By Brevet Lieutenant Colonel G. A. OTIS, Assistant Surgeon, U. S. Army, pp. 87, 4to.

Circular No. 8. War Department, Surgeon General's Office, Washington, May 1, 1875. *A Report on the Hygiene of the United States Army, with descriptions of Military Posts.* By Brevet Lieutenant Colonel J. S. BILLINGS, Assistant Surgeon, U. S. Army, pp. lix, 567, 4to.

Catalogue of the Surgical Section of the United States Army Medical Museum. Prepared, under the direction of the Surgeon General, by Brevet Major A. A. WOODHILL, Assistant Surgeon, U. S. Army. Washington: Government Printing Office, 1869, pp. 664, 4to.

Catalogue of the Medical Section of the United States Army Medical Museum. Prepared, under the direction of the Surgeon General, by Brevet Lieutenant Colonel J. J. WOODWARD, Assistant Surgeon, U. S. Army. Washington: Government Printing Office, 1867, pp. 136, 4to.

Catalogue of the Microscopical Section of the United States Army Medical Museum. Prepared, under the direction of the Surgeon General, by Brevet Major E. CURTIS, Assistant Surgeon, U. S. Army. Washington: Government Printing Office, 1867, pp. 161, 4to.

[For Catalogues of the section of Human and Comparative Anatomy, see Centennial pamphlets *infra*.]

Catalogue of the Library of the Surgeon General's Office. By Brevet Lieutenant Colonel J. S. BILLINGS, Assistant Surgeon, U. S. Army. Washington: Government Printing Office, 1872, pp. 454, 4to.

Catalogue of the Library of the Surgeon General's Office. By Brevet Lieutenant Colonel J. S. BILLINGS, Assistant Surgeon, U. S. Army. Vol. 1, A-L, pp. 1193, 4to. Vol. 2, M-Z, pp. 956, 4to. Supplement, pp. 319, 4to. Washington: Government Printing Office, 1873-4.

Specimen Fascicules of a Catalogue of the National Medical Library under the direction of the Surgeon General of the U. S. Army, at Washington, D. C. By Brevet Lieutenant Colonel J. S. BILLINGS, Assistant Surgeon, U. S. Army. Washington: Government Printing Office, 1876, pp. 72, 4to.

A Medical Report upon the Uniform and Clothing of the Soldiers of the United States Army. By Brevet Major A. A. WOODHILL, Assistant Surgeon, U. S. Army. Washington: Surgeon General's Office, 1868, pp. 26, 8vo.

Report on the Pathological Anatomy and Histology of the Respiratory Organs in the Pleuro-pneumonia of Cattle, with 6 lithographs from photo-micrographs. Washington, June 15, 1870, by Brevet Lieutenant Colonel J. J. WOODWARD, Assistant Surgeon, U. S. Army, pp. 9, 4to. In the Report of the Commissioner of Agriculture on the Diseases of Cattle in the United States. Government Printing Office, 1871.

Report of Results of Examinations of Fluids of Diseased Cattle, with reference to the presence of Cryptogamic Growth. By Brevet Lieutenant Colonel J. S. BILLINGS, Assistant Surgeon, U. S. Army, and Brevet Major E. CURTIS, Assistant Surgeon, U. S. Army, pp. 12, 4to. In the Report of the Commissioner of Agriculture on the Diseases of Cattle in the United States. Government Printing Office, 1871.

Photographs of Surgical Cases and Specimens, taken at the Army Medical Museum, with histories of 236 cases. By Brevet Lieutenant Colonel G. A. OTIS, Assistant Surgeon, U. S. Army. Washington, 1866-71. 6 vols., 4to.

Reports accompanied by Photographs of Microscopic objects, by Brevet Lieutenant Colonel J. J. WOODWARD, Assistant Surgeon, U. S. Army, viz:

Report on the Magnesium and Electric Lights as applied to Photo-Micrography, 6 pp., 4to, 11 photographs. Surgeon General's Office, 1870.

Report on the Oxycalcium Light as applied to Photo-Micrography. 3 pp., 4to, 2 photographs. Surgeon General's Office, 1870.

Report on an improved method of photographing Histological Preparations by Sun-light. 10 pp., 4to, 11 photographs. Surgeon General's Office, 1871.

Report on the Histology of Minute Blood-vessels. 8 pp., 4to, 11 photographs. Surgeon General's Office, 1870.

Report on the Minute Anatomy of two cases of Cancer. 10 pp., 4to, 2 photo-lithographs. Surgeon General's Office, 1872.

Memorandum on Pleurodynia Angulatum and Pleurodynia Formosum. 4 pp., 4to, 8 photographs. Surgeon General's Office, 1871.

Memorandum on Surirella Gemma. 1 p., 4to, 2 photographs. Surgeon General's Office, 1871.

Memorandum on the Test Pedura. 3 pp., 4to, 5 photographs. Surgeon General's Office, 1871.

Memorandum on Amphipleura Pellucida. 1 p., 4to, 2 photographs. Surgeon General's Office, 1871.

Memorandum on the Nineteen-Jand Test Plate of Nobert. 4 pp., 4to, 9 photographs. Surgeon General's Office, 1872.

Four Letters to the Surgeon General, accompanying photographs of the Mosquito, certain Parasites, the Proboscides of certain Flies, and miscellaneous photographs of Insects and parts of Insects. 8 pp., 4to, 55 photographs. Surgeon General's Office, 1872.

The Medical Department of the United States Army from 1775 to 1873. By Brevet Major H. E. BROWN, Assistant Surgeon, U. S. Army. Washington: Surgeon General's Office, 1873.

THE MEDICAL AND SURGICAL HISTORY OF THE WAR OF THE REBELLION, 1861-65. Prepared under the direction of the Surgeon General. Part I, Vol. I, *Medical History*, by Brevet Lieutenant Colonel J. J. WOODWARD, Assistant Surgeon, U. S. Army, pp. xlii, 720; Vol. II, *Surgical History*, by Brevet Lieutenant Colonel G. A. OTIS, Assistant Surgeon, U. S. Army, pp. cli, 650. Appendix, containing Reports of Medical Directors, &c., pp. 365. Washington: Government Printing Office, 1870. [Actually issued in December, 1872.] Part II, Vol. II, *Surgical History*, by Brevet Lieutenant Colonel G. A. OTIS, Assistant Surgeon, U. S. Army, pp. 1024. Washington: Government Printing Office, 1876.

A Report on a Plan for Transporting Wounded Soldiers by Railway, &c. By Brevet Lieutenant Colonel G. A. OTIS, Assistant Surgeon, U. S. Army. Surgeon General's Office, 1875, 56 pp., 8vo.

Pamphlets issued in connection with the exhibit in the Hospital of the Medical Department, U. S. Army, International Exhibition of 1876, viz:

- No. 1. *List of Skeletons and Crania in the Section of Comparative Anatomy of the U. S. Army Medical Museum, for use during the International Exhibition of 1876.* By Dr. H. C. Yarrow. Washington, 1876, pp. 52, 8vo.
- No. 2. *Description of the Models of Hospital Care.* By Brevet Lieutenant Colonel J. J. Woodward, Assistant Surgeon, U. S. Army, 10 pp., 8vo.
- No. 3. *Description of the Models of Hospitals.* By Brevet Lieutenant Colonel J. J. Woodward, Assistant Surgeon, U. S. Army, 22 pp., 8vo.
- No. 4. *Description of the Models of Hospital Steam-Vessels.* By Brevet Lieutenant Colonel J. J. Woodward, Assistant Surgeon, U. S. Army, 12 pp., 8vo.
- No. 5. *Description of Perot & Co's Improved Medicine Wagon.* By the manufacturer, 16 pp., 8vo.
- No. 6. *Description of the U. S. Army Medicine Transport Cart, Model of 1876.* By Brevet Lieutenant Colonels D. L. Huntington and G. A. Otis, Assistant Surgeons, U. S. Army, 16 pp., 8vo.
- No. 7. *Description of Selected Specimens from the Surgical Section of the Army Medical Museum.* By Brevet Lieutenant Colonel G. A. Otis, Assistant Surgeon, U. S. Army, 22 pp., 8vo.
- No. 8. *Check List of Preparations and Objects in the Section of Human Anatomy of the U. S. Army Medical Museum, for use during the International Exhibition of 1876.* By Brevet Lieutenant Colonel G. A. Otis, Assistant Surgeon, U. S. Army, Washington, 1876, pp. 135, 8vo.
- No. 9. *List of Selected Microscopical Preparations from the Army Medical Museum.* By Brevet Lieutenant Colonel J. J. Woodward, Assistant Surgeon, U. S. Army, 7 pp., 8vo.
- No. 10. *Description of Selected Specimens from the Medical Section of the Army Medical Museum.* By Brevet Lieutenant Colonel J. J. Woodward, Assistant Surgeon, U. S. Army, 21 pp., 8vo.
- No. 11. *Typho-Malarial Fever: Is it a Special Type of Fever?* Being remarks introductory to the discussion of the question in the Section of Medicine, International Medical Congress. By Brevet Lieutenant Colonel J. J. Woodward, Assistant Surgeon, U. S. Army, 44 pp., 8vo.

Other Official Publications of the Medical Staff.

Cholera Epidemic of 1873 in the United States. Reports prepared under the direction of the Surgeon General of the Army. A. *History of the Cholera Epidemic of 1873 in the United States.* By Brevet Major E. McClellan, Assistant Surgeon, U. S. Army, 513 pp., 8vo. B. *History of the Travels of Asiatic Cholera.* By John C. Peters, M. D., of New York, and Brevet Major E. McClellan, Assistant Surgeon, U. S. Army, 192 pp., 8vo. C. *Bibliography of Cholera.* By Brevet Lieutenant Colonel J. S. Billings, Assistant Surgeon, U. S. Army, 320 pp., 8vo. Washington: Government Printing Office, 1875, 43d Congress, 2d Session, House of Representatives, Executive Document No. 95.

Statistics, Medical and Anthropological, of the Precent Marshal General's Bureau, &c. By Colonel J. H. Baxter, Chief Medical Purveyor, U. S. Army. Washington: Government Printing Office, 1875, Vol. I, pp. lxii, 568; Vol. II, pp. xxviii, 767.

Omitted.

Report on Quarantine on the Southern and Gulf Coasts. By Brevet Major H. E. Brown, Assistant Surgeon, U. S. Army. Washington: Government Printing Office, 1873, 43d Congress, 2d Session, Senate, Executive Document No. 9.

Pamphlets issued in connection with the exhibit in the Hospital of the Medical Department, U. S. Army, International Exhibition of 1876, viz:

No. 1. *List of Skeletons and Crania in the Section of Comparative Anatomy of the U. S. Army Medical Museum*, for use during the International Exhibition of 1876. By Dr. H. C. YARROW. Washington, 1876, pp. 52, 8vo.

No. 2. *Description of the Models of Hospital Cars*. By Brevet Lieutenant Colonel J. J. WOODWARD, Assistant Surgeon, U. S. Army, 10 pp., 8vo.

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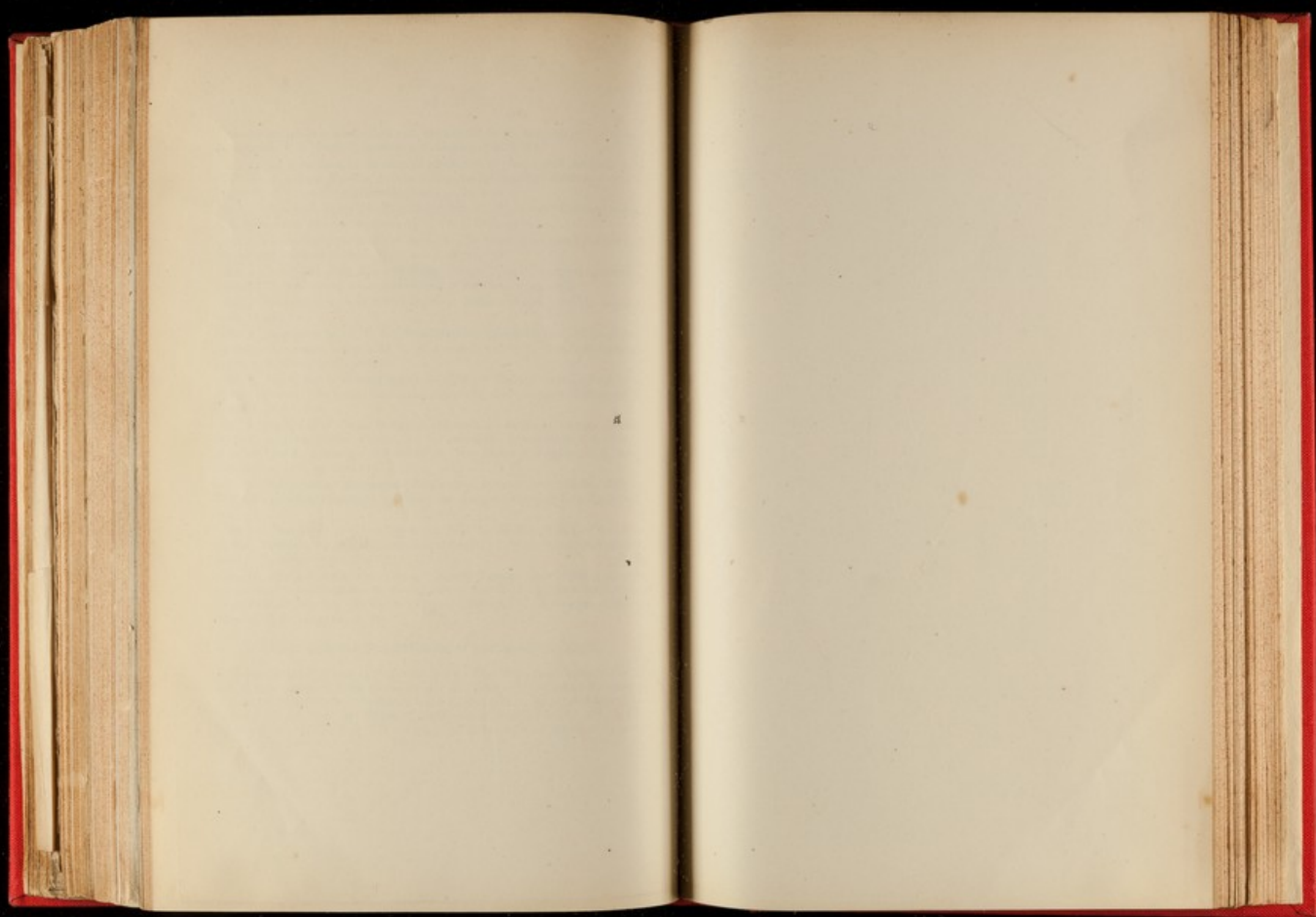
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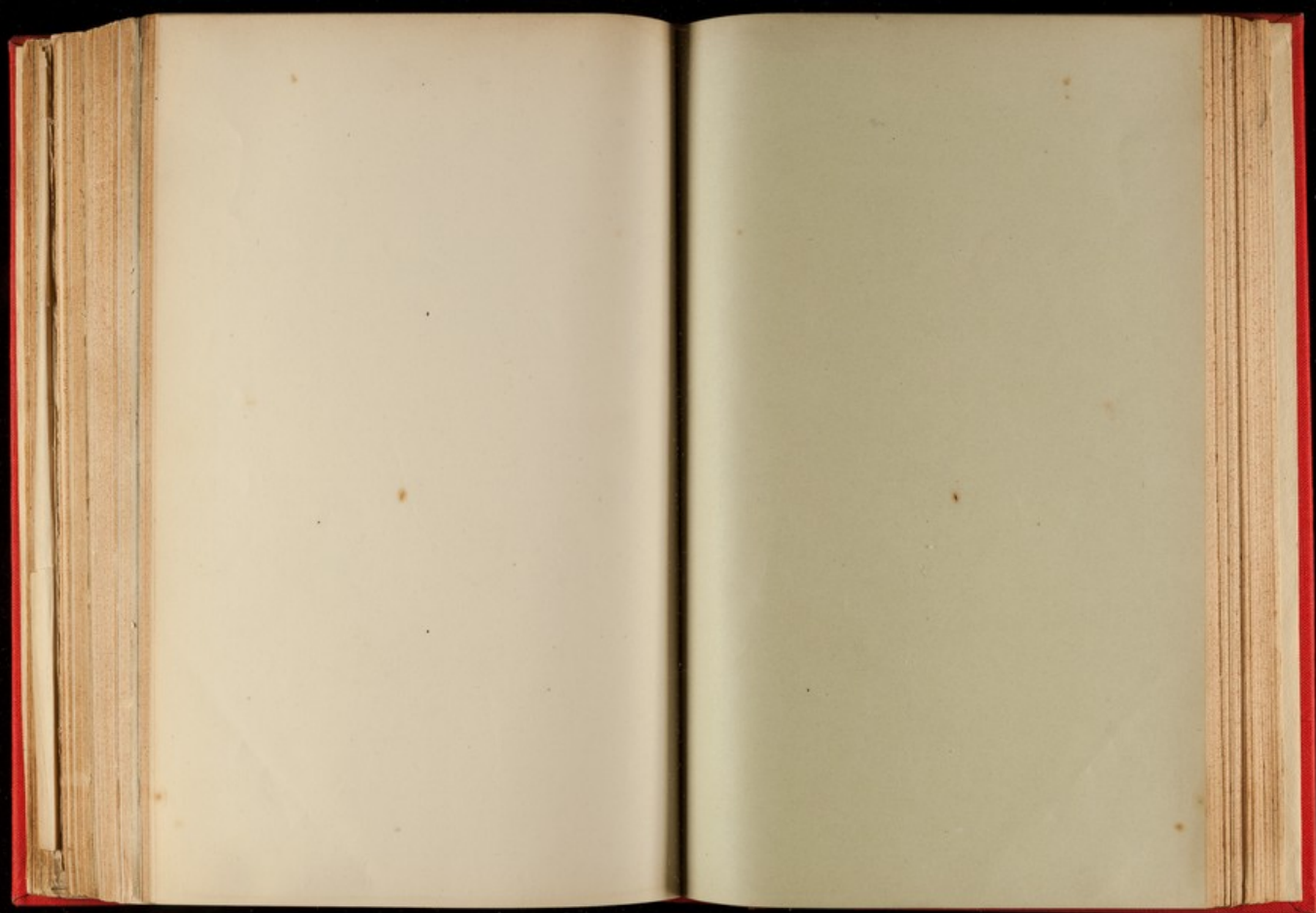
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International Exhibition of 1876.

TYPHO-MALARIAL FEVER:
IS IT A SPECIAL TYPE OF FEVER?

BEING

Remarks Introductory to the Discussion of the Question

IN THE

Section of Medicine, International Medical Congress.

BY

J. J. WOODWARD,

Assistant Surgeon, U. S. A.,

IN CHARGE OF THE REPRESENTATION OF THE MEDICAL DEPARTMENT, U. S. A.

Philadelphia, 1876.

Typho-Malarial Fever: Is it a Special Type of Fever?

SINCE the earliest times Pestilence has followed in the footsteps of War. It has been the consequence of Ignorance as much as of Necessity. Its causes are to be sought, not merely in fatigues, exposures, and privations necessarily incurred during the performance of heroic deeds; not merely in the morbid influences of strange climates; not merely in the miseries of besieged places; they are equally to be sought in the thousand preventable abnormal conditions to which armies are exposed when huddled together in ill-selected, over-crowded, and filthy camps, fed by ignorance or cupidity on scanty, improper, ill-cooked food, drinking water contaminated by human excretions, and breathing air poisoned by human effluvia. Hence arises a brood of camp diseases more destructive than the improved small-arms or rifled cannon of any foe; which, on memorable occasions in times past, have annihilated whole armies, and yet more frequently decided the fate of campaigns in spite of the military genius of generals or the heroism of their followers.

The humane spirit of modern civilization revolted at horrors which modern science has shown to be to a great extent preventable, has made of late years earnest efforts at prevention, and the intelligence of modern administration has perceived that the success of such efforts is an indispensable condition to success in war. It is this double motive that has called into existence the Medical Staff, which has become of late years an essential component part of the army of every civilized nation. The work to be done cannot be performed by a band of hired barber-surgeons employed to bind up rudely the wounds received in battle; it cannot be performed by the voluntary assistance of the crowd of educated civil physicians who may be led by motives of humanity to the scene of suffering, after the mischief is done and pestilence has actually broken out; for its efficient performance it requires the existence of a trained Medical Staff.

To possess the desired efficiency such a staff must be a component part of the army in time of peace. It must enjoy such rank and pay in its higher grades, and offer to its lower grades such prospects of rea-

sonably rapid promotion as to secure the life-long services of the ablest medical men. These must devote themselves in times of peace to the study of the sanitary conditions which affect the health of armies, and war must find them ready to point out with authority the precautions which cannot be neglected without peril. The demands of philanthropy, the impulses of humanity, are best fulfilled by such a staff when it best discharges its military duty, which is to see to it that of a given number of soldiers on the rolls, the largest possible number shall always be ready for duty.

This proper duty of the Medical Staff is as much a military duty as that of the artillery or the infantry. It is the business of these to maim and destroy till the strength of the enemy is so diminished that he can no longer resist; it is the business of those to aid in keeping the fighting ranks full until their work is done. For the efficient discharge of this military duty the medical staff requires military rank as much as any other branch of the army service. It requires it, not merely because it is otherwise impossible to secure the continuous service of an efficient personnel, but because, without military rank, no personnel, whatever its qualifications, can be really efficient. It requires rank, because it requires authority. If its wise counsels can be thwarted at every step by the obstinacy of ignorance, it becomes a mere witness of evils which it is impotent to prevent.

This is not the time or place to discuss the question as to whether the conditions just indicated as necessary to secure the most efficient medical staff possible have yet been completely fulfilled in any army. I must leave that question to the thoughtful consideration of my hearers of all countries. It is enough for my present purposes to point out that coincidently with the elevation of the medical staff in modern times the camp diseases of modern wars have notably diminished in malignancy. We no longer hear of armies destroyed by pestilence within the first few weeks or months after taking the field. The old bubo-plague and spotted typhus no longer figure in the history of wars between civilized nations.

I admit that much remains to be done by Preventive Military Medicine. I admit that much remains to be learned with regard to the causes of disease. But this is no reason why armies should not enjoy to the uttermost the knowledge we already possess. And it is after all but a partial application of this knowledge which has brought about the amelioration to which I have just referred. I think it is safe to affirm that no army ever yet took the field, even in the most modern times, that did not campaign in daily violation of well-established hygienic laws. And hence it will be found that if in any modern war the mortal-

ity from disease has been very small, it has been because the struggle has been very brief. We shall deceive ourselves if we overlook the element of time in the production of the diseases of modern armies. An army may very well escape with trifling mortality from an exposure of a few weeks or months to influences which would have proved fearfully destructive if continued for a year or longer.

This was well illustrated by the experience of the Armies of the United States during the civil war by which this country was recently convulsed. Notwithstanding the want of discipline among the newly-leveled troops; notwithstanding the lack of experience in military medicine on the part of the newly-enrolled medical officers; notwithstanding all the faults of administration and the necessity of reform, of which so much has been said in certain quarters, the mortality from disease did not exceed 2.2 deaths per 1,000 of strength monthly, during the first six months of the struggle*—a death rate which, if it had continued, would have represented an annual loss from disease of 26.4 per 1,000 of strength. But in point of fact a rapid increase in the mortality took place after the first of November, 1861. The deaths from disease during the year ending June 30, 1862, were at the rate of 49.3 per 1,000 of strength, and, in spite of increased discipline and increased experience, the reorganization of the Medical Staff, and other reforms, rose to 63.2 per 1,000 of strength during the year ending June 30, 1863. During the year ending June 30, 1864, the improved discipline and sanitary management of the white troops were at length accompanied by a diminished mortality, and the death-rate from disease fell to 48.2 per 1,000 of strength, or very nearly what it was during the first fiscal year of the war. Subsequently, however, it rose again, in spite of every effort, and was 56.5 per 1,000 of strength during the year ending June 30, 1865. These figures, it must be remembered, refer only to the white troops, who constituted the bulk of our forces. They include both the regular army and the volunteer troops.† And I may remark that I have shown in the introduction to the first volume of the Medical History of the War,‡ after an analysis of the records of the Surgeon General's office, and a careful comparison with the records of the Adjutant General and the Quartermaster General, that the average annual mortality from disease among the white volunteers, during the four years of the struggle, must be fixed at 55 per 1,000 of mean strength, while it was only 32 per 1,000 of strength for the small regular army during the same period.

* These figures and those in the following paragraphs are deduced from the Statistical Tables of the first Medical volume of the *Medical and Surgical History of the War of the Rebellion*, (1861-65), Washington, Government Printing Office, 1895.

† Op. cit., Introduction, p. XLII.

But what shall I say of the mortality among the colored troops? The statistical tables in the first volume of the Medical History show it to have been 211 per 1000 of mean strength during the year ending June 30, 1864, and 139.8 during the year ending June 30, 1865. Even if we extend the view to cover the whole period from the day the first volunteer colored regiment was mustered into service to the day the last was mustered out, a period of five years and four months, and distribute the mortality over the whole term, it will be found, as I have shown in the Introduction to the first volume of the Medical History,* that it represents an average annual mortality from disease of 133 per 1000 of mean strength—a proportion which it is impossible to consider without emotion.

It is only just to express my conviction that a large part of this excessive mortality was due to circumstances from which the colored men suffered before they were enlisted, rather than to mismanagement or maltreatment afterwards. It must be remembered that a large part of these colored soldiers were fugitive slaves. They fled into our lines literally naked and starving. The diseases which destroyed them were to a great extent engendered by the miseries they had suffered before they found a refuge under our flag.

In all—embracing in the count all arms and all colors, officers and men—the total mortality of the armies of the United States from disease during the war, (including the deaths during the year following, in which a large part of the mortality was from diseases contracted during the struggle,) may be fixed at a little over 200,000 men, while battle and wounds destroyed rather more than 100,000.† This estimate of 200,000 men dead of disease embraces, it must be remembered, not only about 30,000 of the colored soldiers, upon whose mortality I have commented, but a nearly equal number of white soldiers, who died while prisoners of war in the hands of the enemy, under circumstances upon which I refrain from comment at this time, but for which the Medical Administration of the United States army can assuredly in nowise be held responsible.

These circumstances no doubt increased the mortality of our armies

* *Op. cit.*, Introduction, p. XI.

† In the Introduction to the first Medical volume of the Medical and Surgical History of the War, I have fully discussed the various official records, and arrived (see p. XXXVIII) at the following results, which are probably very near the truth:

Deaths from battle, wounds, and other violence	112,071
Deaths from disease	188,000
Deaths, the causes of which are not recorded	24,771
	324,842

On the reasonable supposition that those deaths in which the causes are not recorded were distributed between wounds and disease in the same proportion as those whose causes are recorded, we shall arrive at the results expressed in the text.

greatly beyond what it would otherwise have been. On the other hand, it must not be forgotten that discharges from the service for disability took place with a freedom—perhaps in strict justice I ought to say, with a recklessness—never before exhibited in any army. The total number of soldiers thus discharged may be estimated as not far short of three hundred thousand.* No doubt very many of these men only went home to die. No doubt, also, many thousands of them, especially those suffering with lame backs and general debility, rheumatic pains, and cardiac palpitations, needed only a short sojourn in a northern climate, with a generous diet, to have fitted them again for the field. I cannot dwell here on this shameful story. It is one of the scandals of the war. I have never been able to collect data to justify even an approximate estimate of the proportion of these men who died. I believe it to have been comparatively small. Removed from the theatre of war, returned to the healthier circumstances of their homes, I doubt not that a large proportion of these men recovered their health, and that thousands of them, induced by the large bounties which were offered for recruits, found their way again into the ranks.

Certainly the statistics I have cited afford food for earnest thought. But if their study is to be profitable, it must be undertaken with a careful consideration of all the circumstances. Above all, when these figures are compared with the results of other wars, the element of time must be taken into account, or the gravest misunderstandings will arise. A striking illustration of this possibility has been brought to my notice.

In an oration delivered on the 2d of August, 1874, on the anniversary of the Military Medical School of Berlin,† Professor Rudolph Virchow, one of the ablest medical thinkers in Europe, alluded to this enormous mortality from disease during our war, and contrasted it with the comparatively small losses of the German army during the late war with France. After reciting the American figures, and, I may add, after speaking of the publications of the Surgeon General's office in language so complimentary that, as one of the officers concerned in their preparation, my modesty will not allow me to repeat it, the distinguished orator continued as follows: "The German army had, during the last French war, out of a strength of 913,967 men, a total loss of 44,980. Of these, 17,572 fell before the enemy, 10,710 died later of their wounds, 12,253 fell a sacrifice to disease and pestilence; certainly a very favorable proportion. But we had before us the experiences of two recent

* See Introduction to the first Medical volume, just cited, p. XII.

† *Die Fortschritte der Kriegsheilkunde, besonders im Gebiete der Infektionskrankheiten. Rede gehalten zur Feier des Stiftungstages der militärärztlichen Bildungs-Anstalten, am 2. August, 1874, von R. Virchow.* Berlin, Verlag von A. Hirschwald, 1874.

Wars, which had been well discussed and taken advantage of, both scientifically and administratively. We possessed the inestimable experience of the Americans, and, finally, we had German science.*

Truly, I will not yield even to Virchow himself in my appreciation of German science. I know well the debt of gratitude which modern medicine owes to German investigation. For myself, I have drawn much of the knowledge I value most from German sources. I admire German science for its industry, which is without parallel; for its originality, which has already pushed discovery so far; but most of all, for the truly catholic spirit which knows no nationality, and for the manly independence, which never hesitates to weigh authority by a comparison with the actual facts.

Something of this spirit I have tried to catch, and I will not therefore allow myself to be misled as to the matter under discussion, even by the authority of Virchow. I cannot avoid interpreting the facts otherwise than he has done, and I feel that I am but performing a necessary duty when, standing here before you to-day, I declare it to be my opinion that not even German science would have sufficed to save the German army from a greatly increased percentage of mortality if the war had lasted a few years instead of a few months.

The figures given by Virchow are from the official report of Dr. Engel.† They represent a period of seven months. They must not be compared with the losses of our whole civil war, but with the losses of the first seven months. Let us make the comparison. Virchow's figures represent a mortality of 13.4 + per 1000 of strength for seven months, or 1.9+ per 1000 monthly. Now, I have already shown you that the mortality from disease in our armies during the first six months of the war averaged 2.2 per 1000 monthly. During the following month, viz., November, 1861, the mortality increased very greatly, so that, indeed, almost as many died during that month as during the whole six months preceding. Including these deaths, I find, on a discussion of the official data, that during the first seven months of the civil war, viz., from May 1 to November 30, 1861, the mortality from disease was at the rate of 18.8 per 1000 of strength, or 2.7 per 1000 monthly.‡ You see that the

* *Op. cit.*, S. 7.

† *Zeitschrift des Königlich Preussischen Statistischen Bureau's*. Redigiert von dessen Director Dr. Max Rosin. Zweiter Jahrgang, 1871. Berlin, 1871, S. 93.

‡ These ratios are deduced from the Statistical Tables in the first Medical volume of the Medical and Surgical History quoted above. I may add here, that the total number of deaths from disease from the commencement of the war to November, 1861, recorded on the alphabetical registers of the Surgeon General's Office, is 1,406. There are also 160 deaths recorded during the same time, the causes of which are not specified. If we suppose all of these to have been deaths from disease, the number will be 1,566. Of this number 1,427 died during the month of November, viz.: 1,413 of disease, and 14 of causes not specified. The absolute number is but a little more than one-fourth of the German figures; but the average strength of the troops in service during the time referred to was also about a fourth of the

mortality of our army from disease, during equal times, was really but about one-third greater than that of the German army in the French war; whereas, as Virchow presents the subject, it is made to appear more than fifteen times greater.

Now, I am perfectly willing to admit that a part of the actual difference in favor of the German army was really due to better discipline and a wiser application of Preventive Medicine. But I do not believe that this is the only reason for the difference. The raw levies of the Northern States were sent at the very first to the South, and campaigned or lay in camp during the time in question in the miasmatic valleys of the Mississippi, the Ohio, and the Potomac, while the German army did its work on the comparatively salubrious plains of France. What would have happened had the scene been exchanged? How much of the difference was really due to the wisdom of man, how much to a more favorable climate, and the absence of the intense malarial poison to which all were exposed who bore our arms?

This malarial influence, and the pathological processes to which it gives rise, demand the most careful study of those who would endeavor to comprehend the problem of the health of armies in America. It is not merely manifested by the frequency of ordinary ague, of which very nearly a million cases* were officially reported in our armies during the war; it

German army, so that the ratios are as stated in the text. The comparatively small mortality at the commencement of our civil war is strikingly illustrated by the Medical History of the three-months' volunteers. It will be remembered that at the commencement of the struggle President Lincoln called out 75,000 men to serve for three months. This call was issued April 15, 1861. According to the records of the Adjutant General's Office the actual number of men who were mustered into service on this call was 36,460. Through the kindness of Assistant Adjutant General T. M. Vincent, I have ascertained from the death and disability records of the Adjutant General's Office that the actual mortality of these troops during their three-months' service was as follows:

Deaths from battle, wounds, and other violence 224
" from disease 231
" from causes not recorded 734

Total 989
If all the deaths of which the causes were not recorded were from disease, the total number of deaths from disease would be 915, or 4.2 per 1000 of strength for the three months. This would correspond to a mortality of 1.4 per 1000 monthly, or less than three-fourths of the monthly rate which I have shown in the text for the first six months of the war.

* The number of cases and deaths reported as due to Ague was as follows:

	WHITE TROOPS.		COLORED TROOPS.	
	Cases.	Deaths.	Cases.	Deaths.
Quintan Intermitent Fever	442,208	418	61,291	18
Tertian Intermitent Fever	275,470	324	57,045	54
Quartan Intermitent Fever	47,252	54	3,273	21
Cognitive Intermitent Fever	12,573	1,379	6,138	794
Total	877,503	4,087	127,469	973

The grand total for both white and colored troops is 995,442 cases and 1,960 deaths. See the first volume of the Medical History, cited above.

colors and complicates other diseases to an extent which can hardly be credited by those who have not been eye-witnesses to its effects. Especially does it demand the consideration of those who may attempt the study of the fatal continued fevers which have been, and will be, the scourge of the camps of every army that operates in the valleys of the Mississippi and its tributaries, or of the rivers that flow into the Gulf of Mexico, and into the Atlantic ocean south of the fortieth parallel.

These camp fevers occupy a conspicuous place among the diseases which produced the mortality of our armies during the civil war. They caused more than one-fourth of all the deaths from disease. In fatality they proved second only to diarrhoea and dysentery. I suppose it is safe to estimate that diarrhoea and dysentery produced about 69,000 deaths in the armies of the United States during the civil war, and camp fevers rather more than 50,000.* A right comprehension of these two groups of diseases must therefore be regarded as the most important task of Military Medicine in America.

It is my purpose in the present discourse to discuss certain points connected with the pathology of these camp fevers, and especially the complication of the typhous process by the malarial influences to which I have just referred.

Already in the fall and early winter of 1861 reports began to come in from various quarters that a new form of fever was prevailing in our camps. The great majority of our army surgeons at that time were fresh from civil life. Many of them had been engaged in extensive private practice. Almost all of them were well acquainted with ordinary typhoid fever (enteric fever, typhus abdominalis) as it annually prevails in the Northern States, and it was precisely these men who first called attention to the fact that the fevers they were now called upon to com-

* 44,558 deaths from diarrhoea and dysentery were reported during the war, out of 136,843 deaths from disease, the causes of which were specified in the reports. If we suppose these diseases to have caused the same proportion of those deaths from disease the causes of which are not specified in the reports, we shall obtain the estimate of the text. The cases and deaths of the several forms of camp fevers reported to the Surgeon General's Office were as follows:

	WHITE TROOPS.		COLORED TROOPS.	
	Cases.	Deaths.	Cases.	Deaths.
Typhus Fever.....	2,501	520	181	54
Typhoid Fever.....	71,768	27,295	4,794	1,745
Common Continued Fever.....	11,565	141	—	—
Typho-malarial Fever.....	49,571	4,670	5,399	1,218
Remittent Fever.....	255,439	1,933	39,041	1,070
Total.....	490,124	35,065	49,315	6,527

This gives a total of 49,566 deaths from these fevers out of 136,843 deaths from disease, the causes of which are specified in the reports. On the supposition just mentioned we obtain the estimate in the text.

bat differed in many important particulars from those to which they were accustomed at home.

This circumstance was noticed in both the Western and the Eastern armies; but, so far as I have been able to ascertain, official attention was first directed to it in the Army of the Potomac, then encamped just beyond the banks of the river in front of Washington. By an order from the Adjutant General's office, dated December 6, 1861, a Board of Medical Officers was convened for the purpose of visiting the camps of the Army of the Potomac, and inquiring into the nature of the prevailing fever, especially endeavoring to ascertain—to use the language of the order appointing the Board—"whether it is to be considered an intermittent or bilious remittent fever, in its inception, assuming in its course a typhoidal type, or a typhoid fever primarily." This Board consisted of Surgeon A. N. McLaren, U. S. A.; Brigade Surgeon G. H. Lyman, U. S. Volunteers, and Assistant Surgeon M. J. Asch, U. S. Army. It convened December 16th, at the quarters of Brigade Surgeon Lyman, who was chief medical officer of the division commanded by General Fitz John Porter; and during its subsequent labors examined the hospitals of this and other divisions, and collected a great deal of valuable information, in writing, by means of written questions addressed to the brigade and regimental medical officers of parts of the army which its members were unable conveniently to visit. As might have been expected, some diversity of opinion was expressed in the replies received. But in their general tenor the great majority of these replies confirmed the opinion formed by the members of the Board on the basis of their own personal observations. This opinion was, that while a certain number of cases of ordinary typhoid fever existed in the army, the large majority of the febrile cases were "bilious-remittent fevers, which, not having been controlled in their primary stage, have assumed that adynamic type which is present in enteric fever."

In the following spring, after the Army of the Potomac commenced its Peninsular campaign, this mixed form of fever increased in frequency. It assumed formidable proportions during the siege of Yorktown, and reached its greatest intensity while the army lay encamped on the swampy borders of the Chickahominy. The hospitals of Washington and Alexandria, of Baltimore, Philadelphia, New York, and other Northern cities, were crowded to overflowing with the sick. Among the attending physicians were some of the best instructed medical men of the Northern States. They have shown that they recognized that they had to deal with an unusual pathological complex, by perpetuating the name of Chickahominy fever, which appears so often in their reports.

It was under these circumstances that I was ordered, early in the

summer of 1862, to serve on a Board of Medical Officers, who were directed to revise the form of sick report in use in the army. I was fresh from the Army of the Potomac, which I had accompanied from its camps before Washington, where I had spent the winter with it. I had lain in camp at Yorktown, and followed the army up the Peninsula. I had formed the opinion that the prevailing fevers of the Army of the Potomac were hybrid forms, resulting from the combined influence of malarial poisoning and of the causes of typhoid fever. I believed that individual cases received their characters in accordance as the one or the other of these influences preponderated in the individual, and that very often the picture was still further complicated by the coexistence of a scorbutic taint. Full of these opinions, I proposed to the Board, as I had previously suggested to the Surgeon General, to designate the complex condition in question by the name typho-malarial fever, and I induced the Board to add this term to the list of diseases printed on the blank form for the monthly sick report. I often regret that I did not also urge upon the Board the preparation of a circular letter to accompany the new sick report, explaining why this term had been adopted, and calling for special reports with regard to the cases which it was intended to designate. As it was, the term went upon the sick report without any explanation or a word of comment. But even under these circumstances, 23,346 cases were reported as typho-malarial fever during the following year, showing how widely the opinions I had formed were shared by the medical officers of the army.

In September, 1863, I published in Circular No. 15, of the Surgeon General's Office,* a short statement with regard to the sickness and mortality of the army during the first year of the war, in which I stated the meaning I designed to attach to the term typho-malarial fever, and in November of the same year completed the publication of my *Outlines of the Chief Camp Diseases of the United States Armies*,† in which I presented my views at some length. I also gave a short account of the subject in Circular No. 6, Surgeon General's Office, 1865.‡ And now, after a careful study of all the pathological and documentary material

* Circular No. 15, Surgeon General's Office, Washington, D. C., September 8, 1863. Sickness and Mortality of the Army during the First Year of the War. The language used in this preliminary report was as follows: "Moreover, while a certain amount of uncomplicated enteric and remittent fever certainly did occur, especially at the commencement of the war, the vast majority of the camp fevers of the army were of a mixed character, exhibiting undoubted enteric phenomena, variously combined with the periodicity and other peculiarities of malarial disease, and still further modified by the tendency to scurvy, which is the ordinary concomitant of camp diet. To indicate this mixed nature, the term typho-malarial fever, which I had the honor to suggest to the Department in June, 1862, appears appropriate, and, at the present time, is coming into very general use."

† J. J. WOODMAN, *Outlines of the Chief Camp Diseases of the United States Armies, as observed during the present war*. Philadelphia: J. B. Lippincott & Co., 1865. 8vo, pp. 364.

‡ Circular No. 6, Surgeon General's Office, Washington, November 1, 1865, p. xiv et seq.

accumulated during the war, I still hold substantially to the same views, and hope in the second volume of the Medical History of the War to present the facts upon which my opinion is based in such a manner as to command universal assent. In so doing, I shall, of course, present many additional matters of detail not contained in any of my former publications; and also, I may frankly say, I shall correct some errors of detail, particularly with regard to the pathological anatomy of the intestines in these fevers, into which I fell during my earlier studies, and which were incorporated in the account presented in my book on Camp Diseases.

In the same connection I hope to present historical proof of a proposition, which I do not hesitate even now to announce to you, that such hybrids between malarial fever and typhus, of one form or another, are no new thing in the history of armies. They were not first begotten on American soil. In fact, in every great army that ever yet campaigned for any length of time in a malarial region the prevalent form of fever has been a hybrid between malarial fever and some form of typhus. By a malarial region I mean simply a region in which ague and remittent fevers are the common endemic diseases. The causes of these fevers act always with peculiar intensity upon strangers; and an invading army is therefore peculiarly prone to suffer from them. At the same time the uncleanness and overcrowding of camps favor the spread of some form of typhus, whether originating *de novo* or introduced from without by contagion. In some cases it has been spotted typhus which has made its appearance; in others it has been abdominal typhus, (typhoid fever;) and as the typhus poison has been of one or the other variety, and as the malarial influence has been more or less intense, the complex result has varied—at times the malarial phenomena, at times the typhous phenomena being the more prominent. The morbid conditions resulting from these twofold causes have usually also been still further modified by the existence of actual scurvy, or at least of a scorbutic taint, the result of an improper and often scanty supply of food.

It would be impossible, in the time allotted to me, to re-examine to any great extent the history of armies from this point of view. I can only bring to your notice a few striking illustrations. First, let me recall the pestilential fever which destroyed the French General Laurore and the army of thirty thousand men with which he besieged Naples, in 1528. Hecker* has analyzed the chronicles of the time with his usual eloquence, and has arrived at the conclusion that it was simply petechial typhus which raged in the French camp. After an examination of the

* J. F. C. HECKER. *The Epidemics of the Middle Ages*. Transl. of Sydenham Soc., London, 1844, p. 200, et seq.

authorities he cites, I cannot agree with this conclusion. The siege began May 1st. Almost the first act of the French General was to cut the aqueducts which supplied the city with water. By this rash act the plains on which he was encamped, intensely malarial at the best, were converted into a vast series of bogs and stagnant pools, from which the heat of the sun raised clouds of vapor, which hung around his camp like a pall. I must believe that Jovins* was right in attributing the destruction of the French army chiefly to this act of madness. No contemporaneous physician has described the pestilence that followed, but the chroniclers of the siege have recorded symptoms which are incompatible with the theory of Hecker. Jovins tells us that many of the patients were affected with swellings of the belly and legs. They became so pale and death-like in their complexions that their friends were hardly able to recognize them. Scarcely able to crawl, and without attendants to nurse them, they often died in their tents of hunger and thirst. Sandoval† describes the same death-like faces, and applies to them the epithet *amarillos* (yellow). These are not the symptoms of spotted typhus, but of intense malarial poisoning. We saw just such cadaverous yellow faces, with swelled legs and bloated bellies, crawling about in the camps at Young's Point on the Mississippi, and at other swamp-beset localities, during our own war.

I agree, however, with Hecker, to whose work I must refer you for particulars, that spotted typhus was no doubt also present in the camp; and I suppose it complicated the acute fevers very much, as it did later in the same century in the Austrian armies in Hungary. Moreover, Guicciardini‡ relates that after Lautrec first fell sick, during the month of July, things fell into confusion, the enemy cut off the convoys of provisions, and some of the soldiers actually died of starvation in consequence. These circumstances, I doubt not, also played their part in destroying the French Army. By the second of August there were but four thousand men fit for duty. Lautrec died August 15th, and the mortality still continuing, his successor thought only of flight. This he attempted August 29th, but was pursued, and capitulated at Averse a few days later. Crowded into the stables of la Madeleine, the pestilence continued its ravages among the prisoners, and when, a little later, they were released by the conqueror, but a handful remained to find their way back to France.

* JOVIN (PAUL, *Neocomensis, Episcopi Nucerini, Historiarum sui Temporis*. Tome 11, Paris, 1599-1600, Lib. XXVI. I have not obtained access to the original, but find in the Congressional Library a German translation, printed at Frankfurt, 1595.

† SANDOVAL. *Historia de la vida y hechos del Emperador Carlos V.* Pamplona, 1604-05. Part II, Lib. XVII, § XI, p. 12 et seq.

‡ GUICCIARDINI. *Delta storia d'Italia*. Lib. XX, Venice, 1573. I have used the English translation of A. F. Goddard, 3d Edn., London, 1875.

Next let me ask your attention to the story of the celebrated Hungarian fever, which for at least three centuries played so formidable a part in the campaigns undertaken by the House of Austria against the Turks. The valleys of the Danube and its tributaries are still the home of agues, remittent and continued malarial fevers, big spleens, and malarial cachexias. Lying further to the north than our own Mississippi valley, the climate is nevertheless such that the marshy borders of the streams and pools give rise to a malaria scarcely less intense than that with which we are familiar in the lower Mississippi. I may refer you to the papers of Müller, Wenmaring, and Lantz* for graphic descriptions of the characteristics of the country and of its prevailing diseases in our own day.

Now, in every considerable campaign against the Turks, in which the armies of the German Emperors invaded the Hungarian plains, from the beginning of the sixteenth century to the end of the eighteenth, a form of fever prevailed among the troops so unlike the ordinary European fevers that it has always been known as the Hungarian fever, and so fatal as to occasion the proverb that "Hungary is the grave of the Germans." This Hungarian fever has exercised some of the best medical minds of the last three centuries. It is now generally admitted to have been a hybrid between the endemic remittent fevers of the Hungarian soil and spotted typhus. The attention of civilized Europe was first directed to it when, after the luckless Hungarian campaign of Maximilian II, in 1566, his pest-stricken soldiers returned to their homes. They scattered the contagion of spotted typhus throughout Germany on their way. The disease bred by that contagion was also called the Hungarian fever, but it was simply spotted typhus, and the student of the voluminous older literature of the Hungarian fever finds no little confusion growing out of this circumstance, and no little difference between the descriptions of such eye-witnesses as Thomas Jordan and Tobias Cober, who described the Hungarian fever as they saw it on Hungarian soil, and the descriptions of those who merely observed the spread of spotted typhus in the German towns, and gave it the name of the Hungarian fever because the contagion had been spread by soldiers returning from Hungary.

The army of Maximilian, however, was not the first German army

* JOH. MÜLLER. *Die k. k. Militärgrenzen, mit besonderer Berücksichtigung der vereinigten Carlstädter, Banat und Waradiner Grafschaften*. Med. Jahrb. des k. k. ost. Staates. Bd. 35, (1841) S. 39, 107, 316. Bd. 36, (1842) S. 119, 225, 328. F. LANTZ. *Phys. Med. Beschreibung der Banatger Grenzschiffahrt in Ungarn*. (Same Journal.) Bd. 35, (1841) S. 31, 227, 374. Bd. 36, (1842) S. 39, 107, 340. E. WENMARING. *Ueber die Samfischerfebrer*. (Same Journal.) Bd. 37, (1843) S. 11, 179. Consider, also, J. M. MÜNSTER. *Das Halldreitägige Fieber*, (Hemolitus), in den Südlichen Provinzen des Russischen Reichs, *Hedland's Journal*, Bd. 18, st. 2, (1809) S. 1. MÜLLER, cited above, speaks of this fever as the *Hemolitus*. *Diele*. Op. cit., Bd. 36, S. 340.

which had suffered from the Hungarian fever. In 1542 a pestilential fever broke out at the camp before Ofen, in the Imperial German army which Margraf Joachim von Brandenburg had led against the Turks. It became still more fatal during the disastrous retreat, and according to Hæser* destroyed 30,000 men. Johannes Langius,† who accompanied the Count Palatine, Frederick II, in this campaign, as well as in the campaign of 1526,‡ has left an epistle, in which he describes this fever in such a manner as to leave no reasonable doubt of its identity. He tells us, also, that the camp surgeons, whose ignorance he pictures with bitter sarcasm, gave the disease the name of *Bhreüne* (*Bküne*) on account of the condition of the tongue, which they supposed to be the most essential symptom. According to Hæser,§ the Chronicler Wintzenberger gave the same epidemic the name, "*pestartige Bräune*." These names long continued in use among the designations by which the Hungarian fever was known to the vulgar.

The epidemic of 1566 is famous both on account of the manner in which typhus was spread through Europe by the disbanded soldiers, and on account of the classical description of the Hungarian fever by Thomas Jordan,|| who accompanied the army of Maximilian as his chief medical officer. The spring had been exceedingly wet, and the great Hungarian streams had overflowed their banks; the summer was unusually hot and dry; the German army was scantily supplied with food. When the fever first appeared the army was encamped at Komorn, at the point of junction of the Waag and the Danube—a marshy, intensely malarial plain. It became still more destructive in the camp at Raab, where the Raab and Rabinitz empty into the Danube. Such was the devastation caused by it that Maximilian, though his force when he went into camp at Raab was about 80,000 men, did not venture to take the offensive, and saw the gallant little garrison at Zigez captured by the Turks after more than twenty vain assaults, without daring to strike a blow in their behalf. In the early autumn he ignominiously retreated with the remains of his army. After the retreat the pestilence was especially destructive at Vienna. The hospitals could not accommodate all the sick, and the dead and dying were scattered through the streets. Throughout all this devastation it was the German troops that suffered; the native Hungarians almost entirely escaped.

* HÆSER. *Geschichte der epidemischen Krankheiten*. 3te Aufl. Jena, 1865, Bd. II, S. 245.

† D. JOHANNES LANGIUS. *Med. Epist.* Basel, 1524. Epist. 4, (p. 17) *De Cera Cassotis Clavigerorum terribilis*.

‡ See HECKER. *Art. Hungarica febris*. In the *Encycl. Wörterbuch der Med.* Wien. Berlin, 1825, Bd. XVII, S. 154; with which compare the Dissertation by G. AGATI. *De Morb. Hungarica*. Berlin, 1840.

§ *Op. cit.*, p. 341.

|| THOMAS JORDAN. *Pestis Phenomena*. Frankfurt, 1576. Cap. XIX, (p. 219) *De Lat. Pestis*.

The Hungarian fever broke out anew during the siege of Papa, in the year 1597. The Italian allies suffered most. According to Hæser, of more than 8000 of these troops, less than 1500 found their way back to Italy. This is the epidemic described in the admirable work of Tobias Cöber.*

Again it made its appearance, as we learn from Esslinger and Hæser, among the 12,000 German troops who occupied Hungary under the celebrated General Montecuccoli,† in the year 1661. The disease broke out in the swampy camp between Komorn and Neuhausel, and soon brought the fruitless campaign to an end.

Once more it appeared in the army with which Prince Eugene besieged Belgrade in 1717. The Grand Vizier advanced to the relief of the besieged with a great army. The Turks took the offensive, and shut up Eugene, with his army of 60,000 men, in the marshy plain between the Danube and the Save. It was here that the Hungarian fever broke out, accompanied by a fatal dysentery. A large number of men had perished, when the gallant Prince, venturing all on the fortunes of a day, attacked the Turkish army and routed it after a desperate battle. The surrender of Belgrade followed, and the peace of Passarowitz was the result.

Still more terrible were the ravages of the Hungarian fever during the disastrous campaign which the Emperor Joseph II undertook against the Turks in 1788. Disappointed with regard to the help he had anticipated from Russia, and his troops decimated by pestilence, the feeble campaign terminated in a humiliating retreat. The imperial army at the commencement of the season numbered about 200,000 men; its losses from disease have been estimated at between 30,000 and 40,000.

The symptoms of the Hungarian fever have been described at great length by numerous writers. I can only refer to a few leading points. The patients were seized, usually during the afternoon or evening, with a slight, short chill, followed by a burning fever. This was accompanied by a headache so intense that the vulgar called the disease sometimes the head disease, (*Haupt-krankheit*); the raging brain disease, (*Hirntöbende-krankheit*); or the head-misery, (*Kopfwehe*). So prominent was this symptom that in the earlier autopsies medical men sought for the cause of the affection chiefly in the encephalon, and, deceived either by the congested appearance of the choroid plexus, or by the presence of veniform clots of blood or fibrin in the ventricles or in the great

* TOBIAS CÖBER. *Obs. Med. Catarrhalem Hungaricorum. Decades tres*. (Edition of H. Meibomius.) Helmsdal, 1687.

† See *Mémoires de Montecuccoli*. Nov. ed. Amsterdam and Leipzig, 1756. Lib. III, ch. 1, p. 301.

sinsos, actually supposed they had discovered worms in the brain, and gave to the disease the designation "Cerebri vermis" or "Hirn wurm." With the headache came on a pain in the epigastrium so intense that the appellations "Herzbräune" and "Herzbreun," were widely employed. Soon the fever was accompanied by a raging delirium; the tongue became dry and covered with a brown coat, from whence the vulgar names "Bräune" and "Pestartige Bräune," already mentioned. Hemorrhages from the cracked tongue or from the gums were common. Then, there was also the characteristic typhus eruption of the skin, accompanied by petechiae, whence the disease was called "Febris Lenticularis," especially by the Italian physicians. In cases which recovered, the favorable crisis usually occurred on the fourteenth or twenty-first day, but fatal cases often terminated much earlier. In some cases gangrene of the extremities occurred.

All these symptoms, together with the unmistakable contagion, certainly point to spotted typhus; but from a very early period, cultivated physicians, like Sennertus, for example, have pointed out that this fever differed in several marked particulars from ordinary spotted typhus. The most striking differences were its tendency to present a decidedly remittent type in its earlier stages, and the accompanying gastric symptoms, bilious vomiting, and the like. Even Rudolphi,* who was disposed to identify the disease with the febris lenticularis of the Italians, was obliged to admit that during its early days it frequently presented, in a decided manner, the type of a simple or double tertian fever. A common form was the semi-tertian, to which the old Greek physicians gave the designation Hemitriticus; and hence the Hungarian fever has sometimes been described as the Hemitriticus Dacicus.

So marked were these symptoms that Sauvages,† the great Nosologist, classes the "Amphimerina Hungarica," as he calls it, among the remittent fevers. The learned Naumann‡ goes so far as to declare that the Hungarian fever is at the bottom merely the common summer fever which occurs every year in Hungary, the valley of the Danube, and Southern Russia, and attains malignity only in epidemic years. Among modern epidemiologists, while Ozanam§ still clings to the notion that

* MARTIN RUDOLPHI. *De Morbo Ungarico*. Leipzig, 1760. Consult Cap. I, p. 3, where, after intimating that these remissions are deceptive in their character, (falsa species,) the author admits that in the case of Baron Rabenhart, who died of the Hungarian fever, he supposed, during the earlier history of the case, that he was dealing merely with a double tertian. For his argument in favor of the identity of the Hungarian fever with febris lenticularis, see Cap. VIII, § XX, p. 378. Consult further, Cap. VIII, quæstio 39, p. 519, for arguments against the supposition that the Hungarian fever has truly a tertian or quartan type.

† F. BOISSIER DE SAUVAGES. *Nosologia Methodica*. Amsterdam, 1766, Tom. I, p. 377.

‡ MORITZ ERNST AUGUST NAUMANN. *Handbuch der Med. Klinik*. Bd. III, Abth. 2, (Berlin, 1812) S. 713.

§ OZANAM. *Hist. Méd. des Maladies Épidémiques*. 2me. Édit., Paris, 1822, Tome III, p. 117.

Hungarian fever was merely typhus, both Hecker and Hauser* express the opinion that it was typhus, modified by the intense malaria of the Hungarian plains.

Side by side with the Hungarian fever a chronic affection occurred among the German soldiers in Hungary, which, like the Hungarian fever, was often spoken of as the Hungarian disease. (Morbus Hungaricus, or Læus Pannonicus.) This was the celebrated Languor Pannonicus, or Asthenia Pannonica.† It was a profound debility, accompanied with a disgust for food, unwillingness for exertion, diarrhoea, and pains in the back. It attacked large numbers of men, and not unfrequently proved fatal. I suppose it to have been the joint effect of chronic malarial poisoning and a scorbutic taint. Much in the old descriptions reminds me of a certain group of cases of general debility which were common enough in our own war. Those, too, were rebellious to treatment so long as the patient remained in the malarial region, but recovered promptly, like some of the cases of Languor Pannonicus described by Tobias Cober, so soon as the patients escaped to a healthier atmosphere and better diet.

Dysentery was another camp disorder which proved fatal in the Hungarian campaigns. It is mentioned by various writers, as for example, by Cober, but does not appear to have attracted as much attention as it probably deserved.

I cannot dwell further in this discourse on the story of the Hungarian camp diseases. I have said enough to indicate that the chief difference between these diseases and those of our own camps during the war of 1861-5 consisted in the prevalence of spotted typhus in Hungary instead of abdominal typhus, which was the form from which our armies suffered. The degree of malarial complication must have been very similar. The extent to which any scorbutic complication existed is difficult now to ascertain. Almost all the writers complain of the food and cooking of the Hungarian camps; but the soldiers would appear to have had fresh meat in some abundance, for one of the constant complaints is that they persisted in cooking it too soon after killing. Scurvy, of a marked kind, however, does not appear to have occurred, and the most significant evidence of the frequent existence of a scorbutic taint is, after all, the constant development in every army, after a few months' campaigning, of numerous cases of the Languor Pannonicus.

Of late years we have heard but little of this once dreaded scourge, which only now and then attracts the attention of some medical writer

* Cited above.

† For a description of the languor pannonicus, see particularly the work of COBER, cited above. Consult, also, SAUVAGES, *op. cit.*, Tom. I, p. 380.

whose tastes incline to historical studies. I cannot but believe, however, that whenever a German army goes again into the valley of the Danube, as perhaps may happen before long unless the present disturbances in the Danubian provinces are fortunately brought to a peaceful termination, the old Hungarian plagues will once more appear in its ranks—a more formidable foe to be encountered than the sword of the Turk.

I have thus presented to you a couple of striking illustrations of the hybrid disease resulting from the complication of malarial influences with the causes of spotted typhus. Let me next refer to some examples of the similar complication with typhoid fever.

The first instance to which I shall refer is the epidemic of the so-called morbus mucosus, which occurred at Göttingen during the years 1760-61, and which has become famous, less on account of the extent of the mischief done than because of the admirable description which we owe to two teachers in the Medical department of the Göttingen University, Röderer and Wagler.* The summer of 1760 was warm and rainy; the winter which followed was wet, with notable vicissitudes of cold and mild weather. Besides the inhabitants, a garrison of French troops, numbering, with the camp followers, about 8,000, was shut up in the town. Röderer and Wagler have drawn a striking picture of the want of food, the uncleanness, the general misery that prevailed. Already by the middle of July, 1760, intermittent fevers, sometimes of mild type, sometimes, however, of marked malignity, occurred to a degree unusual in that region. During August the intermittents continued to be prevalent, but malignant forms became more numerous, and many of the cases assumed a continued type. At the same time a malignant dysentery made its appearance, and raged with fatal results till the month of November. The intermittents meanwhile had continued, but during the month of November both these and the dysenteries were gradually replaced by the morbus mucosus, which became the prevailing disease, and continued as an epidemic all winter. During April and May, 1761, it was again, to a great extent, replaced by intermittents, but still scattered cases continued to occur during the summer. In the autumn, intermittents again became the common disease, occurring often in a malignant form; and small-pox, which had first appeared during the summer of 1761, assumed epidemic proportions during the winter of 1761-2.

The mucous fever was a continued fever, which in severe cases was often prolonged beyond the twenty-first day, sometimes till after the

thirtieth, though fatal cases often perished as early as the ninth. In its earlier stages it usually presented a decidedly remittent type, tertian, double tertian, or semi tertian being the most common varieties. Sometimes, as the patients convalesced, the continued fever passed into an ordinary intermittent before recovery took place. After the fever was fairly under way it presented many of the symptoms of ordinary typhoid fever. Delirium, frequent, feeble pulse, diarrhoea, meteorism, in the worst cases petechiae, made their appearance. At the beginning the tongue was furred, and its swollen, red papillae projected through the fur; it became brown and dry as the disease progressed. Hemorrhages from the nostrils sometimes took place, especially about the sixth day; still more frequent were hemorrhages from the bowels. It is a significant fact that the extract of Peruvian bark often proved highly efficacious in those cases in which the remissions were most marked.

The disease derived its designation from the belief that an excessive secretion of mucus from the alimentary canal was its most characteristic phenomenon. This was manifested by the frequency with which mucous vomiting, with or without bile, occurred at the inception of the cases, just as we know it does in ordinary remittent fever. The diarrhoea was interpreted as but another expression of the excessive mucous secretion, and the dead lumbricoid worms which were often noticed in the stools, or during the progress of autopsies, were supposed to have been bred in consequence of the morbid excess of mucus in the alimentary canal. In the autopsies, the closed glands of the stomach and small intestines were usually found tumefied to a marked degree. This was erroneously supposed to be the consequence of an accumulation of the mucous secretion in their interior. Röderer and Wagler have published three remarkable copper etchings of the appearances they observed. The lesions they have figured are not those characteristic of typhoid fever, but of ordinary intestinal catarrh. In one of the autopsies (No. V) they describe the agminated glands, near the ileo-cæcal valve, as marked with black pigment, quite like the condition often observed in our own war, and described as "the shaven beard appearance." The mesenteric glands were enlarged. The anatomical evidences of peritonitis were often present. Dysenteric sloughs frequently existed in the colon. Nowhere, however, do I find any description of the bulky tumefaction, ulceration, and sloughing of the glands of Peyer, which is characteristic of typhoid fever. Nevertheless, I am by no means sure that this essential lesion did not exist in some of the cases at least. It must be remembered that the typhoid lesion was not then known as we know it now. Perhaps some of the gangrenous spots, of smaller or greater size, which our authors describe as having been observed in the small

* J. D. RÖDERER et C. G. WAGLER. *De Morbo Mucoso*. Göttingen, 1761.

intestines of some of their cases, were really of this nature.* This appears to me the more probable, because in the case of the very similar epidemic which Sarcone† observed in Naples in 1764, and which, in the circumstances under which it occurred, its course, symptoms, and the anatomical lesions observed after death, appears to have been identical with the morbus mucosus of Röderer and Wagler. I read that these gangrenous spots were again observed in the alimentary canal of some cases, and that they occurred chiefly in the small intestines. But even if this interpretation is correct—and I believe it is—I cannot think that the characteristic typhoid lesion was present in all the cases in which Röderer and Wagler made autopsies, or it surely would have received greater attention from those acute observers, and I must think that in a part, at least, of their cases, there was no other lesion of the small intestine than a smart intestinal catarrh.

The doctrine of the mucous fever, as taught by Röderer and Wagler, took firm root in the medical mind of Europe.‡ It figures largely in many of the text-books of the first half of the present century, and you will even find the descriptions reproduced, without criticism, under the head of "Mucous or pituitous fever," in the admirable Dictionary of Copeland.§ Some writers have expressed the opinion that this mucous disease was after all neither more nor less than ordinary typhoid fever. I cannot agree with them. I see in the story, as told by the original observers, unquestionable marks of malarial complications; indeed, also of scorbutic complications. I do not marvel that the Göttingen observers should have devoted sections of their work to the discussion of the relationship of the mucous disease with intermittent fever, and of its relationship with scurvy, and should have arrived at the conclusion, to use their own striking language, that the epidemic which they observed was the corrupted and degenerate progeny of intermittent fever. They thought they saw also a causal relationship between intermittent fever and dysentery, an opinion which I cannot discuss here, but which I must confess I share to a certain extent. No doubt, since their time, the term mucous fever has often enough been applied to simple typhoid fever, and although of late it has been banished from the books, it still survives among certain practitioners who were educated thirty or forty

* *Op. cit.*, p. 361.

† MICHAEL SARCONI. *Intervista ragionata dei mali osservati in Napoli, nel corso dell' anno 1764*. Napoli, 1764. There is a German translation by Forcellini, Zurich, 1771, and a French translation by BoRay, Lyons, 1804. Our library contains the German translation only.

‡ OUDAN. *Op. cit.*, Tom. I, p. 257 et seq., gives an excellent abstract of the works of Röderer and Wagler, and of SAVON.

§ JOHN COPLAND. *Dict. of Pract. Med.*, London, 1803, Vol. I, p. 368.

¶ As for example, W. GRIESINGER. *Infektions-Krankheiten*. Virchow's Handbuch der Spec. Path. u. Therapie. Bd. II, 8th. v. Erlangen, 1877, S. 116.

years ago, and I myself have heard it applied by old practitioners to unmistakable cases of typhoid fever within the last five years. The misuse of terms in medicine is, however, a common consequence of imperfect knowledge, and we must not allow ourselves to be led astray by it.

I cannot dwell longer now upon this interesting epidemic. Let me turn next to another illustration, in which the malarial element was still more potent, and with regard to which I need only present a few salient points, because it is so often cited in connection with the diseases of armies that most of the leading facts must be well known to you all. I refer to the Walcheren fever, which decimated an English army in the year 1809.

The previous experience of English armies in the Netherlands had shown the malignant character of the malarial influences which prevail in that region. It had been described in striking language in the excellent work of Sir John Pringle.* He had recorded that all the flat region between the rivers Lys and Scheldt and the sea, was marshy and unhealthy, the home of periodical fevers; that a great part of Holland, including Dutch Brabant, was subject to the same disorders, and that the air was worst of all in Zealand. He has left graphic descriptions of the fevers which prevailed among the English troops operating in these low countries between 1742 and 1748. He had observed especially that when the troops were encamped near stagnant waters the "marsh fevers" are not only apt to begin with little remission, but, after intermitting for some days, to change into continued fevers of a dangerous nature.† Especially was this the case during the summer and autumn of 1748, when the troops were encamped near the inundations of Dutch Brabant. An epidemic of such fevers occurred among them. Pringle writes: "At the height of the epidemic it appeared that both intermittents and remittents, by extending or doubling their paroxysms, frequently changed into a continued and dangerous form, and that most of those we lost died in this way. These men, as we remarked, had a corrupted smell for a day or two before their death, and soon after, their bodies putrefied. Some had petechial spots, though the place where they lay was neither crowded with sick nor too close; and to these spots were added some other symptoms, the same with those of the hospital fevers."‡

The expedition of 1809 renewed the experiences of Pringle on a more formidable scale. The English army, of between 42,000 and 43,000 men, was quite healthy when it set sail from the Downs, July 28th, but

* SIR JOHN PRINGLE. *Obs. on the Diseases of the Army*. 7th Edn., London, 1774, p. 1, et seq.

† *Op. cit.*, p. 172.

‡ *Op. cit.*, p. 173.

as early as the middle of August the number of the sick was so great as to excite alarm. By the 26th the number was 5,000. By the 7th of September it amounted to 10,948. According to Sir Gilbert Blane,* 26,846 men were sent to hospital in Zealand between the 21st of August and the 18th of November. The expedition was paralyzed by these misfortunes, and after the surrender of Flushing, August 15th, was unable to continue offensive operations. In spite of the fact that a large part of the sick who were sent home to England began to improve so soon as they escaped from the pestilential regions in which their diseases had originated, and ultimately recovered, the total mortality was large. It has been estimated at about 8,000 men. I must refer you to Hansard's Parliamentary Debates, the Annual Register, the Edinburgh Review, and the Essays of Marshall, Sir Gilbert Blane, Dawson, Davis, and Wright† for the particulars of this disastrous expedition. I can only pause to emphasize a few facts.

The diseases of the Walcheren expedition were diarrhoea, dysentery, intermittents, and a form of fever which began as a remittent, and subsequently assumed a continued form, and which at that time was designated the Walcheren fever, or the Walcheren remittent. Sir Gilbert Blane, who visited the island of Walcheren during September and October, reported to the Government "that he found so great a proportion of the sick to consist of those affected with the intermitting and remitting fevers peculiar to marshy countries, that there could be no doubt that the sickness of the army was owing to that cause." He admits, however, that he found a certain number of cases of a fever which he called "typhus," and of dysentery, particularly at Flushing, where "the prevalence of these two diseases was very remarkable, particularly in one regiment, of which all the medical officers were either absent or dead, and of which the sick, originally affected with the endemic disease, were suffering also from typhus and dysentery in consequence of the want of cleanliness, as well as of proper medicines, diet, and attendance."‡ Borland and Lempriere,§ two other medical officers serving with the

* Sir Gilbert Blane. *Facts and Opinions respecting Intermittent Fevers, and the exhalations which occasion them*. Med. Chir. Trans., Vol. III, (1802), p. 11.

† Hansard's Parliamentary Debates. Series I, Vol. 15, Appendix 22 and 23, and Vol. 16, Appendix "Papers relating to the Expedition to the Scheldt." The Edinburgh Annual Register for 1809. Edinburgh, 1811, Vol. II, part 1, p. 566. The New Annual Register for 1809. London, 1809, p. 305. Corrections on the documents, including the evidence heard at the bar, laid before Parliament on the subject of the late Expedition to the Scheldt. The Edinburgh Review, Vol. 17, (1809-10), p. 30.

§ HENRY MARSHALL. *Contribution to Statistics of the Sickness and Mortality which occurred among the Troops employed in the Expedition to the Scheldt in the year 1809*. Edinburgh Med. and Surg. J., Vol. 48, (1807), p. 305. Sir Gilbert Blane, *op. cit.* DAVIS, WRIGHT, and DAWSON—works cited below.

‡ *Op. cit.*, pp. 3 and 5.
§ J. BORLAND and W. LEMPRIERE. *Report on the prevailing Malady among his Majesty's Forces serving in the Island of Walcheren*. The Med. and Physical Journal, Vol. 11, (1805), p. 45.

troops on the island, reported, in the same spirit, that the malady was "the endemic fever of marshy countries; the effect of miasmata from a soil the most productive in deleterious exhalations of any perhaps in Europe;" stated that it prevailed also among the natives of the island as an intermittent or remittent fever, and that among the British troops it assumed "a character of greater malignancy."

But the most elaborate studies of the Walcheren fever were made by the medical men whose duty it became to treat the sick who were sent home to England. Dawson* tells us that the Walcheren soldiers were affected with intermittents in a number surpassing those who were attacked by the continued fevers; that many of the soldiers who were subjects of the continued fever had already labored under the intermittent, and that on the other hand intermittents were common among those who had recently recovered from the continued fever. Davis,† whose account of the fever is more elaborate, tells us that at the beginning it assumed the quotidian, tertian, double tertian, or quartan type, but that the most common of all was the double tertian. It assumed, however, the characters of a continued fever of typhoid type as it progressed, with muttering delirium, small rapid pulse, dry, black tongue, sordes-covered teeth, fetid odor, and black discharges from the bowels.

On account of the frequency with which this fever was associated with dysentery, the characteristic lesions of dysentery were frequently found in the colon during the autopsies which were made. But Davis‡ has also recorded the significant fact that "the ileum and jejunum were frequently interspersed with tubercles, inflamed and ulcerated in different parts." This description would seem to indicate beyond doubt that the lesions, which we have now learned to recognize as characteristic of typhoid fever, were frequently present in the cadavers of those who had perished from the Walcheren disease. After a thoughtful study of the evidence, no doubt is left in my own mind that this fever was not, as has often been asserted, simply a malignant remittent, but that it was a genuine hybrid between malarial and enteric fever.‡

Did time permit, I might bring forward other interesting illustrations from the history of the British Army in the East and West Indies and elsewhere, from the Algerine experience of the French, and from other sources; but I fear that I have already occupied too much of your time.

* G. F. DAWSON. *On the Walcheren Disease*. London, 1809, p. 28.

† J. R. DAVIS. *A Scientific and Popular View of the Fever of Walcheren*. London, 1809. See also THOMAS WRIGHT. *History of the Walcheren Remittent*. London, 1811.

‡ *Op. cit.*, p. 322.

[Essentially the same opinion with regard to the Walcheren fever has been expressed by J. J. LEWIS. *Miasmatic Typhoid Fever*. American Jour. of the Med. Sciences, April, 1864, p. 499.

with facts of this class. I cannot, however, leave the subject of the experiences of other armies without bringing to your notice an unexpected corroboration of the views I am urging upon your attention, which I find in an essay published by Virchow in 1871 on the fever and dysentery of the German army* during the recent war with France, which he contrasts with the similar diseases of our own civil war, as described by me in my book on Camp Diseases, and in Circular No. 6. Virchow hesitates to acknowledge "typho-malarial fever" as a special group of diseases, and exclaims, with cautious conservatism: "It seems to me we ought to be very careful in this direction." Yet, in the same essay, while contending that the prevalent fever of the German army was simply abdominal typhus, as proved by numerous *post mortem* examinations made at Berlin on soldiers brought back sick from the front, this cautious but acute observer finds himself compelled by the facts under his eyes to use the following emphatic language:

"Nevertheless, abdominal typhus affords such numerous diversities in its course that it is in the highest degree imperative to preserve every precaution in the interpretation of individual cases. Especially does the admixture (*Zumischung*) of the malarial element, which also in this war has shown itself active, by numerous cases of intermittent fever, confuse the picture of the so-called normal course of typhus in a sometimes very deceptive manner."

Now, I must protest that these words represent the very essence of the doctrine I am here to defend, and if the comparatively mild malaria of the plains around Metz was capable of complicating the course of the abdominal typhus which occurred in the German army to a sufficient extent to justify this eloquent language, what think you would the great pathologist have written could he have observed for himself the fevers of our own army in the valley of the Mississippi or by the banks of the Chickahominy?

I have occupied the greater part of my hour with these preliminary matters; but not, let me hope, in vain. I come now to a rapid sketch of the principal facts with regard to the typho-malarial fever of the civil war of 1861-5.

The characters and distribution of the malarial fevers of the region in which that colossal struggle took place have been described in a most original and interesting work by our countryman, Dr. Daniel Drake,† who has embraced them under the general designation of autumnal fevers. This term serves very well to express the greater prevalence of

* R. VIRCHOW, *Kriegstypus und Ruhr*, Virchow's Archiv., Bd. LII, (1871), S. 1. Note, pp. 1 and 20.
† DANIEL DRAKE, *The Principal Diseases of the Interior Valley of North America*. Cincinnati, 1826. The same, second series, edited, after the death of the author, by S. H. Smith and Francis G. Smith. Philadelphia, 1846.

intermittents and remittents during the autumn months; but it must be distinctly understood that their occurrence is not limited to these months. In the regions in which they are endemic, they may occur at any season of the year, and their course can be represented by a curve in which the abscissas begin to lengthen early in the spring, and grow longer and longer, till they attain their maximum most generally at sometime during September or October, after which the curve rapidly drops to a minimum during the winter. Sometimes the curve presents, also, a slightly irregular elevation during the early spring, justifying the term vernal intermittents, which has often been used; but most generally the increasing frequency of these fevers in the spring simply represents the commencement of the annual rise in the curve which culminates in the autumn. This is well illustrated by curves which I have had constructed to represent the monthly number of new cases of agues and remittents reported in our armies in the Atlantic and Central regions during the civil war. These I hand you for examination, but I cannot pause to discuss them at this time. Doubtless the winter and vernal cases are to be regarded in part as relapses, in part as illustrations of the postponed development of the consequences of previous exposure; but, however you may choose to interpret them, I wish to insist upon the point that they occur with much greater frequency than some of the systematic writers would have us believe.

Dr. Drake has shown that in a general way these fevers are most intense in the States that border on the Gulf of Mexico, and gradually diminish in frequency and severity as we go to the north, so that they no longer prevail in epidemic form beyond the 44th parallel, and cease to occur even sporadically at about the 47th. To the southwest, the Cordilleras of Mexico and the Southern Rocky Mountains constitute their boundaries, while in the higher latitudes they cease on the great plains, long before we reach the mountains. On the Atlantic slope they prevail with constantly increasing severity as we go southward from New York, and though they do not occur on the table lands and higher ground of the Appalachian chain, yet they ascend high up the valleys of the streams which flow out of the flanks of those mountains.

In the volume of the Ninth Census of the United States, which is devoted to Vital Statistics,* there is an interesting map which exhibits the distribution of the mortality from intermittent and remittent fevers during the year 1870. Doubtless this mortality, which is but at best incompletely represented in the Census Report, can only be regarded as

* Ninth Census, Vol. II, *Vital Statistics of the United States*. Washington, 1875. See, also, *Statistical Atlas of the United States—based on the results of the Ninth Census, 1870*. By F. A. WALKER, 1875, in which the map in question is given on a larger scale, and better engraved, as Plate 47.

a very imperfect measure of the frequency and severity of these fevers; but imperfect as it is, its indications are valuable. It shows in a general way the almost complete exemption of New York, the New England States, and the mountainous parts of Pennsylvania, Maryland, West Virginia, and Virginia, and a gradual increase in severity indicated by an increasing mortality in the river valleys as we go southward from the fortieth parallel. It illustrates, also, in a striking manner, a fact which arrested the attention of Drake,* that in various scattered districts, from the influence evidently of strictly local causes, the malarial fevers display greater prevalence and malignancy than they exhibit further south and on a lower level.

It would be altogether foreign to my purpose to enter in the present discourse into any discussion as to the causes of these fevers. I simply urge upon you to-day the great fact of their endemic existence, in some localities more frequently and with greater severity than in others, formidable even to the natives of the soil, but still more formidable to strangers, throughout the whole region in which our great armies operated during the civil war. The characters of the fevers thus distributed are too well known to you all for any description to be necessary here. I need only remind you of the frequent occurrence throughout the Southern States, side by side with ordinary ague, of malignant forms, the so-called congestive chills or pernicious fever; of the severity of the remittent fevers which prevail; of the frequency of big spleens, disordered livers, and malarial anemias, and of the great frequency with which, in these regions, an intermittent type is impressed on the ordinary acute phlegmasia, and even on chronic disorders.

Drake has also presented an interesting account of the distribution throughout the United States of typhoid or, as he calls it, typhous fever.† This fever is the usual form in which typhus manifests itself in the United States. The spotted typhus of the Old World never appears on our soil except as isolated cases, imported, as "ship fever," into our seaports. Drake has correctly pointed out that while in a general way the typhoid fever of the United States is more prevalent in the Northern than in the Southern States, it nevertheless does occur both sporadically and in local epidemics even in the southernmost portion of our territory. This fact is strikingly illustrated by a map in the volume of the Ninth Census already referred to,‡ which represents the distribution throughout the United States, during the year 1870, of some 24,000 deaths from typhoid fever. In constructing the map a few hundred cases of

cerebro-spinal fever were included, but their number is too small to vitiate its value* in illustrating the distribution of typhoid fever during the year in question. This map, while exhibiting in a general way a gradual decline in the mortality from typhoid fever as we go to the South, displays also a number of limited areas of high mortality, representing the endemic prevalence of the fever during that particular year in certain localities. Several of these areas of local prevalence are situated in the Southern States. In one of them, in Georgia, which embraces the region drained by the Altamaha and Satilla rivers, typhoid fever caused about one-fifth of all the deaths—a greater mortality than it produced in any part even of the New England States. In another almost equally remarkable area, embracing parts of the States of Mississippi and Alabama, having near its centre the town of Columbus, Mississippi, the proportionate mortality from typhoid fever was nearly as great.

Drake has urged, as one of the distinguishing marks between typhoid fever and the autumnal fevers, that the former is not limited like the latter to a particular portion of the year, "between the summer and winter solstice, but occurs, though unequally, at every season." But he believes that "on the whole, however, they are most prevalent in autumn and winter,"† an opinion which has been shared by several careful writers.‡

Liebermeister§ has recently compared the statistics of the monthly prevalence of typhoid fever in some of the great European cities, and shown that in London, Berlin, and Basle, the curve which represents the course of the disease is distinctly autumnal in character. "The minimum is in February and April, (in the Berlin curve a little later;) the maximum is in September and October. (In Berlin, the maximum is in October.)" Munich alone presented an exception, the maximum falling in February. Now, I must say, my study of the sick reports of our civil war inclines me to believe that the autumnal curve observed by Liebermeister represents also the usual annual distribution in this country. I have constructed curves representing the monthly ratio of new cases to strength in each of the three regions. These curves present certain irregularities in the Atlantic and Central regions corresponding to the varying circumstances in the fortunes of the great armies, but on the whole they represent the disease as most prevalent during the latter

* Ninth Census, Vol. II, cited above. Special tables of Mortality, p. XXIII. The number of cases in, malarial fever, 11,811; typhus fever, 1,797; cerebro-spinal fever, 899. The cases reported as typhus were simply misnamed, and are to be regarded as enteric.

† Op. cit., 2d Series, p. 223.

‡ Thus, for example, G. B. Woods. *Treatise on the Practice of Medicine*. 6th Ed., Philadelphia, 1866, Vol. I, p. 369.

§ LIEBERMEISTER. *Typhoid Fever*, in *Ziemann's Cyclopaedia of the Practice of Medicine*, Amer. transl., Vol. I. New York, 1874, p. 65.

* Op. cit., First series, p. 294.

† Op. cit., Second Series, p. 323 of seq.

‡ See also Walker's Statistical Atlas, cited above, Plate 61.

part of the summer and autumn, rather than during the autumn and winter. In the Pacific region the curve is strictly autumnal. The maxima are as follows: October in 1861, September in 1862, November in 1863, September in 1864, October in 1865. The minima were in April and May for 1862 and 1863, April, 1864, and March, 1865. In the Atlantic region the maximum for 1861 was in November. In 1862 there were two maxima, one during the Peninsular Campaign in July, followed by a great reduction on the withdrawal of that army, and a second maximum in October and November. In 1863 and 1864, the maxima were during July and August. In 1865, during October. The minima fell in March, 1862; June, 1863; February, 1864; and April, 1865. In the Central region the maximum for 1861 fell in November; in 1862, in May. During 1862 the curve was quite irregular; it rose to a maximum in May, then diminished in frequency during the summer, and steadily increased after September through the winter, attaining its maximum in February, 1863, after which it diminished until June, and then again increased to a second maximum in August. The maximum for 1864 fell in September; in 1865, during September and October. The minima were in March and September, 1862, June, 1863, February in 1864 and 1865.

I find from the Annual Reports of the Board of Health of the city of Boston, for 1874 and 1875, that the mortality from typhoid fever during those years pursued a markedly autumnal course, the maximum being during September in 1874, and during October in 1875.* In the District of Columbia the registration returns show that the greatest number of deaths since 1872 have always occurred during the months of August and September.

I incline, therefore, to the belief that typhoid fever presents in fact in this country an annual autumnal curve very similar to that of the so-called autumnal fevers. I base upon this circumstance no argument as to the relationship or nature of either disease, but press it upon your attention as a fact which must not be overlooked.

Next, let me remind you of the important fact that intermittent and remittent fevers often disappear more or less completely from neighborhoods in which they have long prevailed, and are replaced by typhoid fever. This circumstance could not escape such a faithful observer as Drake. He has described it in the following language:

"Far in the North, remittent fever often presents, almost from the beginning, a tendency to the continued type, displaying the character-

* See *Second Annual Report of the Board of Health of the City of Boston*, 1874, and *Third Ann. Rpt.* 1875. Both volumes give charts representing the weekly mortality from typhoid fever. Also, *Annual Reports of the Board of Health of the District of Columbia* for 1872, 1873, 1874, and 1875.

istics of the synochus of Cullen's Nosology. It is properly called autumnal fever, because it prevails most in that season, and is an equivalent for the true remittent fever of the warmer climates. Nearly the same remark is applicable to this fever when, in the middle latitudes, it appears in the long-cultivated and drier portions of Tennessee, Kentucky, western Pennsylvania, and Ohio. Formerly it often alated into an intermittent; latterly, it is apt to degenerate into a continued type.*

Whatever criticism you may choose to bestow on the wording of some parts of this remarkable passage, it is an honest attempt by a keen observer to describe a class of facts which he had had the opportunity of observing on a great scale. The substantial truth, that in numerous districts throughout this land intermittents and remittents were the prevailing form of fever when the first settlements were made; that as time passed by and cultivation progressed, the intermittents diminished in frequency, the remittents exhibited more and more a disposition to pass into continued forms, and finally were replaced by ordinary typhoid fever, which became the prevailing endemic fever—all this, I suppose, has occurred under the personal observation of many of the American physicians who listen to me to-day, and I need not weary you by multiplying authorities in proof of a fact with which you must all be familiar.

But next let me observe that the change thus effected is not always a permanent one. Often in individual years the intermittents and remittents reappear in epidemic-wise in regions such as I have just described, and then the typhoids vanish for a time, to return once more when the temporary prevalence of the periodical fevers comes to an end.

Existing thus side by side, replacing each other in this intimate—if you will, in this intricate manner—it is evident that the unknown causes of the periodical fevers, and of typhoid fever, whatever they may be, must frequently coexist. Ought we not, then, to anticipate that individuals exposed to both would often suffer with fevers in which phenomena belonging to both affections would also coexist?

I suppose the once popular belief that diseases are entities, and that a man can suffer from but one at a time, is now so completely dead that it is quite unnecessary for me to bring forward facts and arguments to disprove it. I suppose it to be now well established that individual cases of disease are always more or less complex, representing in every instance the total effect of all the morbid causes acting upon the individual, and modified always by his individual resisting power, the result of his own individual organization and his own previous history. Even Sauvages, the greatest of all the systematic nosologists of the last century, already recognized this fundamental fact when he exclaimed, in

* Drake. *Op. cit.* First Series, p. 712.

the introduction to his work: "Genera and species of diseases are abstract notions. Throughout the Universe neither genera nor species exist, but only individuals."* Is it wonderful, then, that hybrid forms of disease, exhibiting the ordinary symptoms of malarial and of typhoid fever, variously combined, should long have been observed in this country? In fact, such hybrid forms have long been observed in Europe also. In the first volume of his *Institutes*, published in 1781, Burserius† recognized them as a group; "the Proportionata," which he defines as a compound species composed of the synochus and intermittent fever. This union, he says, occurs especially "when intermitting fevers prevail epidemically, or at least constitute the prevailing and stationary disease; for then almost all diseases bear some resemblance to intermittents, or sporadic, or intercurrent fevers, of whatever other kind, are combined with the intermitting fevers."

Hermann Schmidt,‡ in his account of the so-called Summer fever, which was epidemic throughout Europe during the year 1827, has still more elaborately described as the form of fever then most generally prevailing, a combination of intermittent fever with the endemic typhus of Europe, (our typhoid fever.) He has subdivided the resulting hybrid forms into two chief classes: 1. *Typhus intermittens subintrans*, which he defined as a combination of typhus and intermittent fever, with a predominance of the typhus element. 2. *Febris intermittens typhosa*, which he defined as a similar combination, with a predominance of intermittent fever. I would refer you to his elaborate treatise for many suggestive details.

Naumann§ has quoted, with approval, the views of Burserius and Schmidt, and mentions corroborative observations by several other writers, to which I might add many more did the scope of this discourse permit.

Recurring to the American experiences, I would recall to your memory the fact that the existence of the hybrids under consideration did not escape the practical eye of Drake: "When remittent fever terminates fatally in one or two weeks," he observes, "a certain amount of subsultus, a dryness of the tongue, and intestinal hemorrhage, are sometimes present, although no typhous fever may be prevailing in that locality, and this brings us to inquire, not into the distinctive peculiarities of these two forms of fever, but into their combination, into the hybrid or

mongrel diathesis which results from the joint impress, in ever-varying proportions, of the causes which produce true typhous and true remittent fevers."* For these hybrid forms he proposes the designation, "Remitto-typhous or secondary typhous fever." "I do not recollect," he says, "to have seen a case of fever well-marked as typhous in the early stages terminate as an intermittent, nor a decided intermittent degenerate into a typhous. The union is between remittent and typhous." And this certainly is the most common combination; but the combination with intermittent does also occur, though less frequently, and both the possibilities which Drake tells us he never observed were seen often enough during the civil war.

The same combination of remittent and typhoid fever which was observed by Drake has also been described by the late Professor Dickson of this city. Dickson continually emphasized the doctrine of the frequent blending of those febrile types which are "conmate in cause and analogous in symptoms." He tells us that "it is a matter of familiar remark, that in long-protracted cases of the ordinary remittent of malarious regions, there is a domination of the palpable contrast or alternation of the period of febrile exacerbation and remission—a tendency in the former to continuousness, the latter being less an alleviation of the symptoms—and the several symptoms themselves approaching more and more in appearance those which belong to simple continued fever, nervous fever, or typhoid fever. In common professional language, such cases 'take on the typhoid character.'" "On examination, typhoid lesions will sometimes be found in the body dead of bilious remittents. The mucous membrane of the stomach and intestines is highly injected in severe and short attacks. In more protracted cases, follicular ulceration may be found throughout the whole extent of the bowel."†

Similar opinions were long entertained by my revered preceptor, Dr. George B. Wood. He has told you that remittent fever "is sometimes of a low, adynamic or typhous character from the commencement. This may be the result of a previous exposure to causes calculated to depress the vital powers and to deprave the blood; but it probably most frequently arises from the co-operation of a typhoid epidemic influence with miasmata." He did not believe that the characteristic lesions of typhoid fever ever occur in pure remittents, as some have reported, and explained their observations by the remark that "there is reason to believe that enteric fever has sometimes been mistaken for bilious or remittent fever,

* SALVAGES. *Neslog. Method.* Amsterdam, 1768. Vol. I, p. 26.

† J. BURSERIUS. *Instit. Med.* Vol. I. Milan, 1781. I quote from Hocker's Edition, Leipzig, 1826, Vol. I, p. 319.

‡ HERMANN SCHMIDT. *Über das Europäische Sommerfieber*. Paderborn and Arnberg, 1829. 1836. 6th. 11, S. 232.

* DRAKE. *Op. cit.* 3d Series, p. 536.

† SAMUEL HENRY DICKSON. *Elements of Medicine*. Philadelphia, 1855, p. 296. See also his Essay *On the Blending and Conversion of Types in Fever*. *Trans. of the Amer. Med. Association*, Vol. V, (1892), p. 127.

and lesions belonging to the former been placed to the account of the latter; and not unfrequently, in all probability, the two diseases are in greater or less degree mingled together.*

Now, under the conditions which existed in the camps of our armies during the late civil war, these hybrid combinations, which had already attracted the attention of such men as Drake, Dickson, and Wood, in civil life, made their appearance, as might have been predicted, on a great scale, and produced, as I have already shown, a formidable mortality. It was for these hybrid forms that I proposed the term typhomalarial fever. I never meant this term to represent a specific type of fever, but intended it to designate all the many-faced brood of hybrid forms resulting from the combined influence of the causes of malarial fevers and of enteric fever. The term corresponds essentially to the "Proportionata" of Burserius. It includes both the "Typhus intermittens subintrans" and the "Febris intermittens typhosa," of Hermann Schmidt, and the "Remitto typhosa" of Drake. These are merely varieties of the group of hybrids, all of which I intended to embrace. I pointed out, in my book on Camp Diseases, that this whole group might be conveniently divided, for the purpose of study, into—1. Fevers in which the malarial element, without being the only pathological condition present, is the predominant one; and, 2. Fevers in which the typhoid element is evidently predominant, although the others are also present in a more or less distinct manner. To these I felt compelled to add a third group, namely, "Fevers of either of the first two varieties, in which from the first, or at some time during the progress of the affection, the scorbutic element becomes predominant." To this general grouping of the cases, with all the light of subsequent experience, I must still substantially adhere.

In the group of cases in which the malarial phenomena predominated, the disease began as a simple intermittent or remittent fever, of quotidian, tertian, or quartan type, the most frequent form being a simple or double tertian; but after a week or ten days the fever assumed a more or less completely continued type, with many of the phenomena characteristic of typhoid fever, such as diarrhoea, abdominal tenderness, meteorism, muttering delirium, subultus tendinum, dry, brown tongue, and the like. But even when the typhoid phenomena were most pronounced some of the most characteristic of them were often wanting. Thus, sometimes there was no diarrhoea at all, but constipation instead. The characteristic tache rouge, or rose colored eruption, was generally entirely absent; gastric disturbance, hepatic tenderness, and an icteroid

hue of the countenance were much more generally present than in simple typhoid fever.

Now, a large proportion of these cases terminated favorably, especially, as I think, because quinine was so freely used in their treatment; the occurrence of ordinary paroxysms of ague was a frequent accident during the convalescence. And, just because of the frequency with which they recovered, I suppose, the number of autopsies in cases of this kind which I have been able to collect is much less than in cases of the second group, of which I shall presently speak. Still, I have collected a number of autopsies of cases of this kind, in which diarrhoea had been present during the fever, and in which, after it had assumed a continuous type, it had strikingly resembled typhoid fever, but in which dissection showed no other lesion in the alimentary canal than a smart intestinal catarrh. Patches of inflammation, scattered irregularly throughout both small and large intestines, and enlargement of the closed glands, often associated with pigment deposits, were the characteristic lesions. The solitary glands of the small intestine appeared as little projecting tumors the size of pinheads, which often had constricted necks, so that they resembled tiny polypi. The agminated glands of Peyer, slightly prominent, were often the seat of pigment deposit, which gave them the so-called shaven-beard appearance. Sometimes the villi of the small intestines were hypertrophied; sometimes they had pigment deposits at their apices. In the large intestine the slightly swollen solitary glands were often the seat of pigment deposits, seated either in the glands alone, or sometimes also in the surrounding mucosa, in which case the central dot of pigment was surrounded by a little pigmentary ring. When the fever had supervened, as often happened, upon a chronic flux, or where dysentery had been developed during the course of the fever, or of the convalescence, and had been the immediate cause of death, the characteristic follicular ulcerations of the colon or the phenomena of the diphtheritic process complicated the picture. Great enlargement of the spleen and congestion of the liver, with or without fatty degeneration, were frequent concomitants. The condition of the intestinal canal in these cases closely resembled that which has been emphasized by Röderer and Wagner, and by Dickson. Between the simple inflammatory enlargement of the closed glands, which I have pictured, and the more luxuriant process which occurs in ordinary typhoid fever, and which most pathologists believe to be specific, every possible transition existed. I, for one, confess myself unable to draw a line between the two conditions. Anatomically, they appear to pass into each other by insensible gradations. The essential element of both is the accumulation of a swarm of migrate l white

*Wood. *Op. cit.* Vol. I, pp. 309 and 310.

corpuscles in the closed glands, in the surrounding lymph passages, and the adjacent connective tissue, associated, doubtless, as we must infer from the study of other inflamed tissues, with multiplication of the lymph cells of the parenchyma of the closed glands by division, though it is difficult, if not quite impossible, to demonstrate this latter phenomenon in the present case. The sloughing and ulceration of the so-called typhous process is, I think, sufficiently well explained by the intensity of the process and the nutritive disturbances which thence result, without conjuring up in our imaginations an undemonstrated specific something to account for it.

The group of cases in which the typhoid phenomena predominated more closely resembled ordinary typhoid fever. They began more like it; they ran their course like it; like it, they refused to be cut short by quinine; after death they presented the characteristic lesions of the patches of Peyer. But even these cases presented, also, many phenomena which did not belong to ordinary typhoid fever. First of all, I must emphasize the manifestation of an unwonted tendency to periodicity. This was not merely an exaggeration of the daily exacerbation and remission, which we all know as a part of the history of the early stages of typhoid fever. The exacerbations assumed with great frequency a tertian or double tertian type, which has no parallel in the ordinary typhoid history. With this tendency to periodicity, the gastric and hepatic disturbances common in remittent fever were often associated in the early stages, and ordinary ague paroxysms often occurred in the convalescence. The autopsies in these cases disclosed the ordinary lesions of typhoid fever. During my earlier studies I believed that I had observed certain peculiarities in the character of the ulcers in these cases, by which they might be distinguished from the lesions of simple typhoid.* A larger experience, especially the examination of a large number of specimens received by the Medical Section of the Army Medical Museum, has convinced me that this opinion was premature. I renounce it as erroneous. There is really nothing in the lesions of Peyer's glands, in these cases, to distinguish them from ordinary cases of typhoid fever; and it was just these lesions, so well known to you all that I need not pause to describe them, which were observed in the vast majority of those fatal cases of fever occurring during the late war in which autopsies have been recorded or specimens preserved. As for the other lesions observed in these cases, tumefaction of the spleen, far beyond the degree ordinarily observed in typhoid fever, was common enough, and the pigment de-

* *Camp Diseases*, p. 100.

posits in various tissues and organs, which are so frequent in malarial diseases, were very often encountered. Moreover, the colon lesions characteristic of chronic fluxes or of acute diphtheritic dysentery were frequently associated, as is well shown by numerous specimens in our Museum.

I will not for a moment, however, countenance the sophism that, because the lesions of ordinary typhoid fever were those most frequently encountered during the war in fatal cases of fever, uncomplicated typhoid fever was the prevailing febrile form. On the contrary, as I understand it, though this was the lesion in the majority of fatal cases, the slighter lesions described in connection with the first group were those which most probably existed in the majority of the cases which recovered. Nor will I admit the fallacy that, even in those fatal cases in which the typhoid lesion was most marked, the patients are thereby proved to have died of simple typhoid fever. I will not emphasize the big spleens, pigmentary deposits, or other anatomical evidences of malarial complication. I will even admit the uncertain diagnostic value of all these phenomena in the present state of our knowledge. But I cannot ignore the facts of clinical observation. I cannot but see in the periodicity and other clinical evidences of malarial complication to which I have briefly alluded, proof of the action of an additional morbid agency, to which I doubt not we must look for one reason of the great mortality of the fever cases in our armies.

It often happened that, in fevers belonging to either of the classes I have just described, scorbutic phenomena complicated the picture, and sometimes even took a commanding place in determining the course and issue of the disease. I have affirmed, and shall elsewhere bring forward satisfactory evidence in proof of the assertion, that a mild but distinctly recognizable scorbutic taint was wide-spread among our soldiers. It manifested itself as a peculiar anemia, accompanied by mottled complexion, large, smooth, flabby tongue, and by neuralgic or pseudo-rheumatic pains in various parts of the body, especially in the back. As a rule, it was only after this scorbutic anemia had existed for some time, either alone or variously complicated with symptoms due to malarial poisoning, that the characteristic scorbutic conditions of the gums, the scorbutic indurations about the joints of the lower extremities, and the well-known scorbutic purpura made their appearance. These easily-recognizable symptoms of fully-developed scurvy were but moderately frequent. The preliminary anemia, however, was common enough, though often overlooked or misunderstood.

Now, when either of the forms of typho-malarial fever, which I have described, occurred in individuals suffering under the scorbutic taint, the

symptoms were modified to a degree corresponding to the intensity of the scorbutic condition. The effect of the complication was to increase the tendency to mental and bodily prostration during the disease, to tardy convalescence subsequently, and to increase the frequency of petechial and purpuric eruptions, and of hæmorrhages from the nose and bowels. Sometimes the characteristic scorbutic condition of the mouth was developed during the progress of the fever, when it had not previously made its appearance. When the characteristic typhoid process was developed in individuals laboring under a marked scorbutic taint, the symptoms closely resembled those of spotted typhus. Fatal hæmorrhages from the bowels were common in such cases, and on the dissection, the lower patches of Peyer were found converted into dark-red or black pulsatous sloughs of considerable size and thickness. I suppose the scorbutic condition to have modified the typhoid ulceration in such cases, just as we often see it modify the condition of superficial ulcers or of gunshot wounds.

The outlines of the chief phenomena of typho-malarial fever which I have thus endeavored to present to you to-day are necessarily incomplete, for it is, of course, impossible to go into the details of so large a subject in an address like this. I hope to be able to fill up these outlines in a satisfactory manner in the second volume of the Medical History of the War.

And this brings me, at length, to answer the question—Is typho-malarial fever a special type of fever?—and I reply, unhesitatingly, that it is not. I, at least, am free from the blame of that error, if any one has fallen into it. In my first published account of typho-malarial fever, I expressly denied that it could be regarded as a new disease. "Much rather," I said, "should it be considered simply as a new hybrid of old and well-known pathological conditions, in which the exact train of symptoms is as variable as the degree of preponderance attained by each of the several concurring elements."* And this is the view which I advocate to-day. The essential point which I desire most to impress upon you is the recognition of the group of hybrids between typhoid fever and the malarial fevers. The scorbutic complication was a mere accident of the war; its existence is by no means essential to the idea of typho-malarial fever, but in dealing with the typho-malarial fever of the war I could not omit it from the picture.

It was, and still is, my belief that the mixed forms of fever which I have thus sketched constituted the great majority of the continued fevers of our army during the civil war. I still, however, adhere to the

* *Op. cit.*, p. 111.

opinion which I expressed in Circular No. 15 of 1863, and in Circular No. 6 of 1865, that simple typhoid fever and simple remittent fever did also occur, though the statistics fail to show to what extent; and I still adhere, also, to the view then expressed, that a large portion of the cases actually reported during the war "as typhoid and remittent fevers are, to a great extent, to be regarded simply as those in which the typhoid or the paroxysmal phenomena predominated."

It would follow, from the views I have advanced, that typho-malarial fever ought to be encountered also in civil life, particularly in our Southern States; not, indeed, to the same extent that it existed during the war, when hundreds of thousands of soldiers, born and bred in the Northern States, campaigned in the malarial valleys of the South, but to an extent which deserves thoughtful recognition. And this, I must believe, from my own observations, and from facts communicated by professional friends in various parts of the South, is actually the case.

Since the close of the civil war my doctrine of typho-malarial fever has been accepted with approval in many quarters, and the term has been extensively used. Dr. Meredith Clymer* has adopted it as a synonym of "American Camp fever" in his edition of Aitken's Science and Practice of Medicine. Dr. George B. Wood,† though unwilling to adopt the name, has fully recognized the great prevalence during the civil war of "this mixture of the two fevers." In the sixth edition of his work on Practice of Medicine, published in 1866, he remarks: "Since the last edition was published this complex affection has been much more prevalent than before, probably because great numbers of young men engaged in the armies at an age when the predisposition to enteric fever is strongest, have been in an unusual degree exposed to the joint action of the causes of the two fevers; to that of enteric fever, in the almost unavoidable filth attendant upon great encampments, and to that of bilious remittent or intermittent in the low grounds from which miasmatic effluvia are so abundantly extracted in our Middle and Southern States in the latter part of summer and in autumn."

Dr. Austin Flint,‡ whose former experience in the South makes me regard his opinion in this matter as particularly valuable, in his Treatise on the Practice of Medicine, has adopted the term typho-malarial fever as a convenient designation to represent the hybrids which had been indicated by Drake and Dickson, and which Flint himself tells us he

* Wm. AITKEN. *The Science and Practice of Medicine, with additions by MEREDITH CLYMER*. Philadelphia, 1872, Vol. 1, p. 607.

† *Op. cit.*, Vol. 1, p. 377.

‡ AUSTIN FLINT. *A Treatise on the Principles and Practice of Medicine*. Philadelphia, 1866, p. 340; also, Fourth Edn. Philadelphia, 1872, p. 334.

has recognized in his own lectures to medical classes for twenty-five years. His article on simple remittent and typho-malarial fever is an admirable one, to which I refer you with pleasure.

With this intelligent corroboration and support of my views on typho-malarial fever, there has been, I must admit, some indiscriminate use of the term, which is well calculated to bring it into discredit. I have myself known it to be erroneously applied to simple typhoid fevers, in the clinical history of which I at least could see nothing to indicate a malarial complication, and to simple remittents in which I could perceive no typhoid symptoms. I think I have observed, also, a tendency in certain quarters to bestow the term upon almost any obscure febrile affection which offered diagnostic difficulty. May I not hope that the dissemination of this address may serve to diminish abuses of this kind hereafter?

But although widely accepted, my views with regard to typho-malarial fever have not escaped criticism. Dr. Roberts Bartholow,* formerly an Assistant Surgeon of the Army, and now a successful practitioner in Cincinnati, has attacked them with a good deal of acrimony in an article on the Camp Fevers of the Civil War, which he contributed to the Medical Volume of the Memoirs of the United States Sanitary Commission. Led away by the energy of his attack, he goes so far as to affirm boldly "a *typh* element did not in my experience exhibit itself as a modifying condition in remittent fever." He declares the camp fevers of the army to have been remittent, simple continued, typhoid, and typhus, and affirms that "these several forms of fever preserved as distinct clinical features in the army as the same forms of disease in civil life." To give force to his criticism, he even goes to the extent of misrepresenting my views, and says: "There were, therefore, according to Woodward, really no cases wholly typhoid, or wholly remittent, in the army"—although I had distinctly affirmed the occurrence of such cases in all my publications on the subject. I will not pause in this place to answer these criticisms of Dr. Bartholow in detail. I would merely remark that, although he makes typhus one of the forms of camp fever, he himself admits that he has no knowledge of it from personal observation. And though he is so ready to deny that the *typh* element, as he calls it, can complicate malarial fevers, he is compelled to concede that the malarial influence can complicate typhoid fever. This he has explicitly affirmed to be a common occurrence in civil life, in another article contributed to the same volume of the Memoirs of the Sanitary Commission. His language is: "I have already

* ROBERTS BARTHLOW. *Camp Fevers*, being chap. 2 of the Medical Volume of the Memoirs of the U. S. Sanitary Commission. New York, 1867, p. 192, et seq.

alluded to the fact that, as populations increase in malarious districts, typhoid supplants the intermittent and remittent fevers. During the transition period a mixed fever prevails; it is a typhoid fever with a malarial complication."† He admits, therefore, the combination of malarial and typhoid fevers, but holds that the typhoid element is always dominant. Against this, I maintain that sometimes the one and sometimes the other of the two elements predominates, and I must believe that the facts are on my side. I may add that the distinguished editor of the volume of Memoirs in question, Dr. Austin Flint, felt himself called upon to append to Dr. Bartholow's essay the following remark: "The general favor with which the term typho-malarial has been received, and the readiness with which it has come into vogue, show that it expresses a pathological doctrine consistent with clinical experience."‡

In his hasty criticism, Bartholow falls into another error—so mischievous, that I cannot permit it to go unchallenged. He denies the frequency of a scorbutic taint among our soldiers during the civil war, and thinks that even the cases reported as actual scurvy include many of "ordinary stomatitis." He says: "In a pretty extended course of observation, I did not meet during the war a single well-marked case of scorbutus."§ A general belief that Bartholow's opinions as to this matter are correct would be a serious obstacle to any attempt to improve the alimentation of our soldiers in any future war. In fact, however, this opinion is so far wide of the truth, that I can only understand it as an illustration of the extent to which one may be led astray by the eagerness of controversy. It is not necessary to leave the volume in which Bartholow's paper is printed to find evidence to contradict him. You will find such evidence in the paper by Dr. Sanford B. Hunt,‡ which constitutes the third chapter of the volume; and in the first chapter of the volume, by Dr. Bartholow himself,‡ he makes a series of statements which fully justify my views. Thus, he affirms that the amount of aliment furnished to the various armies was too often "determined by the transportation available for bringing it forward, and by the so-called military necessity;" and that "the armies operating in the interior region were more affected by deficiencies in commissariat supplies than those on the Atlantic coast," of which fact he gives several striking examples. He explicitly states that "the diet was not sufficiently varied." "Anti-scorbutics came to be furnished after the first year of the war, but the chief antiscorbutic—the potato—was practically unavailable, from the difficulty of transporting and preserving it."

Is it wonderful that, in this connection, Dr. Bartholow, adopting the

† *Op. cit.*, p. 136. ‡ *Op. cit.*, p. 224. § *Op. cit.*, p. 196. ¶ *Op. cit.*, p. 64. ¶ *Op. cit.*, pp. 16-17.

very term he criticises when used by me, should have felt compelled to write: "A scorbutic taint was to be observed in troops who had served in the South for a considerable period;" and, further on, that "an impoverished state of the blood, due to defective alimentation, undoubtedly existed to a large extent. It exhibited itself in various forms, but especially in increasing the fatality of diseases and in impressing an adynamic character on those of mild and tractable forms." Still further: "The camp fever of the army was essentially typhoid. It was modified by various accidental and specific causes. We have just alluded to one of the specific modifying causes—malaria. The most important of the others was scorbutus."

It would occupy too much time for me to attempt to bring forward even a small part of the evidence on which my belief of the wide-spread existence of a scorbutic taint among our troops during the late war rests. My own observations and opinions have been corroborated by those of numerous capable medical officers. As for actual pronounced scurvy, so fully developed that it could be recognized by the average regimental surgeon, 30,714 such cases, not of the scorbutic taint, but of "scurvy," were officially reported among the white troops during the war, and 16,217 among the colored troops.*

The other critic to whom I desire to refer is Dr. Jerome Cochran of Mobile, whose objections I find in the Transactions of the Medical Association of the State of Alabama for 1875.† This gentleman's service as a Surgeon in the Confederate Army inclines me to regard his somewhat grotesquely presented criticism with a respect I could not have felt had it proceeded from a less reputable source. Singularly enough his objections precisely contradict the objections of Bartholow; so that I might readily call upon either gentleman as a useful witness to contradict the asseverations of the other. Bartholow will see nothing in the continued fevers of the war but the typhoid element; Cochran will see nothing in the fevers around Mobile but the malarial element.

* The ratio of these cases to strength greatly increased during the latter part of the war, and attained formidable proportions among the troops sent to Texas during the year following the war. The following ratios are computed from the tables published in the first volume of the Medical History of the War:

Ratio of Cases of Scurvy per 1,000 of mean strength.

WHITE TROOPS.	
Year ending June 30, 1862.....	4.7
" " " " 1863.....	12.5
" " " " 1864.....	9.5
" " " " 1865.....	10.4
" " " " 1866.....	16.4
COLORED TROOPS.	
Year ending June 30, 1864.....	16.1
" " " " 1865.....	16.0
" " " " 1866.....	44.5

† JEROME COCHRAN. *Noty B. Typho-malarial Fever.* Trans. of the Med. Association of the State of Alabama, 11th Session, 1875. Montgomery, Ala., 1875, p. 337.

"During the last six months," he writes, "several cases of protracted fever, primarily of malarial origin, but assuming in their course certain typhoid symptoms, have been related to the Society under the name of typho-malarial fever." He objects to this term and the theory which it implies. He thinks the fevers in question are purely malarial. "The malarial mother is easily found, the fruitful mother of many children, but for the typhoid father I have looked in vain through all the streets and alleys, in all the wards and suburbs of the city;" and again: "I can only continue to say that if we have typhoid fever here, I have never seen it."

Now, the very same volume in which Dr. Cochran publishes this, contains a tabular statement of the deaths in Mobile during the year 1874. Among these I find 3 from intermittent fever, 12 from remittent fever, 7 from congestive fever, 1 from typho-malarial fever, 6 from yellow fever, 1 from hemorrhagic-malarial fever, and 5 from typhoid fever.* Dr. Cochran himself tells us in the course of his remarks that his antagonists among the Mobile physicians declare the existence in that town of "a continued fever with diarrhoea, dry tongue, frequent delirium, a rose rash, running a persistent course of three weeks or more, and defying all treatment to arrest its progress;" but he will not admit that this fever is typhoid. He does not bring forward any dissections in proof of his views; indeed, he does not appear to have made a single autopsy in any of the cases in dispute. He bases his opinion entirely on *a priori* considerations deduced from his belief in the incompatibility of the idiopathic fevers. He proclaims that "there can be no doubt whatever of the truth of John Hunter's general doctrine, that no two of them can exist in the same part of the body at the same time." I can only express my belief that if Dr. Cochran had spent a part of the time which he has employed in criticizing my views, in making, with his fellow-practitioners, some autopsies on the cases of fever, which he tells us they persist in calling typho-malarial and typhoid, he would have arrived at results quite at variance with the opinions he has expressed.

And now, one word before I close, as to the question of nomenclature. Is it convenient to bestow a single term, as I have done, upon the whole brood of hybrid forms resulting from the simultaneous action of malaria and of the causes of typhoid fever; or, is it best to use several designations according as the one or the other of the two elements predominates? We might give the cases in which the typhoid element predominates the name miasmatic-typhoid fever, suggested by Levick,†

* *Op. cit.*, p. 314.

† *Op. cit. supra*; also a lecture by the same author, *Miasmatic Typhoid Fever.* Med. and Surg. Reporter, June 21, 1866, p. 183.

and call those in which the malarial element predominates typhoid miasmatic fever. Such a double nomenclature we have already seen was suggested by Hermann Schmidt. We might go still further, and apply special names, in accordance as the malarial element showed itself, by giving to the early stages of the case an intermittent or remittent type. I do not think this is at all necessary. I think a single term which shall include all the hybrids quite sufficient; but I shall not quarrel with any one who wishes to make further subdivisions.

If we agree to represent all these hybrid forms by a single appellation, is the designation Typho-malarial the best for the purpose? Would it be an improvement to adopt the term "entero-miasmatic," suggested as a substitute by Dr. George B. Wood? * I confess to a preference for the term I have suggested. It is easy enough to pronounce, and seems to me to express its meaning very well; but I attach far less importance to the employment of the name which I have suggested than I do to the recognition of the compound forms of fever which I intended to represent by it. The name is, after all, a mere matter of choice. But if I have rightly presented the subject, a just appreciation of the hybrid forms which I have urged on your attention to-day is a matter of grave practical importance. Not merely as a question of Military Medicine, though most important in that connection, for I take it that whenever again hereafter an army recruited in a comparatively non-malarial region shall campaign on a malarial soil these hybrid forms will appear once more in epidemic proportions; but meanwhile, I suppose, in sporadic or endemic-wise, we shall continue to have these cases to deal with in civil practice in all the miasmatic regions of our Middle and Southern States, and their right comprehension is, therefore, a question of serious moment to every American physician engaged in practice in such localities.

* *Op. cit.*, Vol. I, p. 377.

International Exhibition of 1876.

HOSPITAL

OF THE

Medical Department, United States Army.

No. 10.

DESCRIPTION OF SELECTED SPECIMENS

FROM THE

MEDICAL SECTION OF THE ARMY MEDICAL MUSEUM

AT WASHINGTON.

EXHIBITED IN ROOM No. 2.

J. J. WOODWARD,

Assistant Surgeon, U. S. A.,

IN CHARGE OF THE REPRESENTATION OF THE MEDICAL DEPARTMENT, U. S. A.

Philadelphia, 1876.

INTERNATIONAL EXHIBITION OF 1876.

HOSPITAL

OF THE

Medical Department, United States Army.

DESCRIPTION

OF THE

SELECTED SPECIMENS FROM THE MEDICAL SECTION OF THE ARMY MEDICAL MUSEUM.

THE Medical Section of the Army Medical Museum is represented in the International Exhibition of 1876 by its printed Catalogue,* copies of which will be found at the Hospital of the Medical Department, in rooms No. 2 and 4, and by a small number of selected specimens exhibited in room No. 2, for the purpose of illustrating the character of the collection.

The primary object of the Medical Section of the Museum was to collect and preserve specimens illustrative of the diseases of soldiers, for the purpose of aiding in the study of the nature of these affections. It was desired, especially, to collect specimens of the pathological changes characteristic of those diseases which in time of war produce the chief mortality of armies, such as camp fevers and disorders of the intestinal canal. Accordingly a large proportion of the medical specimens collected during the civil war of 1861-5 were of this character. Since the close of the war, however, a number of specimens have been received, which, although collected in military practice, represent diseases which occur also in civil life; and as the medical officers of the Army on duty

* Catalogue of the Medical Section of the United States Army Medical Museum. Prepared, under the direction of the Surgeon General U. S. Army, by Wm. L. Col. J. J. Woodward, Assistant Surgeon U. S. Army, in charge of the Medical and Microscopical Sections of the Museum. Washington: Government Printing Office, 1876.

at garrisoned posts attend the families of the officers and enlisted men of the garrisons, a number of specimens have also been received which illustrate the diseases of women and children. Moreover, within the last few years, a number of interesting medical specimens have been presented to the Museum by physicians engaged in civil practice in various parts of the country, so that circumstances seem to favor an extension of the original design, and warrant the hope that the Collection will eventually become a general pathological museum, embracing material for the study of all the various forms of disease.

A similar extension of the original plan has taken place in the Surgical Section, which now embraces a large number of specimens illustrative of the most diverse injuries and surgical affections, as well as of those which are especially characteristic of war; and, simultaneously, considerable collections of specimens of human and comparative anatomy and a large number of microscopic preparations have been accumulated, which are available for useful collateral study in connection with the Medical and Surgical Collections.

Accordingly, the Army Medical Museum, which at the date of the last annual report of the Surgeon General contained 18,109 specimens, is now divided into six sections, as follows:

In charge of Assistant Surgeon J. J. Woodward, U. S. A.

Medical Section.....	1279 specimens.
Microscopical Section.....	7275 "
Comparative Anatomy Section.....	1522 "

In charge of Assistant Surgeon G. A. Otis, U. S. A., Curator.

Surgical Section.....	6539 specimens.
Anatomical Section.....	1254 "
Miscellaneous Section.....	240 "

The pathological preparations contained in the Medical Section are for the most part preserved in the wet way, and preference is given to dilute alcohol as the preservative medium. The chief objection to this medium is the expense of replacing the annual loss by evaporation, which, in a large collection, would amount to a considerable item if the old plan of covering the jars with bladders stretched over their mouths was adhered to. But by the plan actually adopted at the Museum, the wide-mouthed jars are closed with carefully-fitted ground stoppers. The loss by evaporation from such jars is altogether insignificant, and the difference in the first cost of the jars is but trifling. The jars used at the Museum have a glass hook depending from the under surface of the stopper, which serves for the suspension of the specimen, and the stoppers being readily removable, permit the specimens to be taken out

conveniently at any time for the purpose of minute study. Intestinal preparations are usually displayed by stretching the piece upon a frame made of a glass rod bent into the desired form; and such frames, of various forms and sizes, occasionally serve for the convenient display of other specimens.

Specimens intended for the Medical Section of the Museum will be gladly received, not only from medical officers of the Army, but from physicians engaged in private practice in any part of the country. Such specimens, to possess value, should clearly exhibit some characteristic lesion, and should be accompanied by a carefully recorded history of the case. Examples of rare lesions are always acceptable, even when the history is imperfect; but specimens illustrative of the more common forms of disease are valued only in proportion to the care with which the history has been recorded and the degree to which the dissection throws new light on the nature of the affection in question. Specimens of congenital malformations and of monsters are particularly acceptable, duplicates serving to make dissections for the display of internal structure. The Museum possesses at present but forty-one specimens of this class, and additional examples are much desired.

Pathological specimens intended for the Army Medical Museum should be preserved in a sufficient quantity of dilute alcohol. Ordinary proof spirit or common whiskey answers the purpose very well. The quantity should be at least three times the bulk of the specimen. Large specimens, such as diseased livers, &c., have quite frequently been received at the Museum so much decomposed as to be useless, because this precaution had been neglected. Small specimens may be packed for transportation to the Museum in ordinary preserve jars; large ones in carefully-soldered tin cans or small wooden kegs. When such specimens are forwarded by private physicians, the cost of transportation is always borne by the Museum, which also furnishes the jars and alcohol needed for the permanent preservation of specimens.

To avoid disappointment, it is suggested that physicians who may have medical specimens, which they would like preserved at the Museum, should communicate to the officer in charge of the Medical Section a brief memorandum of the nature of the specimen, when they will be informed whether they are desired and how they can best be sent. Specimens which have served as the basis of original communications published in the medical journals have especial interest, and it is suggested that the permanent preservation of such specimens can be better effected by presenting them to the Army Medical Museum than in any other way, and that nowhere else are they likely to be so well taken care of or so accessible for study.

The specimens from the Medical Section, selected for the International Exhibition of 1876, will be found in two cases in room No. 2 of the Hospital of the Medical Department. They are for the most part specimens collected during the war of 1861-5, and serve to illustrate some of the morbid conditions incident to soldiers. The numbers in parentheses are the Catalogue numbers of the specimens.

J. J. WOODWARD,

Assistant Surgeon, U. S. A.,

*In charge of the Medical, Microscopical, and
Comparative Anatomy Sections, Army Medical Museum,*

*and of
The Representation of the Medical Department, U. S. Army,
at the International Exhibition*

MEDICAL SECTION, ARMY MEDICAL MUSEUM.

The first three specimens are tumors from within the cranial cavity. In two of the cases, disturbances of the cerebral functions were observed during life, while in the third, although the tumor attained great size, it produced no symptoms which attracted attention, and the patient continued to do duty as a soldier until attacked by typhoid fever, which proved fatal.

1. (531.) An oval tumor (Müller's cholesteatoma) an inch and a half in diameter, which was attached to the inner surface of the frontal bone three-quarters of an inch above the right orbital plate. It was composed of flattened polygonal cells arranged concentrically in layers, between which lay great numbers of cholesterol plates. Suspended beneath the tumor in the jar is a needle-like splenium of bone, three-quarters of an inch long, which was removed from the lesser wing of the sphenoid bone on the right side, whence it projected upwards, backwards, and outwards. From a soldier of the 16th Indiana Artillery, age 21, who had long suffered from epilepsy, and who died during an epileptic fit. (*Cat. of Med. Sect., 1867, p. 4.*) Contributed by Surgeon W. J. Wolfley, U. S. Vols.

2. (300.) Cerebellum divided in the median line. In its anterior superior part there is an oval sarcomatous tumor the size of a walnut. It was composed of delicate spindle-shaped cells, with numerous large oval vesicles resembling atrophied nerve-cells. From a soldier of the 53d Ohio, age 28, who, one month before death, was attacked with pain in the head, followed by mental disturbance and prostration. (*Cat. of Med. Sect., 1867, p. 4.*) Contributed by Acting Assistant Surgeon H. M. Lilly.

3. (535.) An oval sarcomatous tumor, three inches long by two and a half wide, situated between the posterior lobes of the cerebrum, and attached below to the tentorium and crura cerebelli. It was composed of spindle-shaped nucleated cells, with a scanty matrix. From a soldier of the 2d Massachusetts, who died of typhoid fever, with the usual intestinal lesions. So far as known, no symptoms had been produced by the tumor. (*Cat. of Med. Sect., 1867, p. 4.*) Contributed by Assistant Surgeon R. F. Weir, U. S. A.

In the following case no brain symptoms attracted attention during life:

4. (566.) Portions of brain containing echinococcus cysts. From a soldier of the 133d U. S. Colored, who died of chronic diarrhoea. (*Cat. of Med. Sect., 1867, p. 6.*) Contributed by Acting Assistant Surgeon W. C. Miner.

The next three specimens are illustrations of the extension of the diphtheritic process from the throat to the air passages.

5. (585.) Larynx and trachea lined with diphtheritic membrane. 6. (586.) A portion of the lung of the same patient, showing diphtheritic casts in the branches of the bronchial tubes. From a medical officer who died of diphtheria. (*Cat. of Med. Sec.*, 1867, p. 32.) Contributed by Assistant Surgeon G. M. McGill, U. S. A.

7. (416.) Lower part of nose, with vomer and parts of superior maxillary bones attached; the nasal mucous membrane coated with diphtheritic membrane. The cartilaginous septum is perforated anteriorly by an old ulcer. From a soldier of the 4th Vermont, age 31, in whom diarrhoea supervened upon an amputation of the right leg for shot injury. Diphtheria set in a few days before death, and extended from the throat to the nasal mucous membrane. (*Cat. of Med. Sec.*, 1867, p. 33.) Contributed by Acting Assistant Surgeon G. W. Pay.

The next two specimens illustrate cases of laryngitis. The first terminated fatally by inflammatory closure of the glottis. The second by necrosis of the cricoid cartilage, and the formation of an abscess, which produced suffocation.

8. (652.) Larynx and part of trachea, showing great thickening of the epiglottis, an incision into which discovered it to be infiltrated with pus. From a soldier of the 2d Arkansas Cavalry, age 26, who died of acute laryngitis. (*Cat. of Med. Sec.*, 1867, p. 30.) Contributed by Surgeon Wm. Watson, U. S. Vols.

9. (467.) Larynx and trachea, with enlarged bronchial glands attached. The larynx is laid open in the median line posteriorly; the incision passes through an abscess cavity, in the midst of which the necrosed cricoid cartilage lies free. From a soldier of the 5th Pennsylvania Heavy Artillery, who, while convalescent from chronic diarrhoea, was attacked by (right) pneumonia. Numerous small subcutaneous abscesses succeeded, and fourteen days before death dyspnoea and dysphagia. He died suffocated. Miliary tubercles and intercurrent pneumonia were found in the right lung. (*Cat. of Med. Sec.*, 1867, p. 29.) Contributed by Acting Assistant Surgeon W. C. Mimer.

The following case is a good illustration of empyema:

10. (334.) Right lung, with a portion of the thickened pleura costalis attached. The lung is collapsed to the size of a fist, and coated with a thin layer of lymph. From a soldier of the 14th New York Militia, who died of chronic pleurisy. The right pleural sac contained about a gallon and a half of pus. (*Cat. of Med. Sec.*, 1867, p. 36.) Contributed by Acting Assistant Surgeon Joseph Leidy.

The next case is an unusual example of foreign body in the air-passages.

11. (290.) Lumbrioid worm lying in the larynx, trachea, and right bronchial tube. From a soldier who was choked to death by the worm finding its way into the air-passages. (*Cat. of Med. Sec.*, 1867, p. 33.) Contributed by Acting Assistant Surgeon S. B. Ward.

The next two cases are examples of cardiac disease consecutive to rheumatism.

12. (472.) Portion of heart, showing aortic valves ulcerated and beset with fibrinous deposits; left ventricle greatly thickened. From a soldier of the 5th Massachusetts Battery, in whom the cardiac affection supervened upon articular rheumatism. Anasarca and great dyspnoea preceded death. The lungs were found greatly congested. There was a small quantity of fluid in the right pleural sac, and two ounces of fluid in the pericardium. (*Cat. of Med. Sec.*, 1867, p. 15.) Contributed by Acting Assistant Surgeon O. P. Sweet.

13. (332.) Heart and pericardium, the latter slit open to show its opposing surfaces plastered with pseudo-membranous lymph. From a soldier of the 124th New York, who had suffered six months from rheumatism, and died of pleuro-pneumonia and pericarditis. (*Cat. of Med. Sec.*, 1867, p. 18.) Contributed by Acting Assistant Surgeon G. R. Boyd.

In the next two cases sudden death occurred: In No. 14 from the rupture of a very small aneurism in a young subject; in No. 15 the cause appears to have been the establishment of a fistulous communication between the root of the aorta and the right auricle.

14. (558.) Small aneurism of the aorta, just above the semilunar valves; the sac, which is about the size of a walnut, has ulcerated through into the pulmonary artery and the pericardium. From a soldier of the 1st Maryland Veterans, age 22, who was apparently in good health, and doing guard duty, when he suddenly fell insensible, and expired in a few moments. The pericardium was found distended with blood escaped from the ruptured aneurism. (*Cat. of Med. Sec.*, 1867, p. 21.) Contributed by Assistant Surgeon A. Ansell, 1st Maryland Veterans.

15. (346.) Heart, somewhat hypertrophied, with its aortic valves partly destroyed by an ulceration, which extends deeply into the substance of the heart and communicates by a fistulous orifice with the right auricle. From a soldier of the 8th Ohio, age 27, who died suddenly while under treatment for scrofula. (*Cat. of Med. Sec.*, 1867, p. 16.) Contributed by Assistant Surgeon C. J. Kipp, U. S. Vols.

The following case is an example of very extensive fibrinous heart-clots, formed probably during the death agony. Similar clots attracted much attention during the civil war, and were often erroneously supposed to have been the cause of death.

16. (618.) Heart, containing fibrinous clots in all its cavities; those in the left ventricle are long and ramifying, extending into the aorta and its branches; those in the right ventricle extend in the same way into the pulmonary artery and its branches, but are not so long. From a soldier of the 1st Connecticut Cavalry, age 20, who died of consumption, accompanied by paralysis of the lower extremities. The lungs were tubercular, and contained vomicae; the liver and kidneys fatty; the brain was soft, and the arachnoid somewhat opaque. (*Cat. of Med. Sec.*, 1867, p. 19.) Contributed by Surgeon P. A. Jewett, U. S. Vols.

The next twenty-three specimens are illustrative of the various phases of the typhous process. No. 21 is interesting on account of the degree to which the solitary follicles of the ileum are enlarged. In Nos. 22 and

23, a somewhat similar condition in the ileum is associated with intense catarrh of the colon and luxuriant tumefaction of its solitary follicles. In the case represented by Nos. 24 and 25, the co-existence of malarial poisoning is indicated by the extreme enlargement of the spleen. Nos. 26, 27, and 28 are from cases in which the scorbutic taint complicated the fever; the patches of Peyer are converted into pulsatious sloughs. Nos. 29 and 30 are examples of intestinal perforation. Nos. 32 and 35 exhibit the cicatrices left when typhoid ulcers heal. Nos. 36 and 37 are from a case in which the typhous process co-existed with dysentery, (a frequent complication.)

17, 18, 19. (376, 378, 379.) Successive portions of ileum presenting from above downwards gradual enlargement of Peyer's patches; the thickened patches have abrupt edges, and are in many instances slightly constricted at the base like fat "sossile fungi;" and the summits of some of them are more or less ulcerated; many solitary follicles are also diseased, forming oval elevations similar in character to the thickened Peyer's patches, but smaller in size. From a soldier of the 142d Ohio, who died of typhoid fever. Besides the intestinal lesion, the lungs were engorged, the spleen soft, and the mesenteric glands enlarged. (*Cat. of Med. Sect.*, 1867, pp. 23 and 54.) Contributed by Assistant Surgeon W. Thomson, U. S. A.

20. (188.) A portion of ileum presenting thickening and ulceration of Peyer's patches and some of the solitary follicles. From a soldier who died of fever. (*Cat. of Med. Sect.*, 1867, p. 55.) Contributed by Assistant Surgeon W. A. Bradley, U. S. A.

21. (280.) Portion of ileum with thickened Peyer's patches; its solitary follicles enlarged to polypoid tumors the size of small shot. From a soldier who died in Lincoln Hospital of a fever diagnosed "typhus." (*Cat. of Med. Sect.*, p. 54.) Contributed by Surgeon J. H. Bryant, U. S. Vols.

22. (817.) A portion of ileum with Peyer's patches much thickened and ulcerated. The solitary follicles are enlarged to rounded tumors nearly the size of peas, many of them ulcerated at the apices; the villi are hypertrophied. 23. (821.) A portion of the descending colon, with its solitary follicles enlarged to tumors the size of peas; their apices are ulcerated. From a soldier of the 12th U. S. Infantry, age 25, who died of typhoid fever. The whole colon was in the condition exhibited in the specimen. (*Cat. of Med. Sect.*, 1867, p. 65.) Contributed by Assistant Surgeon W. Thomson, U. S. A.

24. (61.) Portion of ileum with five thickened Peyer's patches, all ulcerated. 25. (62.) Enlarged spleen, nine by five and a half by two and a half inches. From a soldier of the 32d New York, age 24, who died of Chickahominy fever. (*Cat. of Med. Sect.*, 1867, pp. 57 and 97.) Contributed by Acting Assistant Surgeon Joseph Leidy.

26. (90.) Portion of ileum with a sloughing Peyer's patch, remarkable on account of the great size and pulsatious character of its thickening. From a soldier of the 14th New York, in whom the fever supervened upon chronic diarrhoea. The colon was of a dirty slate color, with streaks of inflammation here and there. Pneumonia on the right side. Spleen large and flabby. A number of irregular spots of purpura, from the size of a flea-bite to that of a dime, were observed on the skin, and especially on the thighs. (*Cat. of Med. Sect.*, 1867, pp. 24, 29, and 88.) Contributed by Acting Assistant Surgeon Joseph Leidy.

27. (184.) Portion of ileum presenting a thickened, ulcerated Peyer's patch; the thickening, when fresh, was grumous in consistency, and of a blackish color, tinged with a livid red; its margins were indistinctly defined. From a soldier who died of what the ward physician described as "an obscure disease resembling typhus." The mesenteric glands were large and soft; the lower lobe of the right lung hepatized. (*Cat. of Med. Sect.*, 1867, p. 59.) Contributed by Surgeon T. H. Crosby, U. S. Vols.

28. (468.) Lower portion of ileum, with ileo-cæcal valve and part of cæcum, showing three Peyer's patches converted into pulsatious sloughs; the solitary follicles are enlarged; many of them, especially near valve, ulcerated; these ulcers presenting same character as those of Peyer's patches, but smaller. There are also a number of small sloughing ulcers on the under surface of the valve and in the cæcum. From a soldier who contracted typhoid fever before Petersburg in the fall of 1864. Petechiæ, anæmia, and hæmorrhage from the bowels were prominent symptoms. (*Cat. of Med. Sect.*, 1867, p. 60.) Contributed by Acting Assistant Surgeon W. C. Miner.

29. (371.) Portion of ileum with two large ulcers of Peyer's patches, one of which has perforated. There are also a number of punched-out ulcers corresponding to the solitary follicles, and a pouch-like diverticulum, the mucous membrane of which also presents a number of follicular ulcers. From a soldier of the 5th New York Cavalry, who died of typhoid fever. Notwithstanding the extensive ulceration no diarrhoea occurred until within four days of death. There were five perforations in the ileum and evidences of general peritonitis. (*Cat. of Med. Sect.*, 1867, p. 60.) Contributed by Acting Assistant Surgeon H. M. Dean.

30. (179.) Portion of ileum, taken several feet above the ileo-cæcal valve, with two ulcerated Peyer's patches, which present a peculiar eritriform appearance. Near the bottom of piece is a deep oval ulcer, the long diameter of which is transverse to the gut. At the bottom of this ulcer are two oval perforations a short distance apart. The peritoneal surface of the piece is coated with a thin film of pseudo-membrane; some of the solitary follicles are ulcerated. The small intestines presented several other perforations. The patient had contracted fever before Petersburg, Virginia. (*Cat. of Med. Sect.*, 1867, p. 61.) Contributed by Surgeon W. L. Faxon, U. S. Vols.

31. (510.) A portion of the upper part of the ileum; 32. (511.) from near its middle; 33. (512.) from its lower part, including the ileo-cæcal valve. The pieces show pin-head enlargement of solitary follicles, with adherent shreds of pseudo-membrane. 511 presents a large oval cicatrix, corresponding in situation with a Peyer's patch. The ileum presented a number of such cicatrices. 34. (513.) is a portion of the descending colon, and shows many follicular ulcers, with a few adherent shreds of pseudo-membrane. From a patient who recovered from typhoid fever and subsequently died of chronic diarrhoea. (*Cat. of Med. Sect.*, 1867, p. 63.) Contributed by Acting Assistant Surgeon H. C. May.

35. (489.) Portion of ileum showing typhoid ulcers in various stages of cicatrization; the villi are hypertrophied, especially just around the cicatrices, giving a phloë-like surface to the gut. From a soldier of the 7th New York Cavalry, who died of phthisis, after recovery from typhoid fever. Tubercles were found in both lungs, and a number of large varicose in the left lung. There was a deposit of black pigment at the apex of each of the hypertrophied villi of the small intestine. The colon was cream-colored; its solitary follicles black with pigment. (*Cat. of Med. Sect.*, 1867, pp. 37 and 63.) Contributed by Acting Assistant Surgeon W. C. Miner.

36, 37. (264 and 266.) Two portions of ileum exhibiting large, deep typhoid ulcerations. 38. (267.) Portion of the colon, exhibiting several large ulcers and many smaller ones. 39. (269.) Enlarged mesenteric glands. From a soldier of the 61st Ohio, in whom typhoid fever supervened upon a previously existing dysentery. (*Cat. of Med. Sect.*, 1867, pp. 24 and 68.) Contributed by Acting Assistant Surgeon Joseph Leidy.

The next four specimens are examples of catarrhal inflammation of the small intestines, with enlargement of the solitary glands. This condition was associated, in three of the cases, with catarrhal inflammation of the colon; in case 42 the lesions of diphtheritic dysentery existed in the colon. Simple catarrhal inflammation (of both small and large intestines) was common during the war both as an independent affection—the prominent symptom being diarrhoea—and as a complication of malarial fevers.

40. (97.) Portion of ileum, with enlargement of the solitary follicles and slight thickening of Peyer's patches. From a soldier of the 9th Wisconsin, who died of chronic diarrhoea. The large intestine was streaked and spotted with ash color and dark red on a red ground. Lobular pneumonia existed in the lower lobes of both lungs. (*Cat. of Med. Sect.*, 1867, p. 51.) Contributed by Acting Assistant Surgeon Joseph Leidy.

41. (84.) Portion of ileum, showing slight thickening of Peyer's patches and enlargement of the solitary follicles. From a soldier of the 26th Pennsylvania, age 40, who died of diarrhoea. The mucous membrane of the colon was soft, grayish, with a few streaks of inflammation and a few ecchymosed spots. (*Cat. of Med. Sect.*, 1867, p. 51.) Contributed by Acting Assistant Surgeon Joseph Leidy.

42. (87.) Portion of ileum, with its solitary follicles somewhat enlarged. From a soldier of the 132d Pennsylvania, who died with symptoms supposed to be due to typhoid fever. The mucous membrane of the colon was intensely inflamed, and everywhere covered with a thin layer of white pseudo-membrane. It presented a multitude of ecchymosed spots not larger than flea bites. The skin of the trunk and extremities presented a number of ecchymosed spots. (*Cat. of Med. Sect.*, 1867, p. 51.) Contributed by Acting Assistant Surgeon Joseph Leidy.

43. (107.) Portion of ileum, with solitary follicles enlarged to the size of small shot, and an apparently healthy Peyer's patch. From a soldier of the 20th Michigan, who died of pleuro-pneumonia, consecutive upon chronic diarrhoea. The solitary follicles of the large intestine were also enlarged, and evidences of pleuro-pneumonia existed on both sides. (*Cat. of Med. Sect.*, 1867, pp. 51 and 97.) Contributed by Acting Assistant Surgeon Joseph Leidy.

The next fourteen specimens are examples of follicular ulceration of the colon. In chronic catarrhal inflammation the enlarged solitary follicles of the small intestine long abide as little tumors like those in the foregoing specimens; but those of the colon speedily pass into ulceration, and the follicular ulceration is usually associated with inflammatory

thickening of the submucosa. In such cases tenesmus is sometimes present, sometimes absent; and they are spoken of as dysentery by some surgeons, as diarrhoea by others. Pseudo-membranous inflammation of the mucous surface between the ulcers is apt to supervene in these cases, and this lesion is very generally found when acute dysenteric symptoms precede the fatal termination of a chronic flux. This complication exists in a number of the specimens. Follicular ulcers can generally be distinguished from the ulcers of diphtheritic dysentery by their form; but in the extensive ulcerations found in some chronic cases it is sometimes difficult to be sure which process has produced the destruction of tissue observed. Nos. 53 to 56 are illustrations of this remark.

44. (601.) Lower portion of ileum, with ileo-caecal valve and part of caecum. The solitary follicles of the ileum are enlarged, the caecum is slightly thickened and studded with minute follicular ulcers not much larger than pin-pricks. From a soldier of the 195th Ohio, age 18, who died after suffering from diarrhoea for four or five weeks. Towards the close there were febrile symptoms of a typhoid character. Minute follicular ulcers, like those seen in the caecum, were found throughout the colon. (*Cat. of Med. Sect.*, 1867, p. 63.) Contributed by Acting Assistant Surgeon W. C. Miner.

45. (217.) A portion of descending colon, which is considerably thickened, and presents numerous well-marked follicular ulcers. From a soldier of the 23d New Jersey, who died of chronic diarrhoea contracted in the Army of the Potomac. The small intestine was inflamed in patches, and the glands of Peyer were thickened. The colon was thickened; its mucous membrane softened, and of a greenish-gray color. The ulcers were confined to the descending colon and sigmoid flexure. The lower lobe of the left lung was hepatized. (*Cat. of Med. Sect.*, 1867, p. 71.) Contributed by Assistant Surgeon E. J. Marsh, U. S. A.

46. (438.) Portion of transverse colon, presenting numerous follicular ulcers and slightly fringed with pseudo-membrane. From a soldier of the 6th Ohio Cavalry, who died of chronic diarrhoea. (*Cat. of Med. Sect.*, 1867, p. 71.) Contributed by Surgeon N. B. Moseley, U. S. Vols.

47. (321.) Portion of transverse colon, with thickened mucous membrane and deep follicular ulcers. From a soldier of the 11th Iowa Cavalry, who had suffered from chronic diarrhoea for nine months. The ileum presented evidences of catarrhal inflammation. The colon was throughout in the condition of the specimen. In the lower part of the colon patches of pseudo-membrane adhered to the mucous surface between the ulcers. (*Cat. of Med. Sect.*, 1867, p. 73.) Contributed by Surgeon George F. French, U. S. Vols.

48. (56.) Portion of ascending colon somewhat thickened, with patches of pseudo-membrane adherent to the surface and ulceration of the solitary follicles. From a soldier of the 63d New York, who died of chronic diarrhoea. The lower part of the ileum was affected by pseudo-membranous inflammation, and the colon throughout very much as in the specimen. The lower part of the left lung was affected with pleuro-pneumonia. (*Cat. of Med. Sect.*, 1867, p. 74.) Contributed by Acting Assistant Surgeon Joseph Leidy.

49. (462.) Portion of colon taken near the sigmoid flexure, the mucous membrane thickened, and presenting minute follicular ulcers and pseudo-membranous frosting. From a soldier of the 8th New York Heavy Artillery, who died of chronic diarrhoea. (*Cat. of Med. Sect.*, 1867, p. 75.) Contributed by Acting Assistant Surgeon R. B. Hitz.

50. (222.) Portion of colon, thickened, presenting numerous pseudo-membranous patches and a few follicular ulcers. From a soldier of the 27th New York, who died of chronic diarrhoea. The colon throughout was in the condition shown in the specimen, and the lower lobe of the left lung was hepatized. (*Cat. of Med. Sect.*, 1867, p. 76.) Contributed by Assistant Surgeon E. J. Marsh, U. S. A.

51, 52. (223 and 224.) Two successive portions of colon, with the mucous membrane greatly thickened and covered with a pseudo-membranous layer. In 224 there are many follicular ulcers, which, in three or four patches, have extended into vast crochid excavations, the largest one inch and a half by one inch. From a soldier of the 37th Massachusetts, who died of dysentery supervening on chronic diarrhoea. (*Cat. of Med. Sect.*, 1867, p. 80.) Contributed by Assistant Surgeon E. J. Marsh, U. S. A.

53. (191.) Portion of colon, with many follicular ulcers and a number of large, irregular, burrowing ulcers which invade the muscular coat, some penetrating even to the peritoneum. From a soldier of the 152d New York, age 24, who died of dysentery supervening upon chronic diarrhoea and measles. (*Cat. of Med. Sect.*, 1867, p. 77.) Contributed by Assistant Surgeon W. Thomson, U. S. A.

54. (364.) Portion of ascending; 55. (365.) of transverse, and 56. (366.) descending colon, near the rectum. The mucous membrane is somewhat thickened, and presents numerous excavating ulcers, many of which penetrate to the muscular, and some even to the peritoneal coat. These ulcers appear to have extended by burrowing in the submucous connective tissue; as a consequence, the latter hangs out in more or less extensive shred-like fringes, which are especially remarkable in 366. From a soldier of the 27th New York Battery, who died of chronic diarrhoea contracted in the Army of the Potomac. The Peyer's patches presented the shaven-head appearance, and the neighboring solitary glands were slightly prominent. (*Cat. of Med. Sect.*, 1867, p. 78.) Contributed by Acting Assistant Surgeon D. L. Haight.

57. (63.) Stomach, contracted to a tube about an inch in diameter in its pyloric half, and about two inches in diameter at the largest part of the greater curvature. 58. (64.) A portion of the descending colon considerably thickened, presenting numerous follicular ulcers. From a soldier of the 104th Pennsylvania, who died of chronic diarrhoea. (*Cat. of Med. Sect.*, 1867, pp. 46 and 72.) Contributed by Acting Assistant Surgeon Joseph Leidy.

In the last case the stomach appears to be in a state of extreme contraction from the anemia resulting from chronic diarrhoea. In the next, the colon is in a similar condition from the anemia of hæmorrhage.

59. (458.) Portion of transverse colon very much contracted. From a patient who died of secondary hæmorrhage after amputation of the thigh. (*Cat. of Med. Sect.*, 1867, p. 70.) Contributed by Surgeon Thomas Sims, U. S. A.

The next thirteen specimens are, with one exception, illustrative of the morbid processes of diphtheritic dysentery. The characteristic lesions are pseudo-membranous deposits on the surface of the mucous membrane, involving also the mucosa and submucosa, and giving rise to sloughing, the sloughs invading the tissue of the bowel as deeply as the pseudo-membranous deposit; the resulting ulcers are usually of considerable size. In the case represented by No. 63, an interesting anomaly of the right kidney existed, which is shown in No. 64.

60. (125.) Portion of descending colon, with pseudo-membranous patches and a few ulcers. From a soldier of the 93d Indiana, age 30, who died of dysentery. There were a few tracts of inflammation here and there through the small intestine. The cæcum was inflamed and softened. The transverse and descending colon ulcerated. In the sigmoid flexure and rectum the mucous membrane was almost entirely destroyed by ulceration. (*Cat. of Med. Sect.*, 1867, p. 75.) Contributed by Surgeon George F. French, U. S. A.

61. (135.) Portion of transverse colon, with numerous oval ulcers, which vary in size from that of a three-cent piece to that of a quarter of a dollar. From a soldier of the 95th Ohio, age 25, in whom dysentery supervened upon diarrhoea. An abscess containing twenty ounces of pus was found in the anterior superior part of the right lobe of the liver. The mucous membrane of the ileum was dark red and softened, with patches of livid green. The colon ulcerated, as in the specimen, the ulcers appearing to have resulted from the separation of diphtheritic sloughs. In the cæcum two of them had perforated, giving rise to fecal extravasation and general peritonitis. (*Cat. of Med. Sect.*, 1867, p. 76.) Contributed by Surgeon George F. French, U. S. A.

62. (289.) Portion of colon, with its mucous membrane thickened and coated with pseudo-membrane. There are in the piece several large crochid ulcers, which have destroyed the mucous coat and expose the transverse fibres of the muscular layer. From a soldier of the 168th New York, age 24, who died of dysentery. There were patches of inflammatory congestion in the lower part of the small intestine; the colon throughout as in the specimen. (*Cat. of Med. Sect.*, 1867, p. 77.) Contributed by Assistant Surgeon W. Thomson, U. S. A.

63. (362.) Portion of transverse colon, with numerous superficial ulcers resembling those resulting from the separation of diphtheritic sloughs. 64. (364.) Right kidney converted into a cyst about the size of a small orange, the wall of which is fibrous and about four lines thick; it is connected by a patulous ureter with the urinary bladder. Two renal arteries, the size of crow-quills, proceed from the aorta at the point of its bifurcation, and ramify upon the walls of the cyst. This cyst was situated over the second lumbar vertebra. The left kidney was apparently healthy, but the patient had had albumen in his urine. From a soldier of the 48th Pennsylvania, who died of dysentery, complicated by pleurisy. The left lung was compressed against the vertebral column by a large quantity of greenish-yellow seropurulent fluid. There were a few ulcers in the ileum. The colon was ulcerated throughout. (*Cat. of Med. Sect.*, 1867, pp. 77 and 106.) Contributed by Assistant Surgeon W. F. Norris, U. S. A.

65. (383.) Portion of ascending colon, the mucous membrane of which is thickened, and presents numerous large excavating ulcers occupying a large portion of its surface. Detached shreds of mucous membrane, coated with lymph, hang from the edges of the ulcers. From a soldier of the 24 Battalion Veteran Reserve Corps, who died of dysentery. The colon throughout was in the condition of the specimen. (*Cat. of Med. Sect., 1867, p. 78.*) Contributed by Assistant Surgeon H. Allen, U. S. A.

66. (367.) Portion of the transverse, and 67. (368.) of the descending colon. In both, the mucous membrane is thickened and presents numerous large irregular ulcers, such as result from the separation of diphtheritic sloughs. From a soldier of the 1st Maryland, age 22, who died of dysentery. (*Cat. of Med. Sect., 1867, p. 78.*) Contributed by Surgeon N. R. Mosley, U. S. Vols.

68. (122.) Portion of the transverse, and 69. (123.) of the descending colon, presenting large eroding ulcers which penetrate in 122 to the muscular coat, and several of them in 123 to the peritoneum; the mucous membrane much thickened. From a soldier of the 7th Maine Battery, age 16, who died of dysentery. There was also some ulceration in the lower part of the ileum. (*Cat. of Med. Sect., 1867, p. 78.*) Contributed by Surgeon E. Bentley, U. S. Vols.

70. (849.) Portion of colon, much thickened, with jagged and extensive ulcers, at the edges of which the mucous membrane hangs in shreds; some pseudo-membrane adheres to those portions of mucous membrane which are not destroyed. From a negro, age 50, who died of dysentery in the Freedman's Hospital, Washington. Metastatic foci were found in the right lobe of the liver, and scattered tubercles in both lungs. (*Cat. of Med. Sect., 1867, p. 79.*) Contributed by Assistant Surgeon E. Bentley, U. S. A.

71. (148.) Portion of colon, the surface of which has been extensively eroded by ulceration, leaving, however, numerous little islets of intact mucous membrane, in many of which pin-head ulcers of the solitary follicles can be seen. From a soldier of the 62d New York, who died of diarrhoea, (dysentery?) (*Cat. of Med. Sect., 1867, p. 73.*) Contributed by Acting Assistant Surgeon E. Harbottle.

72. (1280.) Cecum and part of the colon, with diphtheritic sloughs. From a soldier of the 11th U. S. Infantry, who died of dysentery, at Fort Sill, Indian Territory, September 13, 1874. This man was first taken sick with symptoms of acute diarrhoea, which passed into fatal dysentery. In this case the cecum and ascending colon had become adherent to the abdominal walls in the right iliac region, and one of the ulcers in each having perforated, a focal abscess had formed in the abdominal wall, which communicated by one opening with the cecum, by another with the ascending colon. Two other perforations in the colon had led to focal extravasation into the abdominal cavity and general peritonitis. (Specimen received since Catalogue was printed.) Contributed by Acting Assistant Surgeon C. W. Knight.

The next five specimens are from cases of scurvy. The cribriform condition of the aortic valves shown in No. 75 has been supposed to be a characteristic lesion, but this is somewhat doubtful. With these specimens should be considered Nos. 26, 27, and 28, which present the typhoid lesions as modified in scorbutic subjects.

73. (1.) Larynx, posterior third of tongue, half arches, and tonsils; both tonsils the seat of foul, irregular, and gangrenous ulceration. From a patient who died in Marine Hospital, New Orleans, in 1862. One of a number of fatal cases in the same hospital in which gangrenous ulceration of the mouth and throat occurred in debilitated and anemic (scorbutic) men. (*Cat. of Med. Sect., 1867, p. 45.*) Contributed by Acting Assistant Surgeon R. K. Browne.

74. (6.) Anterior half of larynx, with posterior third of tongue attached. Situated on the right side, below the rima glottidis, is a deep phagedenic ulcer, which has dissected between the cricoid and thyroid cartilages. The perichondrium of the cricoid is destroyed, and the cartilage itself, at the bottom of the ulcer, is of bone-like hardness from calcareous deposits. From a soldier who died in the Marine Hospital, New Orleans, in 1862. One of a number of fatal cases in the same hospital in which gangrenous ulceration of the mouth and throat occurred in debilitated and anemic (scorbutic) men. (*Cat. of Med. Sect., 1867, p. 29.*) Contributed by Acting Assistant Surgeon R. K. Browne.

75. (840.) Aortic valves, slightly cribriform at their edges. 76. (838.) A portion of ileum with pin-head enlargement of solitary follicles, and slight thickening of the Peyer's patches. 77. (839.) A portion of the greatly-thickened sigmoid-flexure, with small follicular ulcers. From a man, age 29, who died at Brownsville, Texas, of scorbutic diarrhoea, after about two months' illness. (*Cat. of Med. Sect., 1867, pp. 14 and 65.*) Contributed by Assistant Surgeon Ira Perry, 9th U. S. Colored.

The next three specimens are examples of metastatic foci, quite like those which occur in pyæmia after gunshot wounds, but resulting in these cases from other causes. The point of departure of the metastatic process appears to have been a subcutaneous abscess in No. 78, an ulcerated colon in No. 79, and a collection of pus in the left pleural sac in No. 80.

78. (848.) Upper and middle lobes of right lung, containing numerous metastatic foci. From a freedman who died of pyæmia consecutive to superficial abscess of the right hand, which did not involve either bone, periosteum, or tendons. Metastatic foci were found in both lungs and in the kidneys. (*Cat. of Med. Sect., 1867, p. 35.*) Contributed by Assistant Surgeon E. Bentley, U. S. A.

79. (449.) Section of right lobe of liver, containing numerous metastatic foci, from a quarter to half an inch in diameter. From a soldier of the 24 New York Heavy Artillery, who died of dysentery. Jaundice and bilious vomiting were observed before death. The colon presented extensive diphtheritic ulceration. (*Cat. of Med. Sect., 1867, pp. 80 and 93.*) Contributed by Assistant Surgeon Wm. F. Norris, U. S. A.

80. (325.) Perpendicular section of spleen, which is lobulated, considerably enlarged, and irregularly infiltrated with metastatic masses. When received at the Museum the spleen was so soft as to be easily torn with the finger, of a livid blood-color in part, partly bluish-black; the metastatic foci bright yellow, and consisting entirely of granular matter, in which were embedded the partly disintegrated anatomical elements of normal splenic structure. From a soldier of the 6th Wisconsin,

in whom pain in the side, cough and hectic followed a malarial fever. The left pleural sac contained a pint and a half of purulent fluid; the right, about six ounces of serum. Peyer's patches presented the appearance of "the newly-shaved chin." The solitary glands of the ileum were enlarged, but not ulcerated. The liver was enlarged, and contained a large number of metastatic foci. (*Cat. of Med. Sect.*, 1867, p. 99.) Contributed by Assistant Surgeon G. A. Mursick, U. S. Vols.

The next sixteen specimens are illustrative of tubercular deposits and scrofulous inflammation. These processes were frequently manifested in intense forms among the colored troops and freedmen. Nos. 81 to 85 are a series of specimens from a remarkable case of general tuberculosis, accompanied by scrofulous inflammation of various organs, characterized by bulky cheesy deposits. No. 86 is an illustration of bulky cheesy deposits in the pleural sac of a scrofulous freedman. Nos. 87, 89, 90, and 91 are examples of tubercular ulceration of the bowels. Nos. 88 and 92 of tubercular peritonitis. Nos. 93, 94, and 95 are examples of tubercular deposits in the spleen, and No. 96 of cheesy deposits in the left suprarenal capsule.

81. (510.) Portion of base of cranium, with cervical vertebrae attached. Anteriorly, the carious bodies of the vertebrae have been denuded by an abscess, which communicated through the anterior occipito-atloid space with the base of the brain. Posteriorly, the spinal cord is seen *in situ*. The dura mater spinalis is surrounded externally by a cheesy mass, which is most abundant in the region of the atlas and axis. The basilar process of the occipital bone, the declivity of the sphenoid, and the sella turcica are covered with a cheesy mass, situated for the most part between the bone and the softened dura mater. 82. (511.) The bony bridges and spinous processes of the second, third, and fourth cervical vertebrae, with soft tubercular deposits between the external periosteum and the bone on the right side; some newly formed bone on the left. 83. (512.) Lower part of sternum, with costal cartilages and parts of ribs attached. A cheesy mass involves the substance of the sternum at the attachment of the 5th and 6th right costal cartilages. On the left side there is a similar mass at the junction of the 4th rib with its cartilage. 84. (513.) Urinary bladder with prostate and vesiculae seminales attached, both containing cheesy deposits. The central portion of the prostatic deposit has softened into an abscess, which communicates with the urethra. 85. (544.) Heart, presenting a Cruveilhier's spot about an inch in diameter on the anterior surface of its right ventricle. From a colored recruit, who died after a few months' illness. Besides the extensive lesions exhibited in the specimens, cheesy deposits were found in the lymphatic glands, in the lungs, &c. (*Cat. of Med. Sect.*, 1867, pp. 115, 112, 117.) Contributed by Acting Assistant Surgeon W. C. Miner.

86. (567.) Section of the left side of the thorax. The lung is connected to the walls of the chest by a thick cheesy layer, which also fills the anterior mediastinum. From a freedman, who died in L'Ouverture Hospital, Alexandria, Virginia. The cheesy layer coated the whole of the left lung, and invaded the lower portion and the diaphragm. The heart was pushed to the right, so that its apex was at the left edge of the sternum. The right lung was normal. The spleen contained tubercles about the size of peas. (*Cat. of Med. Sect.*, 1867, p. 40.) Contributed by Acting Assistant Surgeon W. C. Miner.

87. (692.) A portion of ileum, taken at the ileo-caecal valve, with tubercular ulceration of Peyer's patches and of some of the solitary follicles. On the peritoneal surface of the piece, especially opposite the ulcers, are several small tubercles. 88.

(693.) Portion of omentum, in which several tubercles, the size of millet-seed, are embedded. From a consumptive colored woman who died in the Freedman's Hospital, Washington, D. C., and who suffered from diarrhoea and dropsy for some time before death. Both lungs were found tubercular, the left presenting numerous ulcers. There were also tubercles in the liver and spleen, about a pint of serum in each pleural cavity, and four ounces in the pericardium. The abdominal cavity was distended with fluid, and presented evidences of tubercular peritonitis. The ileum presented numerous ulcers, as in the specimen, and ulcers of the solitary follicles were numerous in the caecum and scattered throughout the colon. (*Cat. of Med. Sect.*, 1867, pp. 38, 82, and 88.)

89. (252.) A portion of ileum presenting tubercular ulceration. From a soldier of the 3d Vermont, age 23, who died of tuberculosis and dysentery. The lungs were tubercular. The small intestine presented numerous ulcers similar to that shown in the specimen. For the most part these ulcers had their long diameter transverse to the length of the intestine, and milium tubercles existed on the peritoneal surface opposite to them. The mucous membrane of the colon was thickened, ulcerated, and coated between the ulcers with patches of pseudo-membrane. (*Cat. of Med. Sect.*, 1867, p. 83.) Contributed by Acting Assistant Surgeon Joseph Leidy.

90. (428.) Piece of upper portion of the jejunum, presenting, near its middle, a large ulcer, the long diameter of which is transverse to the length of the intestinal canal. On the peritoneal surface, opposite the ulcer, are a number of small tubercles. 91. (431.) A portion of the caecum, with the vermiform appendix. An irregular, ragged ulceration surrounds the orifice of the appendix, the mucous membrane of which is ulcerated throughout. The caecum presents a number of large, irregular ulcers. From a teamster who died of consumption and diarrhoea. Both lungs were found tubercular. The larynx was ulcerated. Many ulcers, resembling those in the specimen, existed in both small and large intestines. (*Cat. of Med. Sect.*, 1867, pp. 24, 29, and 84.) Contributed by Acting Assistant Surgeon H. M. Dean.

92. (664.) Several knuckles of intestine, beset with numerous thread-like adhesions, and presenting on the peritoneal surfaces of intestines and mesentery a number of tubercles of different sizes. From a soldier of the 27th U. S. Colored, age 21, who died of phthisis. Both lungs were tubercular; the bronchial glands enlarged. The surfaces of all the abdominal viscera were in the condition exhibited in the specimen. (*Cat. of Med. Sect.*, 1867, p. 83.) Contributed by Surgeon E. Bentley, U. S. Vols.

93. (298.) Spleen, with a number of small tubercles just beneath its peritoneal coat. From a soldier of the 142d Pennsylvania, age 29, who died of chronic diarrhoea. There were tubercles in both lungs, and the mucous membrane of the colon was ulcerated. (*Cat. of Med. Sect.*, 1867, pp. 73 and 99.) Contributed by Surgeon E. Bentley, U. S. Vols.

94. (564.) Spleen, laid open by a longitudinal incision, showing in its interior and on its external surface numerous tubercles. From a negro who died of phthisis, accompanied by diarrhoea. Tubercular deposits and cavities were found in the lungs, milium tubercles in the liver, and tubercular ulcers in the intestinal canal. (*Cat. of Med. Sect.*, 1867, p. 99.) Contributed by Acting Assistant Surgeon W. C. Miner.

95. (532.) Spleen, weighing thirteen ounces, containing numerous tubercles the size of hazelnuts. From a soldier of the 8th U. S. Colored, who died of general tuberculosis. Tubercular deposits were found also in the lungs and liver, and the peritoneum was studded with tubercles. (*Cat. of Med. Sect.*, 1867, p. 100.) Contributed by Assistant Surgeon E. D. Beckman, U. S. Vols.

96. (841.) Left suprarenal capsule infiltrated with cheesy masses. From a soldier of the 118th Colored, age 20, who died of scorbutic diarrhoea. The lower lobe of the right lung was hepatized; the mucous membrane of the lower part of the ileum and the colon inflamed but not ulcerated, and scattered tubercles were found in the liver. (*Cat. of Med. Sect.*, 1867, p. 109.) Contributed by Assistant Surgeon Ira Perry, 5th U. S. Colored.

The next five specimens are from a remarkable example of multiple melanotic cancer.

97. (824.) Lobulated melanotic tumor, weighing thirteen ounces, from the left inguinal region. 98. (828.) A portion of the lower lobe of the right lung, presenting a lobulated melanotic mass about the size of a hen's egg at its inferior angle. 99. (829.) Section of liver, presenting several melanotic nodules; the largest were three-fourths of an inch in diameter. 100. (830.) Portion of pancreas, presenting a number of melanotic nodules, the largest about the size of a pea. 101. (831.) Right kidney, the pelvis of which is occupied by a rounded melanotic nodule about an inch and a half in diameter. From a freedman, age 60, in whom numerous other similar deposits were found. The melanotic masses were soft, and composed for the most part of irregular, more or less polygonal cells about one-thousandth of an inch in diameter, containing large oval nuclei and brownish-black pigment granules. (*Cat. of Med. Sect.*, 1867, pp. 25, 41, 95, 97, 108, and 117.) Contributed by Assistant Surgeon E. Bentley, U. S. A.

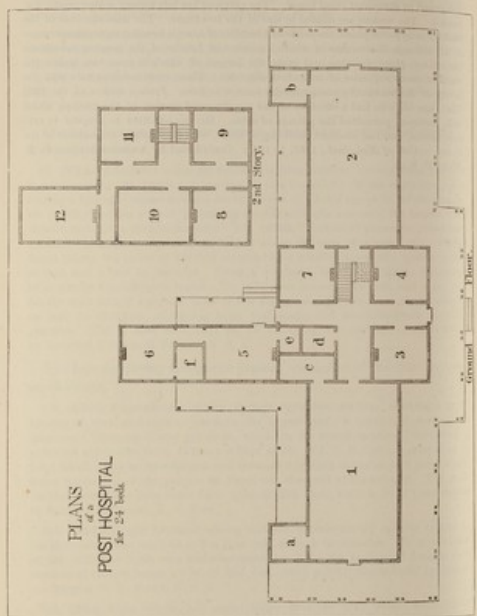
The four remaining specimens present anomalies of the liver, spleen, and kidneys.

102. (639.) Perpendicular section through right lobe of liver, showing a great number of cysts and sinuous passages, the largest nearly a quarter of an inch in diameter. These are dilated gall ducts, which, in the recent specimen, contained a yellowish serum-like fluid. From a soldier of the 23d U. S. Colored, who died of fever which began as intermittent, and assumed a typhoid character as it progressed. Some thickening of the patches of Peyer was observed at the autopsy. The gall-bladder contained a little viscid bile. (*Cat. of Med. Sect.*, 1867, p. 95.) Contributed by Surgeon E. Bentley, U. S. Vols.

103. (534.) Deeply lobulated spleen, with six supernumerary spleens attached; the latter vary from one inch to less than half an inch in diameter. From a soldier of the 146th New York, who died after resection of the hip, performed for gun-shot fracture of the left femur. (*Cat. of Med. Sect.*, 1867, p. 97.) Contributed by Assistant Surgeon W. F. Norris, U. S. A.

104. (259.) Right kidney, laid open; larger than the left; weight twenty-four ounces; filled with cysts, the largest of which attains the size of an English walnut. From a soldier of the 2d Vermont Sharpshooters, who died of chronic diarrhoea. No attention had been drawn to his kidneys during life. The left kidney was in a similar condition, though not so large; it weighed fourteen ounces. (*Cat. of Med. Sect.*, 1867, p. 107.) Contributed by Surgeon J. S. Hildreth, U. S. Vols.

105. (536.) Urinary organs, showing extensive alterations resulting from stricture of the urethra. The pelvis of the right kidney is greatly dilated, and its pyramids encroached upon, so that the kidney forms a multilocular cyst, the walls of which are composed of atrophied renal tissue. The pelvis of the left kidney is also greatly distended. The ureters are dilated to size of the forefinger. The muscular coat of the bladder is hypertrophied, the thickened bundles of muscle forming an areolar arrangement, through the meshes of which a number of hernie of the mucous membrane have taken place, forming oval cysts, the largest of which is over two inches, the smallest about a quarter of an inch in diameter. These cysts communicate with the cavity of the bladder by comparatively narrow orifices. From a soldier of the 123d Ohio, age 43, who had a stricture of the membranous portion of the urethra, which still, however, permitted the passage of urine. He was admitted to hospital in articulo mortis, and had constant dribbling of urine, with involuntary evacuations of the feces. (*Cat. of Med. Sect.*, 1867, p. 109.) Contributed by Assistant Surgeon R. F. Weir, U. S. A.



From Plans of Hospital, Medical Department, U. S. Army. Transcription, Extension of 1875.



International Exhibition of 1876.

HOSPITAL
OF
Medical Department, United States Army.

J. J. WOODWARD,

Assistant Surgeon, U. S. A.,

IN CHARGE OF THE REPRESENTATION OF THE MEDICAL DEPARTMENT, U. S. A.

No. 6.

DESCRIPTION

OF THE

U. S. ARMY MEDICAL TRANSPORT CART,

MODEL of 1876:

BY

D. L. HUNTINGTON, *Assistant Surgeon U. S. A.*

AND

GEORGE A. OTIS, *Assistant Surgeon U. S. A.*

EXHIBITED IN THE YARD.

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DESCRIPTION OF THE U. S. ARMY MEDICAL TRANSPORT CART.

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THE principal means of transport for field medical and hospital supplies employed in the Union armies in the late civil war were the ordinary wagons of the supply trains, ambulance wagons, the medicine wagons of Perot and of Duntun, the regulation army medicine wagons, and panniers designed for transport by pack animals, but usually carried by the most available wheeled vehicles. For the last ten years, field parties of troops engaged in hostile operations against the savages of the Plains, or of the mountainous western region, have carried their medical supplies either in the regulation medicine wagons, drawn by six mules, or in chests or panniers, placed in the ordinary wagons of the supply train. The necessity of some convenient means for the rapid transport of a limited supply of medical and hospital stores, such as might be required in emergencies by a small body of troops, became apparent. Scouting parties and escorts to exploring or surveying expeditions required an outfit of hospital appliances for immediate use, yet could not be encumbered with the large medicine wagons that carried supplies for brigades.

Under these circumstances, recalling that Paragraph 1330 of the Army Regulations permitted the provision of "two-wheeled transport carts for hospital supplies" for small commands,* although the provision had never been carried into effect, the exigencies of the late war having de-

* United States Army Regulations of 1861, with an Appendix, containing the Changes and Laws affecting Army Regulations and Articles of War to June 30, 1862, Washington, 1862, p. 317.

manded more bulky means of transport, the Surgeon General decided to have built an experimental one-horse, two-wheeled, medical transport vehicle, to serve, if it should prove satisfactory, as a model for the construction of others, for issue to troops likely to be engaged in the field. This proposition having been approved by the Secretary of War, the Surgeon General indicated certain indispensable requisites to be observed in regard to the dimensions, weight, and strength of the proposed vehicle, and instructed Assistant Surgeon G. A. Otis, the medical officer on duty with a Board of Officers convened to recommend a pattern of ambulance wagon for army use, to confer with the commandant of Watervliet Arsenal, Brevet Brigadier General P. V. HANSEN, Ordnance Department, and to prepare specifications for such a hospital transport cart. The specifications submitted were as follows:

MEDICAL TRANSPORT CART.

REQUISITES.

1st. To be large enough to carry three (3) boxes for stores, each 18 inches wide, 36 inches long, and 18 inches high.

2d. The weight of the finished cart, with wheels and empty boxes, must not exceed 600 lbs., and have strength of frame sufficient to withstand a load of 800 lbs.

3d. The cart-wheels must be interchangeable with the hind wheels of the new ambulance wagon.

SPECIFICATIONS.

WHEELS. The wheels will be 4 feet 2 inches high (without tires); the hubs (of best elm) 6½ inches in diameter at centre, 5½ inches at butt, and 4½ inches at the point, by 9 inches in length; butt with iron bands on each end mortised for sixteen (16) spokes. Size of mortise 1½ inches by 9-16 inch with a ¼ inch dish. Spokes (best seasoned hickory) 1½ inches by ½ inch (hub tenon) felloe tenon, round ¼ inch in diameter; felloes (best hickory) 1½ inches, two (2) pieces for each wheel; tire (best charcoal iron) 1½ inches wide, by ½ inch thick, fastened on with eight (8) tire-bolts in each wheel; two (2) felloe-plates in each wheel over joints.

AXLE. Of best quality refined iron 1½ inch square for 7 inches from each collar-washer, the remainder rounded. Collar-washer 2½ inches in diameter, ½ inch thick; wheel-boxes of best quality foundry iron, 7½ inches long, 1½ inches in diameter, 7-16 inch thick at butt; 1½ inches in diameter, and 3-16 inch thick at point, with two (2) lugs, 2 inches long, ½ inch high. Oil-chamber, 2 inches long, 1-16 inch deep, to commence 2½ inches from the butt. Weight of box, not less than 4½ lbs. each. Axle to be arranged to track five feet from centre to centre of wheels.

BOXY. Outside length 57½ inches, width 40½ inches, height 8 inches. Inside length 54½ inches, width 38 inches, height 6 inches. Frame, of oak, consisting of two (2) exterior side-sills and two (2) end cross-bars, size 1½ by 2½ inches. Centre cross-bar 2 inches by ½ inch, and two (2) interior cross-bars, at half distance between the centre and the ends, 2 inches by ½ inch; all cross-bars, except the tail-bar, are mortised into the side-sills, and are even with them at bottom; the tail-bar is mortised to receive the sill-tenons. The tenons of the end bars are of one-third thickness; those of the interior bars are of half the thickness. The floor planks will

be ash, ½ inch thick, and level with the top of the side-sills. The upper rails are 1½ inches by 1 inch, and extend over the sides and front, and are vertical. The side panels of the body are of ash, screwed, each side, to six (6) single studs and to a front double corner stud; the front panel of the body, also of ash ½ inch thick, is screwed, in the manner, to three (3) single studs and the double corner studs, to which the sides are attached. These studs are all tenoned into the side-sills and upper rails. The studs are 5 inches long; the single ones ½ inch by 1 inch, and chamfered at their exterior corners between the sill and upper rail. The double corner studs are made from square pieces 1½ by 1½ inches. The sides and front of the body are stayed by upright rods and flat angle-irons about the front corners and the sides, also, by upright and brace-rods at the rear. The ends of the rear cross-bar and the centre-bar project 4½ inches beyond each side to receive lower ends of these braces. The tail-board is framed of ½ inch (panel) boards of ash, screwed to five (5) studs ½ by 1 inch, mortised into a top and bottom rail 1 inch by 1½ inches. The length of tail-board extends even with the exterior of the sides. The tail-board will be hung to the rear cross-bar by three light hinges, to stand even with the end of bar when upright, and will be held closed by means of hooks attached to the sides, and hooking into eyes attached to the irons on the upper rail of the tail-board.

SPRINGS. Two (2) side half-springs, perpendicular to the axle, and clipped beneath it, connected in front by a cross-spring. The side-springs are to be 48 inches long, of English No. 3 oil-tempered steel, of five (5) leaves, 2 inches wide. The cross-spring, of the same number of leaves, of the same width and thickness and 38 inches long, or of sufficient length to connect the side-springs. The eye will be of double thickness, and have eye-bolts 7-16 of an inch. The spread of the springs should be as slight as will keep the body off the axle. The cross-spring will be bolted to an iron cross-piece, which is bolted to the shafts and side-sills. The side-springs will be clipped beneath the axle, by pairs of clips, screwed by nuts, with brass spring-blocks. Behind, the side-springs will be bolted to the sills by iron V-pieces, as may be found most convenient. India-rubber buffers may be interposed over the clips of the side-springs to the axle.

THE SHAFTS are made of ash, 1½ by 2½ inches, separated 22 inches in front, and 30½ inches at the foot-board. They will be somewhat curved, so as to carry the body nearly level, or with a slight inclination downwards at the rear. They are bolted to the body through the front-cross bar and the forward interior bars, being also locked by mortises 1½ inches deep at each bolt. A foot-board 4 feet long 8 inches wide and 1 inch thick, of oak, is bolted to the top of the side-sills, which extend 8 inches in front of the body, to receive the foot-board. The bolts also pass through triangular blocks placed between the foot-board and the sills, and also on the shafts, which give a suitable inclination to the board.

SWINGLE-TREE AND SPLINTER-BAR. The draft is made from the axle by means of two (2) wrought-iron rods ½ inch in diameter, bolted under the foot-board to an oak splinter-bar, to which the swingle-tree is attached. The swingle-tree will conform to that used in the ambulance wagon.

CHESSES. There will be three (3) chests, interchangeable, and consequently of uniform dimensions, viz., 36 inches long, 18 inches wide, 18 inches high. They will be made of half-inch boards of walnut or ash, and firmly framed, and secured against splits or strains by light steel straps and angle braces. The bottoms of the boxes will be covered with sheet zinc, and the tops by cow-hide. The under corners will be supplied with strong castors, and at the middle of each end there will be strong iron folding-handles, which must not project more than half an inch when folded.

down. The chests will open from above by hinged lids, and will be secured, each, by two suitable bolts and locks equidistant from either end.

SLIDE-BOARD. A slide-board, to lower the boxes from the cart to the ground, will be carried on iron loops attached underneath the body, so that when drawn to the rear, to be used as a slide, the hooks at the front end will hold by the rear loops, and when not wanted for use this board will slide back on its loop, and be secured by a thumb-screw.

TARPAULIN. A canvas cover, about 64 by 5 feet, will be provided with eyelets at the four corners, to be secured to suitable adjustable fastenings to the four corner studs.

PAINTING. The cart will be painted of the color and finish of caissons and other ordnance carriages, the iron work black. The letters "U. S.," four inches high, will be painted at the centre of each side panel. Near the front end of each side panel a stencil mark will be placed with the inscription, in small characters, *Transport Cart*
MED. DEPT.

The cart was constructed in accordance with the foregoing specifications, at Watervliet Arsenal, West Troy, under the direction of Brevet Brigadier General P. V. HANSEN, U. S. A., and was delivered at the Surgeon General's Office, in Washington, January 15, 1876, and inspected and approved.

It remained that the three chests, designed to contain respectively surgical instruments and appliances, medicines and hospital stores, mess furniture and utensils, should receive their outfit.

By direction of the Surgeon General, the fitting up and furnishing of the medicine and mess chests belonging to the medical transport cart has been entrusted to Assistant Surgeon D. L. HENTINGTON, U. S. A. In carrying out this work, the endeavor has been made to select from the standard supply table of the Medical Department such medicines, stores, appliances, and utensils as experience has proved to be useful and necessary for the ordinary emergencies of field service, and to arrange them compactly and conveniently.

As the supply table has been strictly conformed to in the preparation of the list for furnishing these chests, it will be possible to refurnish them from the stores usually found at even the more remote frontier posts. Under the circumstances ordinarily attendant upon scouts, expeditions, and marches, it is believed that the quantity and variety of the supply furnished will be abundantly adequate for a force of not less than five hundred troops for a period of three months. The medicine chest has been divided by means of accurately fitting trays into five divisions, the trays subdivided into spaces and compartments for the disposal of medicines, appliances, etc., and so far as possible, these spaces and compartments have been constructed with reference to the average size and form of the original package or article furnished for

the Medical Department, so that the chest may be readily and quickly filled from any dispensary.

MEDICINE CHEST.—The medicine chest is furnished with five trays covered by accurately fitting lids. The trays are of black walnut and are seventeen and a half inches long, sixteen and three-quarter inches wide and vary in depth and in their subdivisions.

All the trays are readily raised by apertures for the fingers cut near the upper edges of the ends and not represented in the cuts.

Tray No. 1 is five inches in depth and is subdivided into three compartments as indicated in the accompanying cut (Fig. 2.) One compartment is intended for stationery, the two others for miscellaneous articles, as enumerated in the subjoined list:

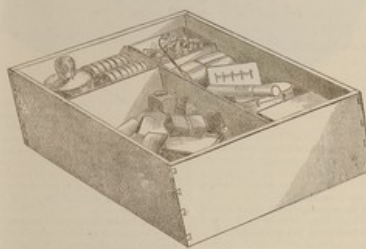


FIG. 2.—Tray No. 1 of Medicine Chest.

COMPARTMENT A contains—
Paper, cap, ruled, Quire 1.
Paper, Quarto-post, ruled, Quire 1.
Paper, note, ruled, Quire 1.
Envelopes, official, large, No. 25.
Envelopes, official, small, No. 25.
Inkstand, traveller's, filled, No. 1.
Pencil, lead, Faber's, No. 2, No. 6.
Pen, Gillott's steel, No. 15.
Penshaken, No. 6.
Ink, carboline, bottles, 1.
Mucilage, bottles, 1.
Elastic rubber hands, doct.'s.
Pocket register for patients, No. 1.

COMPARTMENT B contains—
Pill Tin, 3 by 6, No. 1.
Pouching, No. 1.
Ichthyocolla plaster, in case, yards, 1.
Fountain syringe in case, No. 1.
Assorted corks, box, 1.
Pill boxes, paper, No. 1.
Matches, in tin box, boxes 1.

COMPARTMENT C contains—
Bass Spirit Lamp, with wicking, No. 1.
Hard Rubber piston syringe, No. 1.
Tape measure, No. 1.
Suspensory Bandages, No. 6.
Needle-case, filled, No. 1.
Foil, paper, 1.
Tape, Roll 1.

Tray No. 2, of the same dimensions as tray No. 1, is subdivided into forty-one compartments as indicated in the annexed woodcut (Fig. 3), and is intended for medicines and such pharmaceutical appliances as are necessary to fit out a temporary dispensary for the field.

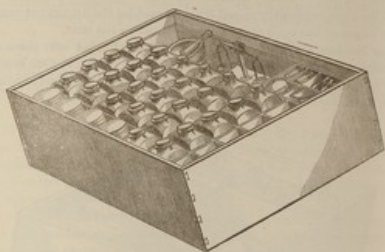


FIG. 3.—Tray No. 2 of Medicine Chest.

THIS TRAY CONTAINS—
 Extractum Hyoscyami, in 1 oz. pots, oz. 2.
 Extractum Conii, in 1 oz. pots, oz. 2.
 Extractum Belladonnae, in 1 oz. pots, oz. 2.
 Soda Bicarbonas, oz. 6.
 Ipecacuanha pulvis, oz. 4.
 Pilula Extracti Colocyth. Comp. (47 } No. 300
 E.L.) et Ipecacuanhae, gr. 100.
 Pilula Cathartica Compositae, No. 600.
 Pilula Opil, No. 300.
 Pilula Opil et Camphorae, No. 300.
 Pulvis Oculi Sulphatis (1 grain each) No. 600.
 Pilula Hydragryi, oz. 6.
 Acidum Tannicum, oz. 4.
 Calomel.
 Acidum Sulcylicum, oz. 4.
 Chloral Hydrate, oz. 4.
 Elix. pulvis, oz. 4.
 Acacia pulvis, oz. 4.
 Gummi Acacia, oz. 4.
 Potassae Permanganas, oz. 4.
 Zinc Sulphas, oz. 2.
 Zinc Oxidum, oz. 4.
 Morphine Sulphas, oz. 5.
 Capri Sulphas, oz. 1.
 Argenti Nitrate, (finest) oz. 1.
 Bismuthi Subnitrate, oz. 4.
 Colloidal, oz. 2.
 Glycyrrha, oz. 4.
 Ferrum Perchloridum, oz. 1.
 Tinctura Castechi, oz. 4.
 Porcelain Table, and Tongs, No. 1.
 Molar Glass, No. 1.
 Hypodermic Syringe, No. 1.
 Prescription Scales and weights in case, No. 1.
 Mortar and pestle, Wadsworth, 3 inch, No. 1.
 Spatula, (large and small,) No. 2.
 Sphygmograph, No. 1.
 Scarificator, No. 1.
 Scissors, No. 1.
 Medicine Glass and Case, No. 1.
 Corkscrew, No. 1.

The small half spaces, represented as unoccupied in the cut (Fig. 3), are left for the convenience of packing any small articles which may be considered of importance.

Tray No. 3 is six inches in depth, the other dimensions are similar to the preceding. The bottles used in both trays are eight, four, and two ounce tincture and saltmouths.

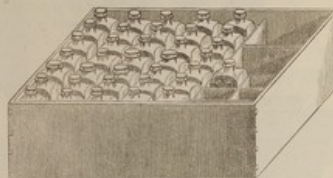


FIG. 4.—Tray No. 3 of Medicine Chest.

Limonatum (as per Standard Supply Table) oz. 2.
 Aqua Ammonia oz. 2.
 Spiritus Aetheris Sarsill, oz. 8.
 Tinctura ferri chloridi, oz. 8.
 Tinctura gentiane fluidum, oz. 8.
 Tinctura Opil, oz. 8.
 Chloroformum, oz. 8.
 Oleum Terebinthinae, oz. 8.
 Tinctura Opil Camphorata, oz. 8.
 Oleum Ricini, oz. 8.
 Spiritus Aromaticus Aromaticus, oz. 8.
 Extractum Zingiberis fluidum, oz. 8.
 Cough Mixture (as per Standard Supply Table) oz. 8.
 Tinctura Aconiti Radicis, oz. 8.
 Potassae Chloras, oz. 2.
 Potassii Iodidum, oz. 8.
 Pulvis Ipecacuanhae et opil, oz. 8.
 Quinine Sulphas, oz. 8.
 Extractum Ergae fluidum, oz. 4.
 Extractum Ipecacuanhae fluidum, oz. 4.
 Spiritus Aetheris Compositus, oz. 4.
 Acidum Carbolicum, crystals, oz. 4.
 Acidum Aceticum, oz. 4.
 Limonatum Camphoratum, oz. 4.
 Acidum Sulphuricum, oz. 4.
 Acidum Nitricum, oz. 4.
 Liqueur Potassae, oz. 4.
 Capping Glasses, No. 6.
 Clinical Thermometer in case, No. 1.
 Urinometer in case, No. 1.
 Spaces for powders.

Tray No. 4, of the same length and breadth as the preceding, and eight inches deep, is not subdivided into compartments, and is designed for an assortment of miscellaneous articles. Its arrangement is represented by a wood cut on the next page (Fig. 5.)

THE TRAY CONTAINS—
 Unguentum Hydragryi, Case 1.
 Ceratum Simplex, Case 1.
 Emulsion Nuclei Vomicae, oz. 1.
 Castile Soap, lb. 1.
 Brown Soap, lb. 1.
 Camellia, Sperm. Bn. 4.
 Camellia, No. 1.
 Nitre, oz. 2.
 Strappings prepared, 2 1/2 lbs. 1.
 Vials, prescription, assorted, doz. 1.
 Trusses, single, No. 5.
 Hard Rubber Springs, 10 oz., No. 1.
 Sponge, fine pieces, doz. 1.
 Perforator, No. 1.
 Towels, doz. 1.
 Muslin, yards 6.
 Red Rubber, yards 1.

For a list of the contents of tray No. 4, see the preceding page.

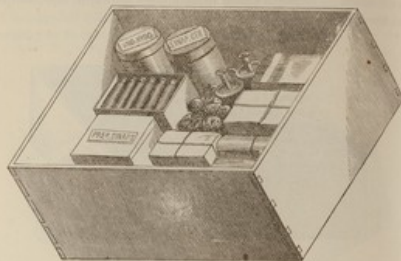


FIG. 5.—Tray No. 4 of Medicine Chest.

Tray No. 5, of the same superficial dimensions as the others and eight inches deep, is devoted to hospital stores.

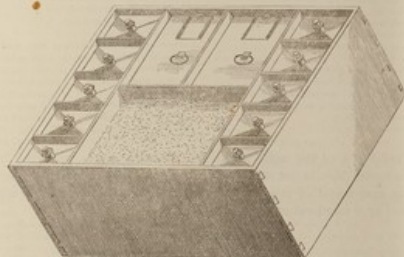


FIG. 6.—Tray No. 5 of Medicine Chest.

THIS TRAY CONTAINS—
Spiritus Vinæ Gallicæ, oz. 16.
Spiritus Frumenti, oz. 24.
Spiritus Rectificatus, oz. 24.
Oleum Olivæ, oz. 12.
Syrupus Scillæ, oz. 12.

One tin can for Magnesia Sulphas.
One tin can for Pulvis Lini.
One tin can for White Sugar.
Two spaces left to be filled at discretion.

MESS CHEST.—The mess chest has been furnished with such utensils as are commonly on hand at every post, and is intended to supply the wants of a temporary field hospital for twelve patients. It has a set of three black walnut trays, each twelve inches wide and sixteen inches long, fitting one above another. The remainder of the chest is left vacant for packing the larger utensils.

Tray No. 1 is four inches in depth and is subdivided as shown in the diagram, (FIG. 7.)



FIG. 7.—Tray No. 1 of Mess Chest.

THIS TRAY CONTAINS—
Knives, table, No. 12.
Knives, carving, No. 1.
Forks, table, No. 12.
Forks, carving, No. 1.
Spoons, table, No. 12.
Spoons, tea, No. 12.

Nutmeg grater, No. 1.
Plates, tin, doz. 1.
Pepper box, No. 1.
Salt box, No. 1.
Tin case for matches, No. 1.

Tray No. 2 of the mess chest is five inches in depth, and, designed for cans and packages of various sizes, is not divided into compartments.

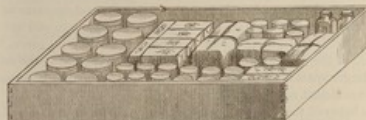


FIG. 8.—Tray No. 2 of Mess Chest.

This tray is intended to be packed with extract of beef in cans or jars, condensed milk in cans, farina in papers, corn-starch in papers, and any other article of nourishment or comfort for the sick which may be regarded as necessary by the medical officer.

Tray No. 3, six inches deep, is divided into compartments and furnished with tin cans, as indicated in the subjoined cut, (Fig. 9.)

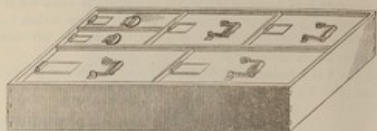


FIG. 9.—Tray No. 3, of Mess Chest.

THIS TRAY CONTAINS EACH OF—

Butter,
Coffee, ground or green,
Pepper,

Salt,

Sugar,

Tea; or for any other articles desired.

The large space in the chest unoccupied by the trays is to be packed with the following articles:

Basin, tin, washhand, No. 1.
Clever, No. 1.
Cups, Britannia, No. 12.
Cups, tin, (1 qt., 1 pt.,) No. 2.
Dippers, assorted, No. 2.
Dishes, tin, No. 6.
Grater, large, No. 1.
Griddle, No. 1.
Kettles, camp, covered, No. 1.
Kettles, tea, iron, No. 1.

Knives, butchers', No. 1.
Ladles, No. 1.
Lanterns, No. 1.
Pans, frying, No. 1.
Pans, sauce, No. 1.
Pots, coffee, tin, No. 2.
Pots, tea, tin, No. 1.
Saws, butchers', No. 1.
Stovepots, No. 1.
Trays, tin, No. 1.

To secure the articles contained in the mess chest against injury by motion, it will be advisable to pack the spaces firmly with oakum, or some yielding and clean material. Oakum is mentioned from the fact that it is nearly always found at posts, is cleanly, and, in cases of emergency, may be taken into use as a surgical dressing, or to pad splints.

In case it is thought advisable to enlarge the list above given, by the addition of the "Norwegian Kitchen," or cooking apparatus, the contents of the larger space may, by a little practice, be so economically disposed as to give sufficient room for it.

It is believed that every thing which can contribute to the well being of the sick men of a small command in the field has been provided in these chests, so far as space would allow.

SURGICAL CHEST.—By direction of the Surgeon General, Assistant Surgeon G. A. OTIS, U. S. A., was charged with the outfit of the surgical chest. The objects held in view were to provide an adequate supply of restoratives, anesthetics, instruments, and appliances for every primary dressing or operation needful and practicable in the field, and to eschew everything superfluous.

This chest contains, in the first place, a set of such carpenter's tools as are requisite for rough and ready work about a field hospital. These are packed in the uppermost of two black walnut trays, of the superficial dimensions of the interior of the chest, as follows:

LIST OF CARPENTER'S TOOLS IN TRAY No. 1.

Hand Saw, (1 rip, 1 cross) No. 2.	Tool Chest (so called) or hollow handle } No. 1.
Key-hole Saw, No. 1.	finned with head-ends, etc.
Hammer, claw, No. 1.	Square, Carpenter's, medium size, No. 1.
Hatchet, with hammer head, No. 1.	Compass, Carpenter's, medium size, No. 1.
Drow Knife, No. 1.	Tacks, papers, assorted sizes, No. 2.
Chisel, 3/4 inch, No. 1.	Bands, medium size, Papers, 1.
Gauge, 1/2 inch, No. 1.	Nails, shingle, 10s. 1; 8 penny, 10s. 2; 10 penny, 10s. 3.
Brace, and complete set of bits, No. 1.	Screw-driver, 8 inch, No. 1.
Wire Filers, 1 round, 1 flat, medium size, No. 2.	Plane, smoothing, short, No. 1.
Forceps, assorted, as used by gas-fitters, No. 3.	File, half round, medium size, No. 1.
Screw or Monkey-wrench, medium size, No. 1.	File, cut-sail, medium size, No. 1.
	Ham, No. 1.

The second or centre tray is furnished with the following articles:

Candles, best sperm, 10s. 2.	Ligature, thread, best linen, 16 in. long, } No. 1.
Flax and tinder, and wool, in tin box, No. 1.	waxed, and put up in papers,
Lamp, alcohol, Mason's patent, in tin } No. 2.	Silk, best sutures, or ligatures, 10s. 2.
heating vessel,	Wire, silver suture, onspool, yds. 10.
Note-paper, commercial, quires, 3.	Whiskey in flask, pint, 1.
Psychometers, No. 2.	1 oz. bottle strong Sugar Ammonia.
Mammocordon paper, block, 1.	1 box of 100 gr. Opium pills.
Pens, steel, No. 10.	1 leather covered 16 oz. flask Chloroform, with a
inkstand, traveller's, No. 1.	shoulder sling.
Roller, bandages, malleo, 1 in. x 1 yd., } No. 3.	Wax, yellow, in paper, 10s. 5.
12; 2 in. x 2 yds., 12; 3 yds. x 3 } yds., 12; 3 in. x 4 yds., 12; 3 yds. x 5 } yds., 12; 4 in. x 4 yds., 6; 4 in. x 5 } yds., 6	Sponges, large, bleached, soft, 10s. 2.
Triangular compresses, large 10, small 20.	Surgeon's sponge, best velvet, medium, assorted
Wire gauge, for splints, yds. 1.	sizes, 10s. 8.
Adhesive plaster, in tin cases, yds. 10.	Splints, wire, anterior, (N. R. Smith's), No. 3.
Ichthyocolla plaster, in tin cases, yds. 4.	Suspensory bandages, No. 6.
Oil silk, yds. 1/2.	(Esophageal tube, No. 1.
List, patent, best flax, in rolls, 10s. 4.	Brushes, for gypsum dressing, No. 2.
	Matches, wax, cans 6.
	Matches, ordinary, package 1.

The third compartment or bottom of the chest is supplied as follows:

Candleticks, No. 2.	Camel's hair brushes, in phial, No. 10.
Plaster of Paris, in tin cans, 10s. 10.	Wax tapers, boxes 2.
Chloroform, in tin can with screw stopper, 10s. 10.	Needles, sewing, assorted, 10.
Simple cerate, in can, 10s. 1.	Cotton thread, spool 3.
Powdered mustard, in can, 10s. 1.	Shavers, for gypsum bandages, No. 1.
Twine, (tinned), 10 oz. finer, 10s. 2.	Brass dressing gun, (army pattern), No. 1.
Jack-knife, stout, with cork-screw, No. 1.	Drainage tubes, No. 6.
Spirits of camphor, 10s. 10.	Napkins, for ophthalmia, 10s. 1.
Elastic catheters, English, assorted, No. 6.	Roller bandages, flannel, (4 in. x 6 yds.), 10s. 1.
Alcohol, 10s. 10.	Towels, 10s. 10.
Bladder's board, for splints, (1/2 in. x 12 in. x 6 in.), 4 in. x 12 in., 6 pieces, 10s. 1.	Oakum, (4 in. x 12 in. to pack closely.)
Wound dressing, (1 in. x 6 yds.), 10s. 1.	Cotton, antiseptic, rolls 2.
Tape, stout linen, yds. 20.	Cotton batting, (3 in. to fill vacant spaces.)
Green silk, for eye shades, yards 1/2.	Steward's pocket case.
	Compass field case.

As the two cases of surgical instruments allowed medical officers as personal sets for capital and minor operations are, necessarily, large and inconvenient for field transportation, Dr. Otis was instructed to select a set that should constitute a *Compact Field Case*, mentioned in the preceding list (†) as part of the contents of the bottom compartment of the Surgical Chest. It has been his endeavor to place in the case such instruments as are necessary for primary operations for traumatic cause, not reducing their size below the best models in order to pack them in a narrow compass, but securing economy of space by careful packing, and, in some cases, by making parts of instruments interchangeable.



TRAY No. 1.

FIG. 10.—Tray of the Compact Field Case fitting over the compartment A, contains: 1 strong cartilage knife, 1 small amputating knife, 1 medium cartilage, 1 medium amputating knife, 1 large cartilage, 1 major amputating knife, 1 straight sharp pointed bistoury, 1 curved sharp pointed bistoury, 1 probe pointed curved bistoury, 1 long straight probe pointed bistoury, 1 noncurved, 1 large scalpel, 1 small and 1 very small knife for dissections and ligatures.

In a few instances, slight modifications, suggested by the experience of the war, have been introduced in well-known patterns of the armamentarium. With the skilful collaboration of Mr. STOHLMANN, of Tiemann & Co., it is believed that the effort to secure compactness, at least, has been remarkably successful. The drawings (Figs. 10, 11, 12) explain the arrangement of the case.



TRAY No. 2.

FIG. 11.—Tray of the Compact Field Case fitting into compartment B, contains: 1 Hey's saw, 1 tension forceps, 1 needle forceps, 1 artery-needle holder with 4 points and 1 key.

Two trays containing knives for amputations, excisions, and dissections, with artery needles and forceps and a Hey's saw, fit into the two

compartments of the case represented in FIGURE 12. The upper compartment, B, contains saws, probes, bullet-extractors, etc. The lower compartment, A, the tourniquet and large resecting instruments.

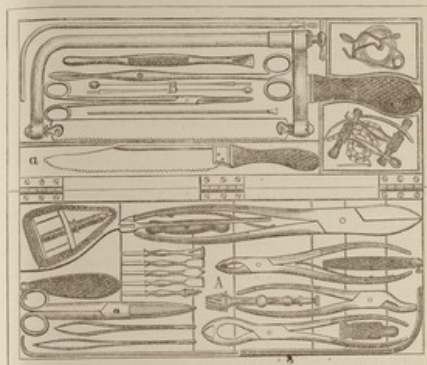


FIG. 12.—COMPACT FIELD CASE. Compartment A contains: 1 tourniquet, 1 large Liston's bone cutter, 1 guaging forceps, 1 resectum forceps, 1 Lane forceps, 1 critical trephine, 1 trephine-brush, 1 German-silver extractor, 1 osteotome, 1 dissecting forceps, 1 artery forceps, 1 silver grooved director, and chain saw conductor, 1 scissor, 1 dissection forceps, 1 artery forceps, 1 silver grooved director. Compartment B contains: 1 major saw with 2 extra narrower blades, 1 movable back saw, 1 English No. 9 gun elastic catheter, 1 elevator, 1 bullet forceps, (model German), 1 bullet forceps, (model Tinsman), 1 long articulated probe or *sonde de poitrine*, with 2 Nelaton or porcelain tips, and 1 horn-headed ball-marker. In lower end tray, 1 chain-saw (model Charrière) with conducting needle; in upper end tray, 1 large screw-driver, 2 coils of annealed iron wire. In tray D, under movable-back case, silk, linen and catgut ligatures, wax, silver suture wire, surgeon's curved needles, aneurysm pins, 3 silver probes.

To save the surgeon's pocket case of instruments, it was thought advisable to add a Stewart's pocket case, (*). This is of sheep's skin, in two folds, and holds a stout pair of scissors, a dissecting forceps, two probes, a spatula, a scalpel and bistoury folding in a shell-handle, a thumb-lancet, and, in a pocket, surgeon's needles, silk, etc.

The triangular compresses mentioned among the contents of the centre tray, are made by dividing diagonally a yard square of unsized muslin. One, in the package, is printed with Esnarch's illustrations of Mayor's system of scarf bandaging. With these compresses are put up

fifty small compresses for primary application to fresh wounds, etc., consisting of a bit of lint and charpie, and a folded scrap of muslin; the whole enveloped in waxed paper.

The several chests were packed under the supervision of Lieutenant Colonel C. SUTHERLAND, Assistant Medical Purveyor, U. S. A. When loaded, the surgical chest weighed 203 pounds; the medical chest, 226 pounds; the mess chest, 173 pounds.

Three folded double colored blankets, of the hospital pattern, are to be strapped on the forward chest, and a rubber blanket to be spread and secured over the entire load. It is intended that the driver may sit on the front box, and experiment shows that in this position he has good control of the reins and as firm a seat as the driver of a caisson. Iron loops or holdfasts have been attached to the forward braces of either panel for greater security.

The cart itself, without a load, weighs 420 pounds. Adding the weight of the three packed chests, or 602 pounds, allowing 50 pounds for the blankets and 148 pounds for the driver, the total weight to be drawn is 1220 pounds. As it is estimated by the best authorities (McAdam and others) that a stout cart-horse 15½ hands high should be equal to the traction of 3200 pounds over ordinary roads at 3 miles an hour, the weight of the entire load is within limits even for long and rapid marches.

Several officers have advised that a detached seat supported by iron stays should be constructed for the driver; but to this it has been objected that such a seat would add to the complexity and expense of the vehicle, and make it more liable to be used for other purposes than that for which it is designed, and, principally, that such an arrangement would necessitate lowering the forward box and thus destroying the uniformity in the dimensions of the chests, which is an important feature in the plan.

This pattern of medical transport cart has not yet been tested in actual service; but the preliminary practical trials that have been made with it indicate that it will prove a convenient and important addition to the army field equipment.



U. S. A. Medical Transport Cart, Model of 1876.

Gibson Brothers, Printers, Washington.

International Exhibition of 1876.
 HOSPITAL
 OF
 Medical Department, United States Army.

J. J. WOODWARD,
Assistant Surgeon, U. S. A.,
 IN CHARGE OF THE REPRESENTATION OF THE MEDICAL DEPARTMENT, U. S. A.

No. 7.
 Description of Selected Specimens
 FROM THE
 SURGICAL SECTION OF THE ARMY MEDICAL MUSEUM
 AT WASHINGTON.

BY
 GEORGE A. OTIS,
Assistant Surgeon, U. S. A., Curator Army Medical Museum.

EXHIBITED IN ROOM NO. 2.

Philadelphia, 1876.

INTERNATIONAL EXHIBITION OF 1876.

HOSPITAL OF THE

Medical Department, United States Army.

DESCRIPTION OF THE

SELECTED SPECIMENS FROM THE SURGICAL SECTION OF THE ARMY MEDICAL MUSEUM.

Is the historical notes on the United States Army Medical Department, compiled by Dr. Harvey E. Brown,* may be found an account of the inception and progress of the collections that constitute the Army Medical Museum, with a copy of Circular No. 2, of May 21, 1862, in which: "As it is proposed to establish in Washington an *Army Medical Museum*, medical officers are directed diligently to collect and to forward to the office of the Surgeon General, all specimens of morbid anatomy, surgical or medical, which may be regarded as valuable; together with projectiles and foreign bodies removed, and such other matters as may prove of interest in the study of military medicine or surgery."..... "The announcement of this project was cordially responded to by medical officers throughout the service."† The "names of many most eminent for zeal and ability in the discharge of their duties under the Government" became identified with the undertaking. It was unnecessary "to stimulate the liberality with which most valuable material was forwarded;" for, on January 10, 1863, Surgeon John H. Brinton, U. S. V., was able to present a printed catalogue,‡ prepared by Assistant

* *The Medical Department of the United States Army from 1775 to 1875*. Compiled under the direction of the Surgeon-General by HARVEY E. BROWN, Assistant Surgeon U. S. Army, Washington, D. C., Surgeon-General's Office, 1875, (p. vii et seq.)

† See the Prefatory chapter to the *Medical and Surgical History of the War of the Rebellion*, by Surgeon-General JOSEPH K. BARNES, United States Army, Washington, 1870, p. 6. The Circular Letter of June 24, 1862, subsequently referred to, is reprinted in these Prefatory observations.

‡ MORGAN, (W.) *Catalogue of the Army Medical Museum*, Surgeon-General's Office, January 1, 1863, Octavo, pp. 58, Washington, Government Printing Office.

Surgeon William Moss, U. S. V., with brief descriptions of "nine hundred and eighty-five surgical specimens, a hundred and six medical, and one hundred and thirty-three missiles;" but, in order to indicate the class of specimens it was especially desired to secure, and to define the proper methods of preparing and transmitting them, an additional circular letter of instructions was issued June 24, 1864.

Soon after the conclusion of the War, it was found that the collections of the Army Medical Museum had so greatly augmented that it became necessary to revise their classification. Instituted originally for the collection and preservation of specimens illustrating the injuries and diseases that produced death or disability during the War, and thus affording materials for precise methods of study of problems regarding the diminution of mortality and alleviation of suffering in armies, the Museum had received many contributions relating to collateral subjects. Many pathological specimens not immediately relating to military medicine or surgery had been donated. Many preparations of human and comparative anatomy had been received. A cabinet of microscopical preparations, in which were many illustrations of original research, had been accumulated. Models and drawings of hospitals, medical and surgical instruments and appliances in great variety, had been forwarded. Numerous objects of ethnological or archaeological interest had been contributed. Therefore the Surgeon General directed the subdivision of the collection in six sections: 1, a surgical section; 2, a medical section; 3, a microscopical section; 4, a section of human anatomy; 5, a section of comparative anatomy; 6, a miscellaneous section. In 1866, quarto printed catalogues were published of the surgical,* medical,† and microscopical sections.‡ An act making appropriations for a descriptive catalogue of the anatomical section, in folio, with plates of the principal types of North American crania, has long been pending before Congress. A preliminary catalogue of the section of comparative anatomy has recently been printed.§ The catalogue of the sixth, or miscellaneous

* *Catalogue of the Surgical Section of the United States Army Medical Museum.* Prepared under the direction of the Surgeon-General U. S. Army by ALFRED A. WOODWARD, Assistant Surgeon and Brevet Major, U. S. Army, Washington, Government Printing Office, 1866. Much of the preliminary work on this catalogue was done by Drs. J. H. BRIDGES, F. SCHAFFNER, MOSS, BULLEN, R. STILES, SPENCER, C. C. LEE, and OTIS, and all the illustrations were made under the direction of the last named.

† *Catalogue of the Medical Section of the United States Army Medical Museum.* Prepared under the direction of the Surgeon-General U. S. Army, by Brevet-Lieutenant-Colonel J. J. WOODWARD, Assistant Surgeon U. S. Army, in charge of the Medical and Microscopical Sections of the Museum, Washington, Government Printing Office, 1866.

‡ *Catalogue of the Microscopical Section of the United States Army Medical Museum.* Prepared under the direction of the Surgeon-General U. S. Army, by Brevet-Major EDWARD COATES, Washington, Government Printing Office, 1866.

§ *List of the Skeletons and Crania in the Section of Comparative Anatomy of the United States Army Medical Museum, for use during the International Exhibition of 1876, in connection with the representation of the Medical Department U. S. Army, Army Medical Museum, Washington, D. C., 1876.*

section, is preserved only in manuscript: for, although there are some objects permanently classified in this subdivision, such as samples or models of hospital and sanitary appliances, instruments, weapons, and the like, a large number of contributions, such as minerals, fossils, stone implements, Indian curiosities, etc., are but temporarily deposited, awaiting exchange with other museums or collections, in return for objects more nearly related to the purposes of the Army Medical Museum.

The Surgical Section, at the close of the war, presented a very complete series of specimens of the immediate and remote effects of lesions of the various tissues by war weapons, and of the results of operations necessitated by such injuries. Moreover, the instruments and appliances included in the *materia chirurgica* were fully represented by samples or by models; and the field hospital service and transport of wounded by land and water was well illustrated. The catalogue of this Section printed in 1866 comprised forty-seven hundred and nine specimens. The dissection, preparation, and mounting of the specimens had been faithfully and skilfully executed by the veteran prosector, Dr. F. SCHAFFNER, who had been engaged in this work from July 1, 1862. It was regretted, that with such affluence of examples of the results of injuries, especially of shot injuries, illustrations of surgical diseases were comparatively few in number, and earnest efforts were made to supply this deficiency, and to have general and special surgical pathology fairly represented in this Section. Partly by purchases, partly by exchanges, partly through the generous contributions of surgeons in civil life, and largely by the zealous co-operation of the officers of the medical staff, a satisfactory advance has been made in this direction. An interesting pathological cabinet, collected chiefly by the labors of Professors MILLER, STONE, and LINCOLN, of the National Medical College, were obtained in exchange for a series of pictures and models suitable for class demonstration, that had been prepared when a project for the establishment of an Army Medical School had been contemplated. The cabinet of the late Dr. WILLIAM GIBSON, of the University of Pennsylvania, comprising over eight hundred specimens, was purchased. Donations of tumors, of diseased bones and joints, of hernia, of aneurisms, and of vesical calculi, in large number, were received from Drs. STEHLING, BONTICOU, EVE, FORWOOD, MASTIN, MAY, WRIGHT, McGUIRE, and many others. From the Soldiers' Home, at Washington, and the several Asylums for Disabled Volunteer Soldiers, some remarkable illustrations of surgical diseases or of the remote effects of injuries were received. The labors of the medical men of the corps, who have rarely neglected to preserve any morbid parts that may be removed, or failed to make necroscopic examinations in fatal cases, provided many valuable contributions.

At the present time, the Section contains sixty-six hundred and four specimens, and the annual increase for the last five years has been very gratifying, both in the number and quality of the contributions. As the extent and nature of the collection has become more generally known to the profession, the circle of contributors has steadily enlarged. The facilities offered by the Museum for the permanent preservation of pathological materials and permanent record of explanatory clinical observations are now widely appreciated. Busy practitioners, who cannot spare time for minute dissections or preparations of morbid growths or diseased tissues, willingly forward to the Museum what they remove by operation or find in their autopsies, with the assurance that the pathological material will be carefully analyzed, and, if of value, prepared and preserved, with a record of the clinical facts communicated. It is only necessary to pack the material suitably for transportation by express, boxed in sawdust and salt, or using hermetically sealed cans, with alcohol, when necessary; the freight charges are defrayed by the Museum, and the specimens accepted are mounted in the best manner, and all data respecting them are placed on record, and are subsequently referred to in the printed catalogues, available for reference by medical men in every land. Moreover, in cases of especial interest, the Museum will return to its contributors photographic prints of their specimens after preparation.

A series of specimens from the Section has been selected for exhibition at the Centennial Exposition at Philadelphia, with the hope that they may not only prove interesting and instructive to pathologists, but may aid in diffusing among practitioners a knowledge of the objects the Army Medical Museum has in view.

GEORGE A. OTIS,

Assistant Surgeon U. S. A.,
Curator Army Medical Museum.

ARMY MEDICAL MUSEUM.

1.—ILLUSTRATIONS OF INJURIES OF THE CRANIUM.

1. (3639.) A calvaria showing the effects of contusion by a shot projectile an inch behind the coronal suture. There is superficial necrosis without, and slight fissure and depression within. The patient survived the injury seventeen days. (See *Cat. 1866*, p. 8; *Med. and Surg. Hist.*, Part I, Vol. II, p. 146.) Donor, Dr. H. Mollen.
2. (1568.) Section of left parietal with fracture of the inner table, from oblique impact of a musket ball on the outer table. Patient died of meningitis after nine days. (See *Circ.* 6, S. G. O., 1865, p. 10, *Cat. 1866*, p. 7, *Med. and Surg. Hist.*, Part I, Vol. II, p. 142.) Contributed by Dr. R. W. Coale.
3. (4194.) A very remarkable exfoliation from the right parietal after shot contusion with depressed fracture of the *tabula vitrea*. The patient recovered, and was pensioned. In 1870, the loss of substance in the skull was reported to be partly replaced by bone, partly by fibro-ligamentous tissue. (See *Cat. 1866*, p. 11, *Med. and Surg. Hist.*, Part I, Vol. II, p. 149.) Donor, Dr. H. M. Bellows.
4. (2121.) Segment of right parietal; one fragment of a conical ball, which split longitudinally upon the bone, was extracted from within the cranial cavity, the other fragment lodged beneath the occipito-frontals. The patient survived the injury thirteen days. (See *Cat. 1866*, p. 14, and *Med. and Surg. Hist.*, Part I, Vol. II, p. 181.) Donor, Surgeon J. Driscoll, 160th Pennsylvania.
5. (3220.) Segment of the calvaria of a quadsom of 21, showing a perforation of the left parietal by a pistol ball at close range. The missile was arrested on the opposite side, after traversing both hemispheres of the cerebrum. The patient survived five days. (See *Cat. 1866*, p. 25, and *Med. and Surg. Hist.*, Part I, Vol. II, p. 318.) Donor, Surgeon E. Bentley, U. S. V.
6. (1108.) Part of cranium, showing a conoidal ball embedded and incrustated between the sphenoid and frontal bones. The aperture of entrance through the right orbit is partly obliterated by osseous depositions. The patient lived 64 days after the injury. No marked cerebral disturbance appeared until the ninth week. (See *Cat. 1866*, p. 28, *Med. and Surg. Hist.*, Part I, Vol. II, p. 205.) Donor, Dr. G. H. Dure.
7. (5116.) Base of a cranium, with a round pistol-ball embedded in the left carotid canal. The specimen was purchased with the Gibson cabinet. It was found in the catacombs of Paris; and, according to tradition, the patient survived the injury many years.
8. (849.) Skull showing fissures of all the cranial bones, resulting from a musket-ball perforation. (See *Cat. 1866*, p. 30.) Donor, Surgeon J. B. Green, U. S. V.
9. (5922.) Skull of a man of 32 years. Fractures resulting from a rifle-musket ball discharged close to the head have implicated all of the cranial bones. Donor, Assistant Surgeon C. Carvallo, U. S. A.
10. (4344.) Segment of the frontal, trephined three weeks after injury on ac-

count of intracranial suppuration, following shot contusion with a depressed fracture of the inner table. The operation afforded no relief, and the patient succumbed the following day. (See *Cat.* 1866, p. 6; *Med. and Surg. Hist.*, Part I, Vol. II, p. 148.) Donor, Dr. R. B. Bontecon.

11. (5021.) Section from os frontis of a man of 33 years. He received a depressed fracture from a blow by a stone in 1842, when twelve years of age. Epilepsy supervened, and he was trephined in 1845 by Dr. Nathan R. Smith. The epilepsy was not alleviated. He became idiotic, and died in 1863. A tough diaphanous sac, composed of horny epithelium, covers the orifice made by the trephine. Donor, Dr. Joseph Borrows. (See *Med. and Surg. Hist.*, Part I, Vol. II, p. 319.)

12. (6600.) Calvaria showing a punctured fracture. The perforation, made by the hammer of a pistol, was not detected during life. Death from cerebritis after three days. Donor, Assistant Surgeon C. K. Winne, U. S. A.

13. (5908.) Cranium of a soldier of the 4th cavalry, killed by Indians near Fort Concho, Texas, September 30, 1870. The iron arrow-head impacted in the left temporal with but slight splintering, produced speedily fatal intracranial hemorrhage. (See *Circular* No. 3, S. G. O., 1871, p. 150.) Donor, Brevet-Major W. M. Notson, Assistant Surgeon U. S. A.

14. (5531.) Cranium of a California Indian, killed by a stone-headed arrow, which is seen penetrating the left malar bone and orbit. The skull was found by Dr. C. Yates, in Alameda county, California, and was contributed to the Smithsonian Institution, and numbered 8196. It was transferred to the Army Medical Museum January 25, 1867.

15. (2179.) Skull-cap exhibiting a bayonet perforation behind the left parietal protuberance, from a soldier who received the injury November 27th, and died December 23, 1863, after suffering from cerebral hernia and extended suppuration of the left hemisphere. (See *Circular* No. 6, S. G. O., 1865, *Cat.* 1866, p. 34; *Med. and Surg. Hist.*, Part I, Vol. II, p. 32.) Donor, Dr. C. J. Klipp.

16. (3307.) Calvaria of a negro boy of 18 years, with four *sabre* cuts of the left parietal, and depressed fractures of both parietals. (See *Med. and Surg. Hist.*, Part I, Vol. II, p. 19.) Donor, Surgeon H. Wardner, U. S. V.

17. (5107.) Cranium showing a *sabre*-cut of the right parietal. The skull, supposed to have been cleft by one of the long, straight swords of the French cuirassiers, was brought from Waterloo in 1813. Purchased with the Gibson collection.

18. (970.) Skull of an Aurocanian Indian killed by Chilian troops. There are nine cleanly-cut sword wounds on the bones of the head and face. Received in exchange from the Smithsonian Institution.

19. (2619.) Segment of the os frontis, showing the repair of a depressed fracture. The date of the injury was unknown. The patient died of typhoid fever, July 2, 1865. (See *Cat.* 1866, p. 10; *Med. and Surg. Hist.*, Part I, Vol. II, p. 165, 319.) Donor, Assistant Surgeon D. C. Peters, U. S. A.

20. (2964.) A wet preparation of a segment of the os frontis, showing the effects of necrosis remotely following shot contusion. (See *Cat.* 1866, p. 10; *Med. and Surg. Hist.*, Part I, Vol. II, p. 165.)

II.—ILLUSTRATIONS OF INJURIES OF THE TRUNK.

1. (2843.) Six dorsal vertebrae, showing a shot fracture of the spinous and transverse processes and lamina of the third vertebra. The ball passed through the left lung, and the patient survived only one day. (*Cat.* 1866, p. 58; *Med. and Surg. Hist.*, Part I, Vol. II, p. 435.) Donor, H. M. Doan.

2. (2762.) Third lumbar vertebra with a conoidal ball and shreds of clothing embedded. The patient died from tetanus after nine days. (*Cat.* 1866, p. 60.) Donor, Dr. G. A. Mursick.

3. (5553.) Spinous process of a lumbar vertebra, with a flint arrow-head encased in it. Discovered in some human remains exhumed by Dr. A. I. Comfort from a tumulus near Fort Wadsworth, Dakota. (See *Circular* No. 3, S. G. O., 1871, p. 163, and Dr. Comfort's paper in the *Annual Report of the Smithsonian Institution* for 1871, Washington, 1873, p. 349.)

4. (5673.) Three vertebrae from a white citizen murdered by Indians near Fort Concho in 1867. An arrow-head is impacted in the right transverse process of the fourth dorsal vertebra. Other arrows penetrated the thorax and abdomen. (See *Circular* No. 3, S. G. O., 1871, p. 153.) Donor, Brevet-Major W. M. Notson, U. S. A.

5. (6528.) Sternum and portions of adjacent ribs and cartilages lacerated by a musket-ball, which opened the mediastinum and exposed the heart to view during life. The patient survived seventeen days. (*Med. and Surg. Hist.*, [second issue,] Part I, Vol. II, p. 535.) Donor, Dr. H. Ludington.

6. (2902.) Fifth lumbar vertebra and sacrum with a musket-ball impacted in the upper left sacral foramen. From a soldier, 23 years old, wounded May 16, 1864, became paraplegic, and died May 15, 1864. (See *Cat.* 1866, p. 227; *Med. and Surg. Hist.*, Part II, Vol. II, p. 248.) Donor, Dr. O. P. Sweet.

7, 8, 9. (4869, '70, '71.) Sternum, heart, and knife. The sternum and heart exhibit incisions through the gladiolus and right auricle, made by the knife. The specimens are from a case of assassination at Fort Dodge, Kansas, June 2, 1867. (See *Med. and Surg. Hist.*, Part I, Vol. II, p. 534, and *Circular* No. 3, S. G. O., 1871, p. 91.) Donor, Assistant Surgeon C. S. DeGraw, U. S. A.

10. (4727.) Portion of the left scapula of a bison transfixed by a Cheyenne arrow-head. The arrow must have perforated the body of the animal, as the point emerges through the dorsum of the scapula. (See *Circular* No. 3, S. G. O., 1871, p. 100.) Presented by Professor Joseph Henry.

11. (4735.) Section of shaft of seventh rib of a buffalo, with an iron arrow-head impacted. (*Ibid.*, and Bryant's *Manual of Surgery*, 1872, p. 469.) Donor, Professor Joseph Henry.

12. (1644.) Left innominatum and longitudinal half of sacrum, from a soldier of 21 years, wounded May 3d and died July 8, 1863. A battered conoidal ball, which perforated the ilium and lodged in the sacrum, is attached. (See *Cat.* 1866, p. 228; *Med. and Surg. Hist.*, Part II, Vol. II, p. 217.) Donor, Acting Assistant Surgeon Carlos Carvallo.

13. (6313.) Left os innominatum showing a shot perforation of the ilium. The patient died from pyæmia. Donor, Dr. R. B. Bontecon.
14. (4130.) Left os innominatum and sacrum perforated by a shell fragment, from a soldier 35 years old, wounded April 6th, died April 28, 1865, from hemorrhage. (*Cat.* 1866, p. 228, and *Med. and Surg. Hist.*, Part II, Vol. II, p. 223.) Donor, Surgeon J. C. McKee, U. S. A.
15. (819.) Round ball impacted near the tuberosity of the right ischium. From case of Private W. L.—, 234 North Carolina, wounded at South Mountain September 12, 1862, died, as supposed, from the effects of chloroform, October 28, 1862. (*See Cat.* 1866, p. 224, *Med. and Surg. Hist.*, Part II, Vol. II, p. 242.) Donor, Dr. R. Davies.
16. (1216.) Conoidal ball impacted in right ischium. Case of Private S. W.—, 234 New Jersey, wounded at Chancellorsville May 3d, died of secondary hemorrhage, May 24, 1863. (*See Cat.* 1866, p. 227, *Med. and Surg. Hist.*, Part II, Vol. II, p. 242.) Donor, Assistant Surgeon W. Thomson, U. S. A.
17. (5256.) Abdominal aorta and branches showing an aneurism of the left common iliac. From a negro man of 30. The aorta was ligated by Dr. H. McGuire, of Richmond, May 30, 1868. The patient survived the operation eleven hours, the temperature never rising above 96° F. in the axilla. (*See Am. Jour. Med. Sci.*, 1868, Vol. LVI, p. 415; *Circular* 3, S. G. O., 1871, p. 239.) Contributed by the operator.
18. (3597.) Aneurismal varix of the left femoral vessels, showing, with the varicose veins and dilated arteries, a portion of the aorta. The iliacs have been successively tied by Acting Assistant Surgeon J. B. Cutter. The patient died September 31, 1864, four days after the ligation of the primitive iliac. (*See Am. Jour. Med. Sci.*, 1864, Vol. XLVIII, p. 36; *Ibid.*, 1865, Vol. I, p. 391; *Cat. Surg. Sect.*, 1866, p. 469; *Med. and Surg. Hist.*, Part II, Vol. II, p. 336.) Donor, Assistant Surgeon J. Theodore Calhoun, U. S. A.
19. (1926.) A portion of the osmentum magnum, in the folds of which is lodged a conoidal bullet which entered the left loin below the twelfth rib, traversed the abdominal muscles to the right side, whence it probably ulcerated through the abdominal wall into the cavity. The patient, a soldier, wounded at Antietam, survived the injury six weeks. (*See Cat.* 1866, p. 490, and *Med. and Surg. Hist.*, Part II, Vol. II, p. 174.) Donor, Dr. W. W. Keen, Jr.

III.—ILLUSTRATIONS OF VESICAL CALCULI, CHIEFLY TRAUMATIC.

1. (5520.) Vesical calculus successfully removed by median lithotomy, two years after a shot penetration of the bladder, from a soldier, aged 42, wounded in front of Petersburg, by Brevet-Colonel A. N. Dougherty, U. S. V., Medical Director of the Second Army Corps. The concretion is reported to have weighed, when extracted, an ounce and twenty-one grains; its present weight is 131 grains, (Troy.) A layer of uric acid immediately surrounds the ball; the outer investments are of triple phosphate.
2. (6203.) Vesical concretion, weighing 580 grains (Troy), consisting of a pistol-ball enveloped in triple phosphates, removed by lateral lithotomy, by Professor H. McGuire, from a man, aged about 40 years, who received an accidental shot penetration of the bladder in 1867, and was successfully operated on in December, 1870. (*See Virginia Clinical Record*, 1871, Vol. I, p. 46; *Med. and Surg. Hist.*, Part II, Vol. II, p. 275; *Virginia Med. Monthly*, 1875, Vol. I, p. 543.) Donated by the operator.

3. (5934.) Vesical calculus having an iron arrow-head as a nucleus. The concretion weighs 857 grains (Troy.) It was successfully removed by lateral lithotomy by Assistant-Surgeon W. H. Forwood, U. S. A., at Fort Sill, August 23, 1862, from Sata-more, a Kiowa chief, aged 42 years, wounded through the right sciatic notch, near Fort Larned, in 1862, in a fight with Pawnees. (*See Circular* No. 3, S. G. O., 1871, p. 260; *Med. and Surg. Hist.*, Part II, Vol. II, p. 276.) Donor, Dr. W. H. Forwood.
4. (6282.) Pistol-ball voided by the urethra, by a soldier of the 2d Artillery, August 19, 1867, a fortnight after the reception of a shot penetration of the bladder in an affray near the Presidio, California. A slight incision with a neustome permitted the expulsion of the ball, arrested in the fossa navicularis. (*See Med. and Surg. Hist.*, Part II, Vol. II, p. 284.) Donor, Assistant Surgeon J. V. Landerdale, U. S. A.
5. (1832.) Hypertrophied prostate gland and bladder, the latter containing ten large uric acid calculi. The bladder, when removed from an aged man, contained over three hundred hemp-seed vesical calculi; the large concretions are shown *in situ*. Donor, Dr. R. K. Stone.
6. (418.) A mulberry calculus, weighing 1191.6 grains, successfully removed by lateral lithotomy, August, 1867, by Dr. N. S. Lincoln, in the case of a man of 50 years. (*Richmond and Louisville Med. Jour.*, 1869, Vol. VII, p. 423.) Contributed by the operator.
- [A specimen of salivary calculus is placed with this series.]
7. (6204.) A salivary calculus, formed about a straw, removed from the right duct of Steno of a horse. Weight, 73.7 grammes. Donor, Professor H. McGuire.

IV.—ILLUSTRATIONS OF INJURIES OF THE UPPER EXTREMITIES.

1. (3161.) Head of left humerus excised on account of penetration by a musket-ball, which is impacted. (*See Cat.* 1866, p. 104; *Med. and Surg. Hist.*, Part II, Vol. II, p. 573.)
2. (6599.) Head of left humerus, excised for impacted shot fracture, in the case of a soldier of the 9th Minnesota, wounded at Nashville, December 15, 1864. (*Med. and Surg. Hist.*, Part II, Vol. II, p. 531.) Donor, Dr. A. T. Bartlett.
3. (4343.) A segment of the head of the right humerus shattered by shot and secondarily excised, with a good result, showing that such partial excisions are not invariably disadvantageous. (*See Cat.* 1866, p. 97, *Med. and Surg. Hist.*, Part II, Vol. II, p. 527.) Donor, Surgeon R. B. Bontecon, U. S. V.
4. (1118.) Upper extremity of right humerus, shattered by a ball and excised intermedially by Assistant Surgeon C. A. McCall, U. S. A. Case of Private E. H. Woods, 6th Maine, wounded at Chancellorsville May 3, 1863. He was fitted with an apparatus by Dr. E. D. Hudson, who reported, in 1865, that the diaphysis had been partially reproduced. (*See Cat.* 1866, p. 109, *Med. and Surg. Hist.*, Part II, Vol. II, p. 580.) Contributed by the operator.

5. (5657.) Portions of the right humerus, including the head and greater part of the shaft, excised at different periods for caries following perforation by a conoidal ball, about three inches below the shoulder. The first operation was performed eighteen and a half months after the injury, by Dr. E. Andrews, late surgeon 1st Illinois Artillery, and the other specimens sixteen and eighteen months later, by the donor. The remainder of the humerus has been removed since. The subject was a pensioner, and died ten years and nine months after the original injury. (See *Med. and Surg. Hist.*, Part II, Vol. II, p. 594; *Chicago Med. Journal*, 1871, Vol. XXVIII, p. 326.) Donor, Dr. C. M. Clark, late surgeon 39th Illinois.
6. (5341.) The left elbow joint, excised by Surgeon I. Moses, U. S. V., for a shot fracture of the inner condyle of the humerus. The patient recovered and was pensioned. (See *Cat.* 1866, p. 161, *Med. and Surg. Hist.*, Part II, Vol. II, p. 890.) Contributed by the operator.
7. (4249.) The tip of the olecranon and three inches of the lower extremity of the left humerus, successfully excised by Assistant Surgeon A. W. Campbell, 11th New York Cavalry, for compound fracture caused by a fall from a horse. (See *Cat.* 1866, p. 159.) Donor, Dr. M. D. Benedict.
8. (6461.) The lower third of the left humerus and the upper thirds of the ulna, showing an ununited fracture in the upper third of the ulna, about two inches below the elbow joint. This specimen was purchased with the Gibson cabinet.
9. (6443.) An ulna, the diaphysis and epiphyses necrosed throughout, excised from a negro fifty years of age, July 14, 1874. Contributed by the operator, Dr. N. S. Lincoln.
10. (6588.) A wet preparation of a dissection of the right forearm, from a man of 50 years, who died at Fort Sill November 13, 1875. An ununited fracture was known to have existed for more than five years. The ununited extremities of the radius and ulna are rounded off, and the expanded muscular fasciculi form a pseudo-capsule. The forearm was quite serviceable during life. Donor, Surgeon F. L. Town, U. S. A.
11. (5311.) The right radius, showing a simple consolidated fracture with slight angular displacement, without shortening. This specimen, which is more than two hundred years old, was picked up upon an ancient battlefield on Oaks, Sandwich Islands. (*Cat.* 1866, p. 194.) Donor, Assistant Surgeon W. R. DeWitt, Jr., U. S. V.
12. (5251.) A remarkable instance of reproduction of the metacarpal and phalangeal bones after necrosis. The clinical history is unknown. Purchased with the Gibson cabinet.

V.—ILLUSTRATIONS OF INJURIES OF THE LOWER EXTREMITIES.

1. (5691.) Upper portion of the right femur, fractured in the upper third by a conoidal ball. From a soldier of the 7th Infantry, aged 23, wounded May 6, 1870. A fissure extends into the hip-joint. Loose fragments of bone were removed. The patient succumbed on the third day after the injury. (See *Circ.* 3, 1871, p. 70.) Contributed by Assistant Surgeon J. Basil Girard, U. S. A.

2. (86.) The upper third of the right femur, fractured by a conoidal ball, which entered from the front and perforated the bone at the base of the neck, lodging in the great trochanter, and producing a longitudinal fracture extending to the articulation and reaching six inches down the shaft. The patient died twelve days after the injury. (See *Cat.* 1866, p. 236, and *Circ.* No. 2, S. G. O., 1869, p. 81.) Donor, Dr. J. P. Arthur.
3. (3520.) The upper fifth of the right femur, sawn longitudinally, showing a penetrating fracture of the neck by a pistol ball, which lodged, exposing its surface just within the capsule. The injury resulted in suppurative destruction of the joint. The patient survived the injury two months. (See *Cat.* 1866, p. 235, and *Circ.* No. 2, S. G. O., 1869, p. 114.) Donor, Assistant Surgeon W. Thomson, U. S. A.
4. (5518.) A portion of the right os innominatum and the upper fourth of the femur, showing chronic traumatic arthritis of the hip-joint following a gunshot injury. The patient died of morbus Brightii seven years after being wounded. (See *Circ.* No. 2, S. G. O., 1869, p. 55.) Donor, Assistant Surgeon J. H. Janeway, U. S. A.
5. (5920.) The right os innominatum and part of femur, supposed to present an intra-capsular fracture of the neck of the femur. This specimen was found in a dissecting-room at Omaha Barracks, Nebraska. Donor, Assistant Surgeon F. McClain, U. S. A.
6. (128.) The upper fourth of the right femur, showing deformity of the neck from chronic arthritis. The specimen has been thought to simulate consolidated intra-capsular fracture. (See *Cat.* 1866, p. 312.) Donor, Assistant Surgeon B. E. Fryer, U. S. A.
7. (6596.) The right femur, showing an ununited shot fracture in the upper third. The patient recovered from this injury, which was inflicted September 19, 1864; but while at the National Home for Disabled Volunteer Soldiers, at Hampton, Virginia, in February, 1876, he fell upon his disabled thigh, and extensive inflammation and suppuration resulted, and caused death in a few days. Donor, Dr. W. M. Wright, surgeon in charge.
- 8, 9. (3881-'82.) Specimens representing ununited shot fractures in both thigh-bones. The right femur ununited, two inches shortened, after fracture in the upper third. The left with two and a half inches shortening and angular deformity. The patient survived these injuries seven months and thirteen days. (*Cat.* 1866, pp. 265, 279.) Donor, Acting Assistant Surgeon G. M. Paulin.
10. (3394.) Upper portion of the left femur, badly comminuted by shot below the trochanters and united with displacement and profuse deposit of callus. A number of large fragments preserved their life, to connect the broken shaft. From a soldier in a Nashville hospital. (*Cat.* 1866, p. 281.) Donor, Assistant Surgeon C. C. Byrne, U. S. A.
11. (6571.) The right femur, fractured in the upper third by a rifle ball. Three or four fragments of bone were removed by Dr. McClelland, of Denver. The patient survived the injury thirteen years, an almost constant patient discharge continuing during this period. Donor, Assistant Surgeon J. H. Patzki, U. S. A.

12. (4201.) Upper half of the left femur contused by shot at the junction of the upper thirds. An exfoliation at the seat of injury is nearly separated; the posterior surface is eroded. The patient, a soldier of the 191st Pennsylvania, aged 39 years, survived the injury forty-seven days. (Cat. 1866, p. 258.) Donor, Assistant Surgeon W. F. Norris, U. S. A.

13. (3540.) Upper third of the left femur, longitudinally bisected, with an impacted pistol ball in the base of the neck. The patient survived the injury seventy-two days. (Cat. 1866, p. 260, Circular 2, 1869, p. 71.) Donor, Assistant Surgeon W. Thomson, U. S. A.

14. (1907.) The left femur comminuted in the centre of the shaft by a conical ball, which previously passed through the right thigh, and is attached to the specimen much flattened. The patient survived the injury sixteen days. (Cat. 1866, p. 267; Circular 6, S. G. O., 1865, p. 33.) Donor, Acting Assistant Surgeon J. Cass.

15. (4354.) The left femur, firmly united, with an inch shortening and slight lateral deformity, after a fracture in the middle third by a conoidal ball. The large fragments that were split off occupy the place of splints held by the callus. The point of fracture shows portions of dead bone not yet thrown off. The patient, Private J. W., 21st Georgia, aged 38, wounded at Fort Steadman March 23, 1865, survived the injury one hundred and eighty-two days. Dr. G. K. Smith, who treated the case at Armory Square Hospital, regarded it as an example of recovery, and the patient was photographed five months after injury at the Museum. (Surg. Series of Phot., S. G. O., Vol. II, p. 42; see also Cat. 1866, p. 270.) Donor, Assistant Surgeon W. F. Norris, U. S. A.

16. (2182.) The left femur, fractured at the junction of the middle and lower thirds by a conical ball. The displaced fractured ends of the shaft have been connected by arches of callus. From a soldier of a Kentucky regiment, who survived the injury forty-nine days. (Cat. 1866, p. 270.) Donor, Acting Assistant Surgeon R. T. Higgins.

17. (5484.) Two femurs, the right showing consolidated simple fracture; its fellow is mounted with it to show the extent of shortening. This specimen was found with a number of skeletons, believed to belong to a prehistoric race allied to the Esquimaux, in a tumulus near Fort Wadsworth, Dakota, explored by the donor, Dr. A. I. Comfort. (See Report of Smithsonian Institution, 1871, p. 389.)

[Many illustrations of consolidated fractures of the femur after shot injury will be found in the volumes of surgical photographs sent to the International Exhibition at Philadelphia. The preparations of this class are for the most part so fragile that it is inexpedient to expose them to the hazards of transportation.]

[The next four specimens illustrate excisions at the Hip.]

18. (3375.) Upper portion of the right femur, successfully excised by Assistant Surgeon G. A. Marsick, U. S. V., for shot comminution, in the case of Private H. Wright, 8th New Jersey, aged 28, wounded at the Wilderness May 24th, excised May 27, 1864. The patient recovered, and walks without assistance or noticeable lameness. (Circ. 6, S. G. O., 1865, p. 68. New York Med. Jour., 1865, Vol. I, p. 424. Cat. 1866, p. 246. Circ. 2, 1869, p. 41.) Contributed by the operator.

19. (5499.) The head and upper portion of the shaft of the right femur, excised for fracture by a musket ball, by Professor C. R. Gibson, in the case of a soldier of the 61st Virginia regiment, wounded at the Wilderness May 6, 1864. The patient survived the operation four days. (See Circ. No. 2, S. G. O., 1869, p. 27.) Donor, Dr. W. F. Richardson.

20. (5576.) Carious head of left femur with a musket ball impacted, excised August 14, 1868, ten months after injury, in the case of Private C. F. Reed, 37th Infantry, aged 21. He made an excellent recovery, and walks with only a slight limp. (See Circ. No. 2, 1869, p. 117, and Circ. No. 3, 1871, p. 228, S. G. O.) Assistant Surgeon J. R. Gibson, U. S. A.

21. (5658.) The head, neck, and portion of the shaft of the left femur, shattered by a musket ball December, 1863, near Fort Laramie, and excised the following day by Assistant Surgeon F. Meacham, U. S. A. The patient, a soldier of the 4th Infantry, aged 48, recovered and was discharged. (See Circ. No. 3, S. G. O., 1871, p. 230.) He afterwards entered Soldiers' Home, became insane, and died at the Government Insane Asylum November 7, 1871.

[The four following preparations illustrate amputations at the Hip.]

22. (4237.) Upper two-thirds of the right femur, amputated at the hip-joint by Surgeon E. Griswold, U. S. V., April 12, 1865, for an oblique shot fracture at the base of the great trochanter, with a complete longitudinal fracture extending eight inches down the shaft, in the case of a soldier of the 24 New York Mounted Rifles, aged 17, wounded March 31, 1865. The patient survived the operation less than an hour. (Circ. 6, 1865, pp. 50 and 72; Cat. 1866, p. 248; Circ. 7, 1867, p. 39.) Donor, Surgeon E. Griswold, U. S. V.

23. (4286.) The left femur amputated at the hip-joint by Surgeon E. Bentley, U. S. V., for complications resulting from an imperfectly united shot fracture at the junction of the upper thirds, in the case of Private G. W. L., 6th Maryland, aged 30, wounded May 5, 1864, and amputated October 12, 1865. The patient recovered and was pensioned. (Cat. 1866, p. 248; Circ. 7, 1867, p. 42.) Donor, Surgeon E. Bentley, U. S. V.

24. (5684.) The upper portion of the left femur excised on account of osteomyelitis nearly six years after primary amputation of the leg, and consecutive amputation through the condyles, in the case of a soldier of the 4th Artillery, aged 28. The patient recovered, and is now (June, 1876) in good health. (See Circ. No. 3, S. G. O., 1871, p. 215; Am. Jour. Med. Sci., 1871, Vol. LXI, p. 141.) Donor, Assistant Surgeon G. A. Otis, U. S. A.

25. (252, 4954, 5946.) Private W. C., 7th New Hampshire, was wounded at Petersburg July 30, 1864, and amputated primarily. Osteomyelitis ensued, and, November 29, 1864, Assistant Surgeon W. Thomson, U. S. A., extracted the cylindrical sequestrum, (Spec., 252,) and on June 6, 1866, resected several inches of the shaft, affected with osteoporosis, (Spec., 4954.) The patient was discharged October 15, 1866, the stump still in a diseased condition. On October 15, 1871, Dr. N. S. Lincoln excised the remaining portion of the femur, by an incision on the outer aspect of the thigh, without implicating the important blood-vessels. The patient recovered and was pensioned, and entered the National Military Asylum at Hampton. He died while on furlough at Queenstown, Ireland, January 1, 1874.

[The next series illustrates primary or ulterior lesions in the shaft of the femur, amputated for shot injury.]

26. (4120.) The lower half of the right femur, amputated primarily by Surgeon D. S. Hays, 110th Pennsylvania, for a severe shot comminution by a conoidal ball, which has flattened in a mushroom shape against the anterior surface of the lower third. The patient, a soldier of the 73d New York, aged 46 years, wounded September 11, 1864, recovered and was pensioned. (Cat. 1896, p. 256.) Contributed by the operator.

27. (4143.) The lower half of the right femur, amputated for a transverse shot fracture in the middle third by a conical ball, which is attached, flattened. A very small portion of the laminated structure is wanting at the point of impact on the outer surface, and directly opposite a longitudinal fissure extends into both fragments. (Cat. 1896, p. 225.) Donor, Surgeon C. S. Wood, 69th New York.

28. (340.) Lower half of the right femur, amputated a fortnight after shot fracture in the middle third, by Assistant Surgeon J. S. Billings, U. S. A. The patient, a soldier, wounded at Williamsburg May 5, 1862, recovered. (Cat. 1896, p. 285.) Contributed by the operator.

29. (3875.) Portion of the left femur, amputated one month after injury in the upper third, by Assistant Surgeon R. F. Weir, U. S. A., for shot comminution in the middle third with a very oblique fracture. The patient, Private J. F.—, 1st N. Y. Cavalry, aged 21, was wounded July 7, 1865, and died twelve days after the operation. (Cat. 1896, p. 289.) Donor, Acting Assistant Surgeon J. H. Bartholf.

30. (4067.) Greater portion of the shaft of the right femur, amputated in the upper third nine days after injury, by Surgeon N. R. Mowley, U. S. V., for a shot fracture in the middle third, with extensive longitudinal fissures, by a conical ball, which is attached, flattened. The patient, a soldier of the 138th Pennsylvania, aged 29, survived the operation six days. (Cat. 1896, p. 288.) Contributed by the operator.

31. (2039.) Lower half of the left femur, amputated five days after injury, by Surgeon J. Aiken, 71st Pennsylvania, for a shot comminution in the middle third by a conical ball, which is attached. The patient, Private P. M.—, 39th N. Y., wounded February 6, 1864, is a pensioner. (Cat. 1896, p. 256.) Contributed by the operator.

32. (3518.) A post-mortem specimen, excised from the stump of the left femur, after a primary amputation above the knee for shot injury, by Assistant Surgeon J. C. McKee, U. S. A. Private T. T.—, 12th Georgia, aged 29, wounded near Washington, and amputated two days after injury, survived the operation about six months. The tubular sequestrum, enclosed in a bulky involucrum, shows in an exaggerated form the alterations in bones protruding from stumps. (Cat. 1896, p. 310.) Donor, Acting Assistant Surgeon H. M. Dean.

33. (5346.) Lower half of right femur, exhibiting an osteoplastic operation by Assistant Surgeon J. W. S. Gouley, U. S. A., for a shot fracture of the femur involving the knee-joint, in the case of a soldier of the 5th New Hampshire, aged 29, wounded at Fredericksburg December 13, 1862. Amputated in the middle third by Surgeon J. P. Prince, 30th Massachusetts, three days subsequently, for hemorrhage from the popliteal. The patient survived the last operation twelve days. (Cat. 1896, p. 293; Boston Med. and Surg. Journ., Vol. 68, p. 69.) Donor, Surgeon J. P. Prince, 30th Massachusetts.

34. (406.) Lower third of the left femur of a soldier of Morgan's partisan cavalry, amputated by Dr. V. B. Thornton, for a partial fracture by a conoidal ball, which is embedded just above the patella. The patient recovered. (Cat. 1896, p. 283.) Donor, Acting Assistant Surgeon F. Schaffert.

35. (576.) The lower third of the right femur, amputated for inflammation of the knee, following a partial fracture from a spherical iron ball, which is lodged in the anterior face of the outer condyle. (Cat. 1896, p. 332.) Donor, Dr. G. Welles.

36. (319.) The lower third of the right femur, amputated six days after injury for perforation above the condyles by a round ball, in the case of a soldier of the 25th Ohio, who died forty-five days after the operation. (Cat. 1896, p. 353.) Contributed by the operator, Surgeon J. E. Summers, U. S. A.

[The next two specimens are of amputations remotely after consolidated shot fractures.]

37. (4914.) Lower half of left femur, showing a consolidated fracture in the lower third. From a soldier, 24 years of age, of the 27th Indiana, wounded at Antietam, September 17, 1862, and discharged as cured December 7, 1863. Frequent detachments of osteophyte and necrosed bits of bone kept up a perpetual suppuration, and the pensioner asked to have his limb removed. It was amputated November 11, 1867, five years after injury, by Dr. D. W. Bliss, and rapid recovery ensued. (Ore. No. 3, S. G. O., 1871, p. 205.) Contributed by the operator.

38. (5558.) Lower three-fifths of right femur, showing a consolidated shot fracture in the middle third, with a fragment of ball impacted in the callus. Private J. M. J.—, 21st Indiana, aged 29, was wounded at Baton Rouge August 3, 1862, treated conservatively, and discharged August 15, 1862. Although the fracture had united with great deformity, there was such constant suffering from exfoliations, abscess formations, and burrowing of pus, that the pensioner demanded the removal of the limb. Amputation just above the seat of injury was practised by Dr. D. W. Bliss.

[Several succeeding specimens illustrate diseased stumps, particularly osteomyelitis and the necrosed sequestra frequently found after amputation.]

39. (2692.) An involucrum of three inches and a tubular sequestrum of seven inches in length, extracted from a stump of the right femur three months after amputation in the lower third, in the case of a soldier of the 4th Pennsylvania Cavalry, aged 24, wounded at Upperville June 21, 1863, and amputated twelve days subsequently by Assistant Surgeon F. C. Davis, U. S. A. (Cat. 1896, p. 309.) Dr. C. B. King resected the diseased stump, and presented the specimen.

40. (2232.) A heavy tubular sequestrum, nearly five inches in length removed from the stump of the left femur by Surgeon B. A. Vanderkief, U. S. V., six months after amputation at the junction of the upper thirds for a shell fracture of the middle third. The patient, Private J. F.—, 15th Massachusetts, aged 35, was wounded October 14, and amputated October 26, 1863, and the sequestrum was removed April 1, 1864. (Cat. 1896, p. 306.) Donor, Surgeon W. S. Ely, U. S. V.

41. (107.) A cylindrical sequestrum two and a half inches long from a stump of the left femur, amputated in the middle third for shot comminution of the lower third (Spec. 3734, *Surg. Sect. A. M. M.*) by Acting Assistant Surgeon E. G. Waters. The patient, Sergeant E. U—, 15th New Jersey, was wounded October 19, 1864, at Cedar Creek, and amputated November 14, 1864. March 8, 1865, the sequestrum was removed by Acting Assistant Surgeon B. R. Miles. Exarticulation at the hip was successfully performed by Dr. T. G. Morton, February 17, 1866. (See *Circ.* 7, S. G. O., 1867, p. 51; *Cat.* 1866, p. 305; *Am. Jour. Med. Sci.*, 1866, Vol. LII, p. 17.) Donor, Dr. B. R. Miles.

42. (4281.) A sequestrum of eight inches, removed from the stump of the left femur three months after primary amputation for shot injury. The patient, a soldier of the 6th N. Y. Cavalry, aged 35, wounded and amputated May 7, 1864, recovered. (*Cat.* 1866, p. 309.) Donor, Assistant Surgeon W. Thomson, U. S. A.

43. (171.) A sequestrum, eight and a half inches long, removed from the stump of the left femur, two months after intermediary amputation in the lower third for shot injury. The patient, a corporal of the 64th New York, aged 30, wounded at Hatcher's Run, March 25, 1865, recovered. (*Cat.* 1866, p. 309.) Donor, Assistant Surgeon H. Allen, U. S. A.

44. (2698.) Necrosed stump of left femur, surrounded by a firm and uniform deposit of callus, removed, on account of protrusion, seven weeks after primary amputation for a railroad accident. The patient, a soldier of the 12th Wisconsin, recovered. (*Cat.* 1866, p. 294.) Donor, Surgeon H. Culbertson, U. S. V.

[The next series illustrate shot injuries of the knee.]

45. (3269.) Bones of the right knee, after amputation in the lower third of the thigh, by Surgeon N. R. Mosley, U. S. V., for shot fracture of the tibia and fibula, in a case in which Dr. W. H. Ensign had excised the upper portion of the fibula for gangrene and hemorrhage. The patient, a private of the 170th New York, aged 44, (wounded August 24th, excised September 12th, amputated September 18th, 1864,) survived the amputation three days. (*Cat.* 1866, p. 381.) Donor, Dr. H. G. Bates.

46. (4135.) The upper extremity of the bones of the left leg, fractured by a conoidal ball which perforated from within and below, splintering the head of the tibia and resting on the articulation. The patient, Private T. J. T., 57th Massachusetts, was wounded March 24th, amputated March 30th, and discharged on October 20, 1865, and furnished with an artificial limb. (*Cat.* 1866, p. 319.) Donor, Surgeon W. O. McDonald, U. S. V.

47. (1882.) The bones of the right knee, amputated in the lower third of the femur by Surgeon A. N. Dougherty, U. S. V., in the case of Private W. G. M—, 4th Ohio, wounded at Mine Run, November 27, amputated December 3, 1863, for a shot fracture of the outer condyle and the head of the tibia. A conoidal ball, compressed upon itself, is lodged in the latter bone. The patient is a pensioner. (*Cat.* 1866, p. 348.) Donor, Surgeon J. Drwinelle, 106th Pennsylvania.

48. (2276.) The bones of the left knee, amputated in the lowest third of the thigh for fracture of the internal condyle of the femur and of the head of the tibia by a conoidal ball, which is impacted in the latter. The patient, Private L. R—, 2nd North Carolina, aged 34, wounded at Spotsylvania, May 12, was amputated May 14, 1864, and died of pyæmia eleven days after the operation. (*Cat.* 1866, p. 345.) Donor, Surgeon O. A. Judson, U. S. V.

[A specimen of ligamentous union is selected from the series of united simple fractures of the patella.]

49. (5364.) The bones of the right knee-joint, showing a transverse fracture of the patella with ligamentous union. (From the Gilson Cabinet.)

[The next series is of shot injuries of the bones of the leg.]

50. (4347.) The right tibia and fibula, from a case of amputation in the lower third of the thigh six months after shot fracture in the leg. Tolerable union has occurred in the fibula. The tibia is partly united, is carious at the point of fracture, and has a very large and complete follicular deposit throughout its greatest length. The patient, a sergeant of the 2d Maryland, aged 24, was wounded April 2, and amputated October 14, 1865, and recovered. (*Cat.* 1866, p. 392.) Donor, Surgeon E. Bentley, U. S. V.

51. (3335.) Right tibia and fibula, comminuted by a twelve-pound cannon shot at Gettysburg, July 3, 1863. Primary amputation above the knee was performed by Surgeon T. Sim, U. S. V. The patient rapidly recovered, and was able to ride out in a fortnight. (*Circ.* No. 6, S. G. O., 1865, p. 38; *Cat.* 1866, p. 378.) Contributed by Major General D. E. Sickles, the officer mutilated.

52. (3604.) The right tibia and fibula, comminuted by a musket ball at Fort Hudson, May 27, 1863. The patient, Brigadier General T. W. S—, U. S. V., was amputated above the knee a few weeks after the injury by Dr. W. Stone, and recovered. (*Circ.* No. 6, S. G. O., 1865, p. 38; *Cat.* 1866, p. 393.) Donor, Professor C. Bacon, of Yale.

53. (6581.) Fragments of the bones of the left leg and ends of condyles of the femur, and a piece of a small bursted swivel gun that inflicted the injury. Primary amputation at the knee-joint resulted in a good stump. Case of Private G. G—, 2d Infantry, wounded July 4, 1875. The pensioner is at Soldiers' Home. Donor, Assistant Surgeon J. K. Conson, U. S. A.

54. (1022.) The upper extremity of the left tibia, in the spongy portion of which a buckshot was embedded, which was extracted. The patient, a private of the 11th Pennsylvania, wounded at Fredericksburg, died three weeks after the injury, of pyæmia. (*Cat.* 1866, p. 362.) Donor, Dr. G. F. French.

55. (1956.) Head of left tibia and condyles of the femur, excised five months after fracture by a spherical ball, which is lodged in the inner condyle. The patient died from pyæmia twenty-two days after the operation. (*Circ.* No. 6, S. G. O., 1865, p. 39; *Cat.* 1866, p. 335.) Contributed by the operator, Dr. F. Hinkle.

56. (2778.) Upper portions of the tibia and fibula of the right leg, with hyperostosis of the distal extremities of both bones. From a soldier of the 51st Pennsylvania, wounded at White Oak Swamp, June 30, 1862. (See *Cat.* 1866, p. 400.) Donor, Dr. T. G. Morton.

57. (1916.) The bones of the left leg after shot contusion of the tibia by a musket ball. The patient, Corporal H. C.—, 21st Michigan, wounded at Murfreesboro, December 3, 1862, died five months after the injury. (See Cat. 1866, p. 375.) Donor, Assistant Surgeon C. C. Gray, U. S. A.

58. (3388.) The left tibia, two and a third months after longitudinal shot fracture of the shaft, and consecutive necrosis. Corporal J. D.—, 164th New York, aged 48, was wounded at Cold Harbor, June 24, and died August 18, 1864. (Cat. 1866, p. 375.) Donor, Assistant Surgeon W. Thomson, U. S. A.

59. (3337.) The bones of the right leg with two and a half inches of the middle third of the tibia excised, and showing dead bone for an inch on each side of the excision. Amputation at the middle third of the thigh for gangrene was practised a month after the injury. The patient survived the operation two days. Case of Private N. B.—, 115th Pennsylvania, aged 27. (Cat. 1866, p. 382.) Donor, Surgeon E. Bentley, U. S. V.

60. (1526.) Six inches of the stumps of the bones of the left leg, reamputated for necrosis of the tibia, showing a massive involucrum, except on the anterior border, where a heavy sequestrum is visible. Case of Private J. C.—, 7th Wisconsin, aged 21, wounded June 18, amputated June 19, 1864, and reamputated February 25, 1865. The patient recovered. (Cat. 1866, p. 397.) Donor, Surgeon B. B. Wilson, U. S. V.

61. (1740.) Stumps of the left tibia and fibula, reamputated for necrosis three inches below the knee, nearly nine months after amputation above the ankle. Both bones present large involucra enclosing cylindrical sequestra. The patient, Private O. P.—, 28th Colored Troops, aged 19, wounded June 7, amputated June 27, 1864, and reamputated March, 1865, recovered. Donor, Surgeon T. W. Fry, U. S. V.

62. (2594.) The bones of the right leg, amputated in the middle third seven months after fracture in the lower third, the fibula being firmly consolidated, and much callus being effused about the tibia, but caries having prevented firm union. The patient recovered, and was furnished with an artificial leg. (Cat. 1866, p. 385.) Donor, Assistant Surgeon C. R. Greenleaf, U. S. A.

63. (6569.) The lower two-thirds of the right tibia and fibula successfully amputated for disease nearly ten years after gunshot fracture, by Dr. J. F. M. Forewood, of Chester, Pennsylvania, in the case of Private L. O. B.—, 1st Delaware, 19 years of age, who was wounded at Antietam. Contributed by the operator.

64. (481.) The lower portions of the bones of the right leg amputated ten and a half months after perforation of the tibia by a conoidal ball, in the case of Private E. C.—, 3d Mississippi, aged 22, wounded at Peach Tree Creek, July 20, 1864. (Cat. 1866, p. 384.) Donor, Surgeon S. Kneeland, U. S. V.

65. (2454.) Three inches of the right tibia and fibula resected four months after a primary amputation near the ankle, for shot injury in the case of Private C. F.—, 111th New York, aged 19, wounded March 11, 1865. (Cat. 1866, p. 298.) Donor, Surgeon B. B. Wilson, U. S. V.

[The next two specimens are from cases of simple fracture in the leg.]

66. (6341.) The right tibia and fibula seven months after simple fracture at diagonally opposite points in the two shafts. Union took place, and the patient recovered with but slightly perceptible shortening. He died several months afterwards with aneurism of the aorta. Case of Artificer J. M.—, Engineer Battalion. The fracture occurred July 27, 1866, and death March 2, 1867. Donor, Surgeon B. J. D. Irwin, U. S. A.

67. (6516.) Amputated portions of bones of the left leg, in the case of a lad of 19 years, who had a simple fracture in his first year. The bones united with such disposition that the foot was directly reversed. Dr. S. D. Turney, who presented the specimen, was the operator. The patient recovered.

[A single example of operative interference for disease of the tibia is introduced.]

68. (1945.) A sequestrum, nearly twelve inches in length, from the right tibia of Private W. F.—, 85th Illinois, aged 24. (Cat. 1866, p. 408.) Donor, Surgeon C. W. Hornor, U. S. V.

[Illustrations of shot injuries, diseases, and operations at the ankle follow.]

69. (3607.) Bones of right ankle, amputated thirteen and a half months after injury by a ball which entered six inches above the ankle-joint and escaped at the point of the heel. The patient, a private of the 4th Ohio, wounded at Missionary Ridge, recovered. (Cat. 1866, p. 435.) Donor, Assistant Surgeon G. M. Sternberg, U. S. A.

70. (3356.) Ligamentous preparation of the right tarsus and metatarsus, one month after injury, with a conoidal ball lodged in the carious astragalus. Case of Private C. H., 33d Massachusetts, wounded at Dallas May 25, 1864. Amputated June 26, 1864. (Cat. 1866, p. 428.) Donor, Dr. L. B. McNabb.

71. (2783.) Portions of the right tibia, fibula, astragalus, and calcaneum, from a successful Pirogoff's amputation. From Private O. C.—, 17th Wisconsin, wounded at Gettysburg July 1, 1863. (Cat. 1866, p. 422.) Contributed by the operator, Acting Assistant Surgeon A. Hewson.

72. (854.) Ligamentous preparation of the bones of the left foot, from a case of talipes. A. B.—, colored, aged 25, died in hospital at Washington November 20, 1866. Donor, Hospital Steward A. M. Squier, U. S. Army.

73. (4543.) The left astragalus and lower borders of the tibia and fibula, from a soldier shot through the ankle at Fredericksburg December 12, 1862, and amputated by a modification of Syme's method.

74. (828.) The left metatarsus, scaphoid, cuboid, and outer cuneiform bones, with conoidal bullet in the place of the inner cuneiform. Amputated by Syme's method by Surgeon J. W. Wisbart, 160th Pennsylvania, in the case of Private H. E. B.—, 1st Massachusetts Artillery, wounded at Spottsylvania, May 19, 1864. (Cat. 1866, pp. 127, 413; *Med. and Surg. Hist.*, Part II, Vol. II, p. 683.) Contributed by the operator.

75. (6266.) Bones of left foot, amputated June 8, 1873, for gelatinous arthritis of the tibio-tarsal articulation, in the case of Pensioner W. J—, Soldiers' Home, by Acting Assistant Surgeon J. D. Barnes. The tibia and fibula became diseased, and reamputation at the place of election was practised December 21, 1873. On recurrence of disease of the bones of the stump reamputation at the knee-joint was practised May 15, 1875, by the same operator. Donor, Dr. J. D. Barnes.

[The foregoing memoranda briefly refer to the specimens sent to Philadelphia from the pathological branch of the Surgical Section, and indicate wherein fuller information may be found. Of the many other objects pertaining to the Surgical Section exhibited in the representation of the Army Medical Department, some, as the series of photographs deposited in room 4, or suspended to the walls, are accompanied by printed descriptions, and others, such as the surgical instruments now issued to army medical officers, those used in the Revolution, the War of 1812, the War with Mexico, and the late Civil War, together with drawings and models of the means of transport of wounded by land or water, or the various appliances that make up the *Materia Chirurgica* of the army surgeon, either have attached labels or are described in other pamphlets.]

INTERNATIONAL EXHIBITION OF 1876.

HOSPITAL

OF THE

Medical Department, United States Army.

J. J. WOODWARD,

Assistant Surgeon, U. S. A.,

IN CHARGE OF THE REPRESENTATION OF THE MEDICAL DEPARTMENT, U. S. A.

No. 9.

LIST OF MICROSCOPICAL PREPARATIONS

FROM THE

ARMY MEDICAL MUSEUM.

On Exhibition in Room No. 2, and in the private office.

PHILADELPHIA, 1876.

INTERNATIONAL EXHIBITION OF 1876.

HOSPITAL
OF THE

Medical Department, United States Army.

LIST OF MICROSCOPICAL PREPARATIONS.

NOTE.—These slides are exhibited as samples of the preparations in the Microscopical Section of the Army Medical Museum, which now number 7375. Medical men acquainted with the use of the microscope, who desire to examine them, will have every facility extended on application to Dr. H. C. YARROW, Room No. 7.

No. 1. (No. 419 Mic. Sect.) Perpendicular Section of Ileum, with enlarged Solitary Glands. Intestinal Catarrh.

No. 2. (No. 466 Mic. Sect.) Perpendicular Section of Ileum, with a follicular ulcer. Intestinal Catarrh.

No. 3. (No. 1699 Mic. Sect.) Perpendicular Section of Ileum, showing typhoid thickening of a Peyer's Patch.

No. 4. (No. 648 Mic. Sect.) Perpendicular Section of Colon, showing enlarged Solitary Glands. Intestinal Catarrh.

No. 5. (No. 678 Mic. Sect.) Perpendicular Section of Colon, coated with pseudo-membrane. Diphtheritic Dysentery.

No. 6. (No. 6108 Mic. Sect.) Perpendicular Section of Ileum, showing ulcers of the Solitary Glands. Intestinal Catarrh.

- No. 7. (No. 711 Mic. Sect.) Perpendicular Section of Colon, to show the edge of a large Ulcer. Dysentery.
- No. 8. (No. 878 Mic. Sect.) Perpendicular Section of Human Skin, to show a Small-pox Pastule.
- No. 9. (No. 6094 Mic. Sect.) Perpendicular Section of Skin of Calf, to show the Vaccine Vesicle, 144 hours after inoculation.
- No. 10. (No. 6650 Mic. Sect.) Perpendicular Section of Skin of Calf, to show Vaccine Vesicle, 48 hours after inoculation.
- No. 11. (No. 4277 Mic. Sect.) Perpendicular Section of Stomach of Mare: case of gastro-enteritis with commencing peritonitis. A small vein in the sub-peritoneal connective tissue is surrounded with a swarm of migrated white corpuscles.
- No. 12. (No. 7192 Mic. Sect.) Transverse Section of Stomach of Frog, to show Gastric Glands.
- No. 13. (Not catalogued.) Section of Ovary of Cat, showing Graafian Follicles and Ovules.
- No. 14 and 15. (Not catalogued.) Silver staining of the Endothelium of the Bloodvessels of the Bladder of the Frog, with carmine staining of the nuclei.
- No. 16. (No. 3246 Mic. Sect.) Silver staining of Epithelium of Skin of Frog.
- No. 17. (No. 4676 Mic. Sect.) Muscle of Rat. Carmine injection.
- No. 18. (No. 4602 Mic. Sect.) Lung of Frog. Capillaries injected with nitrate of silver, and nuclei stained with carmine.
- No. 19. (No. 3224 Mic. Sect.) Transverse Section of Jejunum of Cat. Capillaries injected with Prussian blue, nuclei stained with carmine.
- No. 20. (Not catalogued.) Muscle of Rat. Capillaries injected with carmine.
- No. 21. (No. 6538 Mic. Sect.) Papillary Wart from Abdomen.
- No. 22. (No. 3884 Mic. Sect.) Condyloma. See No. 48.
- No. 23. (No. 4606 Mic. Sect.) Lipoma from the Groin.
- No. 24. (No. 2157 Mic. Sect.) Section of Goitre.
- No. 25. (No. 2624 Mic. Sect.) Sarcoma of Mesentery.

- No. 26. (No. 5905 Mic. Sect.) Exostosis of Tibia.
- No. 27. (No. 6133 Mic. Sect.) Melanotic growth from Back.
- No. 28. (No. 4656 Mic. Sect.) Epithelioma of Leg.
- No. 29. (No. 6085 Mic. Sect.) Epithelioma of Leg (to show "corps concentriques").
- No. 30. (No. 4754 Mic. Sect.) Epithelioma of Lip.
- No. 31. (No. 5861 Mic. Sect.) Epithelioma of Lip, to show invasion of muscle.
- No. 32. (Not catalogued.) Papillary Growth of Uvula.
- No. 33. (No. 2387 Mic. Sect.) Epithelioma of Larynx.
- No. 34. (Not catalogued.) Epithelioma of Lacrymal Gland.
- No. 35. (No. 5904 Mic. Sect.) Medullary Carcinoma of Parotid.
- No. 36. (No. 6464 Mic. Sect.) Myxo-Carcinoma of Parotid.
- No. 37. (No. 2390 Mic. Sect.) Cancer of Liver (minute nodules).
- No. 38. (No. 4037 Mic. Sect.) Cylindrical Epithelioma of Gall Duct.
- No. 39. (Not catalogued.) Colloid Cancer of Stomach.
- No. 40. (No. 2448 Mic. Sect.) Wall of an Ovarian Cyst, showing hair follicles, hair, etc.
- No. 41. (No. 5555 Mic. Sect.) Ovarian Tumor (cystic).
- No. 42. (No. 3910 Mic. Sect.) Adenoma of Mamma.
- No. 43. (No. 4021 Mic. Sect.) Cysto-Sarcoma of Mamma. Other parts of the same tumor were carcinomatous.
- No. 44. (No. 3490 Mic. Sect.) Carcinoma of Mammary (cancer cylinders).
- No. 45. (No. 5509 Mic. Sect.) Carcinoma of Mamma (invasion of fat).
- No. 46. (No. 1251 Mic. Sect.) Keloid growth from the Breast of a Negro.
- No. 47. (No. 3872 Mic. Sect.) Keloid growth from Ear.
- No. 48. (No. 3885 Mic. Sect.) Condyloma from a Negro. See No. 22.
- No. 49. (No. 2222 Mic. Sect.) Melanotic Tumor of Leg.
- No. 50. (No. 6128 Mic. Sect.) Melanotic Tumor of Back.

- No. 51. (No. 3734 Mic. Sect.) Epithelioma of Hand.
 No. 52. (No. 5978 Mic. Sect.) Epithelioma of Arm.
 No. 53. (No. 5721 Mic. Sect.) Epithelioma of Leg.
 No. 54. (No. 6354 Mic. Sect.) Epithelioma of Leg.
 No. 55. (No. 6358 Mic. Sect.) Epithelioma of Leg.
 No. 56. (No. 6980 Mic. Sect.) Epithelioma of Foot.
 No. 57. (No. 5869 Mic. Sect.) Epithelioma of Pudenda.
 No. 58. (No. 6405 Mic. Sect.) Epithelioma of Lip.
 No. 59. (No. 3723 Mic. Sect.) Epithelioma of Lip.
 No. 60. (No. 3724 Mic. Sect.) Epithelioma of Lip.
 No. 61. (No. 5859 Mic. Sect.) Epithelioma of Lip.
 No. 62. (No. 7135 Mic. Sect.) Papillary growth of Uvula.
 No. 63. (No. 2270 Mic. Sect.) Epithelioma of Larynx.
 No. 64. (No. 2191 Mic. Sect.) Papillary growth of Pharynx.
 No. 65. (No. 4915 Mic. Sect.) Fatty Liver.
 No. 66. (No. 6530 Mic. Sect.) Fatty Liver.
 No. 67. (Not catalogued.) Fatty Liver.
 No. 68. (Not catalogued.) Nutmeg Liver.
 No. 69. (No. 4900 Mic. Sect.) Syphiloma of Liver.
 No. 70. (No. 3462 Mic. Sect.) Carcinoma of Liver.
 No. 71. (No. 3938 Mic. Sect.) Carcinoma of Liver.
 No. 72. (No. 3983 Mic. Sect.) Carcinoma of Liver.
 No. 73. (No. 6150 Mic. Sect.) Commencing Carcinoma of Liver. From a case of cancer of the Stomach.
 No. 74. (No. 2646 Mic. Sect.) Carcinoma of Spleen.
 No. 75. (No. 4293 Mic. Sect.) Carcinoma of Pylorus.
 No. 76. (No. 4502 Mic. Sect.) Carcinoma of Pylorus.
 No. 77. (No. 4506 Mic. Sect.) Carcinoma of Pylorus.
 No. 78. (No. 4717 Mic. Sect.) Carcinoma of Pylorus.

- No. 79. (No. 2454 Mic. Sect.) Carcinoma of Ovary.
 No. 80. (No. 2447 Mic. Sect.) Wall of an Ovarian Cyst.
 No. 81. (Not catalogued.) Myoma of Uterus.
 No. 82. (Not catalogued.) Hepatized Lung.
 No. 83. (Not catalogued.) Apoplectic Lung.
 No. 84. (No. 3649 Mic. Sect.) Granular Kidney.
 No. 85. (No. 5640 Mic. Sect.) Mammary Gland of Bitch.
 No. 86. (No. 4086 Mic. Sect.) Adenoma of Mamma.
 No. 87. (No. 4088 Mic. Sect.) Adenoma of Mamma.
 No. 88. (No. 6824 Mic. Sect.) Adenoma of Mamma.
 No. 89. (No. 4041 Mic. Sect.) Adenoma of Mamma.
 No. 90. (No. 4558 Mic. Sect.) Adenoma of Mamma.
 No. 91. (No. 4559 Mic. Sect.) Adenoma of Mamma.
 No. 92. (No. 6519 Mic. Sect.) Adenoma of Mamma.
 No. 93. (No. 5611 Mic. Sect.) Cysto-Carcinoma of Mamma. A part of the section shows the structure of cysto-sarcoma, a part of carcinoma.
 No. 94. (No. 5612 Mic. Sect.) Another cut from the same growth as 5611 and 5614.
 No. 95. (No. 5614 Mic. Sect.) Another cut from the same growth as 5611 and 5612.
 No. 96. (No. 6555 Mic. Sect.) Adeno-Carcinoma of Mamma.
 No. 97. (No. 2744 Mic. Sect.) Carcinoma of Mamma.
 No. 98. (No. 4316 Mic. Sect.) Carcinoma of Mamma.
 No. 99. (No. 4620 Mic. Sect.) Carcinoma of Mamma.
 No. 100. (No. 5689 Mic. Sect.) Carcinoma of Mamma.
 No. 101. (No. 6557 Mic. Sect.) Carcinoma of Mamma.
 No. 102. (Not catalogued.) Medullary Carcinoma of Mamma.
 No. 103. (No. 5926 Mic. Sect.) Carcinoma of Mamma (invasion of Fat).
 No. 104. (No. 5756 Mic. Sect.) Carcinoma of Mamma (invasion of Muscle).
 No. 105. (No. 4698 Mic. Sect.) Melano-Carcinoma of Mamma.

International Exhibition of 1876.

HOSPITAL

OF

Medical Department, United States Army.

No. 2.

DESCRIPTION

OF THE

MODELS OF HOSPITAL CARS

EXHIBITED IN ROOM No. 2.

J. J. WOODWARD,

Assistant Surgeon, U. S. A.,

IN CHARGE OF THE REPRESENTATION OF THE MEDICAL DEPARTMENT, U. S. A.

Philadelphia, 1876.

INTERNATIONAL EXHIBITION OF 1876.

HOSPITAL

OF

Medical Department, United States Army.

DESCRIPTION OF THE MODELS OF HOSPITAL CARS.

These models are intended to represent especially those methods of adapting the ordinary rolling stock of American railroads to the transportation of sick and wounded soldiers, which were found to be most satisfactory during the war of 1861-5. They are all on the scale of one inch to the foot, and are made of hard wood and brass, all details being carefully worked out; they are made with their roofs removable to permit the inspection of the interior. They were constructed in accordance with plans furnished from the Surgeon-General's office, by J. G. Brill & Co., car builders, Thirty-first and Chestnut streets, Philadelphia, Pa.

Various plans were adopted by the several armies, some of them as early as the summer of 1861, a description of which may be found in a recent report by Assistant-Surgeon G. A. Otis, United States Army.* As might have been anticipated, these methods were brought to the greatest perfection in the rear of the great Western armies, after they began to move southward from Chattanooga. While these armies were operating chiefly on the Mississippi river and its tributaries, hospital steamboats, one of which is represented by the model of the *D. A. January*, afforded a convenient mode of transporting their sick and wounded to the general hospitals at the base of operations and in the

* G. A. OTIS, Assistant-Surgeon U. S. Army. *A report on a plan for transporting wounded soldiers by railway in time of war, with descriptions of various methods employed for this purpose on different occasions.* WASHINGTON: WAR DEPARTMENT, SURGEON-GENERAL'S OFFICE, 1875.

Northwestern States; but after they concentrated at Chattanooga this was no longer feasible, and it became necessary to extend considerably the arrangements already made by the Army of the Cumberland for the transportation of its own sick and wounded on the railroad from Chattanooga to Nashville and Louisville. The first hospital cars on this route were run between Nashville and Louisville, before the concentration alluded to, but the service was subsequently extended to Chattanooga, and afterwards to Atlanta.

Surgeon George E. Cooper reports that when he became Medical Director of the Department of the Cumberland, in May, 1864, he found a train of hospital cars, which had been fitted up under the direction of Acting Assistant-Surgeon J. B. Barnum, already in operation on the line, one hundred and eighty-five miles in length, between Louisville and Nashville. This service he rapidly extended, using freight cars to some extent, but giving the preference to passenger cars fitted up with litters, so as to carry the patients in the recumbent position, until, as Dr. Otis states in the report above referred to, before the close of the year 1864, "there were three hospital railway trains, each consisting of ten or twelve cars, with several freight or baggage cars attached sometimes, connecting the advance of the army with Nashville and Louisville; one train at least daily leaving the vicinity of the field hospitals. In each train, one car was fitted up exclusively as a kitchen and store room, and another as a dispensary, with accommodation for the medical officer in charge, and an ample supply of medicines, stores, instruments, and appliances."

"These cars were fitted up under the immediate supervision of Medical Director Cooper, and of Surgeon O. O. Herriek, 34th Illinois volunteers."

"General Thomas accorded the fullest authority to Medical Director Cooper to select for the hospital trains the best locomotives and cars to be found among the rolling stock, and to have new cars fitted up whenever necessary, and caused to be detailed for the hospital service the most experienced conductors, engineers, and other employes of the several railway lines. Medical Director Cooper informs the reporter that the smoke-pipes of the locomotives of the hospital trains were painted of a brilliant scarlet; the exterior of the hood, and of the tender-car with water and fuel, were of the same conspicuous color, with gilt ornamentation. At night, beneath the head-light of the engine, three red lanterns were suspended in a row. These distinguishing signals were recognized by the Confederates, and the trains were never fired upon or molested in any way. Dr. Cooper was informed by wounded Confederate officers in Nashville, who were captured at the battle near that place,

of the stringent orders given his troopers by General N. B. Forrest for the non-interference with, and protection of, the U. S. A. hospital trains, by giving them timely warning in the event of the railway being obstructed or torn up. The partisan troops of Colonel John Morgan's command had similar instructions. It is related, that on one occasion Colonel Morgan's scouts stopped the train directed by Dr. Barnum, and having switched it off upon a siding, after inquiring if there were sufficient stores on the train for the sick and wounded, they tore up the main track, and then rifled and destroyed five supply trains that successively arrived at the point where the line was interrupted.

"Ventilation, without exposure to drafts, was well provided for in these cars, by windows in the elevated part of the ceiling, and by valvular openings near the roof."

"When General Sherman's army was before Atlanta, until the lines of communication were destroyed, preparatory to the march to the sea, hospital cars ran regularly from the front to base hospitals, some of which were four hundred and seventy-two miles distant."

Assistant-Surgeon F. L. Town, U. S. A., in a report on these hospital trains, states that "the conception of a complete hospital, with all its appliances and means of comfort, propelled by steam, was first carried into practical operation in the medical department of the West, and its perfect success was most gratifying to all. In visiting these hospital trains the air is found sweet and pure, the wards neat and inviting, and it may unhesitatingly be said that men on hospital trains are often as comfortable, and better fed and attended, than in many permanent hospitals."

The operations of the Army of the Potomac led it for a large part of its history to occupy such camp sites that water transportation was available, and was extensively used for its sick and wounded. While this army lay along the Rappahannock, however, transportation by rail became necessary, and a number of hospital cars were constructed for the purpose. Specially constructed hospital cars were also used on several of the Northern railroads, and various plans for both freight and passenger cars were employed by the Confederate authorities. An account of these devices will be found in the report of Dr. Otis, already alluded to.

To illustrate this subject, five models have been constructed. No. 1 represents the surgeon's car of a hospital train of the Army of the Cumberland. No. 2, the kitchen car of a hospital train of the Army of the Cumberland. No. 3, the form of car found most satisfactory for the transportation of sick and wounded in the Army of the Cumberland. No. 4, a hospital car of the Army of the Potomac. No. 5, a freight car fitted up with litters for transporting sick and wounded.

No. 1. *Surgeon's Car, Hospital Train of the Army of the Cumberland.*—This model represents an ordinary passenger car, with the seats removed, and with partitions and fixtures introduced, so as to lodge the surgeon in charge of the train and his hospital steward, and give accommodations for the dispensary of the train, with an office for the transaction of business.



FIG. 1.—Horizontal plan of surgeon's car, Army of the Cumberland.

Figure 1 represents the arrangements of this car.

A, dispensary and steward's quarters; *a*, desk and book-case; *b*, shelves for medicines. This apartment contains also a revolving chair at the desk and a bed for the steward.

B, surgeon's sitting-room; *d*, lounge; *e*, water-closet; *f*, clothes-closet.

C, surgeon's bed room; *c*, bed.

D, office; *g*, lounge; *h*, water-cooler; *i*, wood box and stove.

E, wash-room, with water-basin, tank, and dressing locker.

F F, passage through car.

G, water-closet.

No. 2. *Kitchen Car, Hospital Train of the Army of the Cumberland.*—This model represents an ordinary passenger car with the seats removed, and with partitions and fixtures introduced for a kitchen, store-room, and dining room.

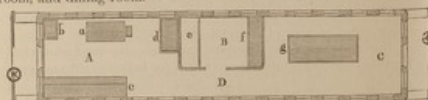


FIG. 2.—Horizontal plan of kitchen car, Army of the Cumberland.

Figure 2 represents the arrangements.

A, kitchen; *a*, cooking range; *b*, sink; *c*, cupboard; *d*, table and shelves.

B, store-room; *e*, ice-box; *f*, shelves for provisions.

C, dining-room; *g*, table, surrounded by benches. This apartment contains also a stove and wood-box.

No. 3. *Car for Sick and Wounded, Hospital Train of the Army of the Cumberland.*—This model represents an ordinary passenger car, fitted up in the manner reported by Medical Director Cooper to be "the simplest and best form."

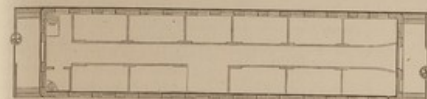


FIG. 3.—Horizontal plan of one of the hospital cars of the Army of the Cumberland.—(OTIS.)

Figure 3 is a horizontal plan of the arrangements. Figure 4 is a

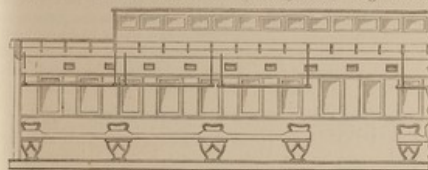


FIG. 4.—Longitudinal section of one of the hospital cars of the Army of the Cumberland.—(OTIS.)

longitudinal section of a part of the car. Figure 5, a transverse section.

The arrangements were as follows:

The alternate seats of the passenger car were removed, and suitable slats laid upon them for the reception of mattresses. On one side of the car, one of the beds was omitted, and two windows and the adjoining panelling being removed, a wide door was introduced, "affording an ample space for the ingress and egress of litters with the most severely wounded patients." Eleven beds were thus formed, above each of which an ordinary field stretcher, with its handles shortened, was suspended by means of two iron hooks,



FIG. 5.—Transverse section of one of the hospital cars of the Army of the Cumberland.—(OTIS.)

one at each end, fixed in the side of the car, and two iron rods terminating in hooks, which were fastened above to the roof of the car. Eleven additional beds were thus provided, so that the car would carry twenty-two patients, one to each bed; but the lower beds were so wide, (about 44 inches,) that two patients could be carried in each when deemed expedient, (especially mild cases,) in which case the car carried thirty-three patients. Each car was provided with a water-closet, stove, wood-box, and water-cooler.

No. 4. *Hospital Car of the Army of the Potomac.*—This model represents the form of a hospital car devised by Mr. J. McCrickett, Assistant Superintendent of Military Railroads, and recommended for construction by Surgeon R. O. Abbott, U. S. A. The cars were not passenger cars refitted, but were specially devised for the purpose, the frame-work being plain, and constructed with a special view to strength. All the details of the frame-work are faithfully worked out in the model. Figure 6 is a horizontal plan. Figure 7, a longitudinal section of a part of one of the cars. Figure 8, a transverse section.

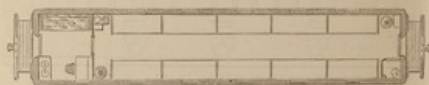


Fig. 6.—Horizontal plan of one of the hospital cars of the Army of the Potomac.—(Orrin.)

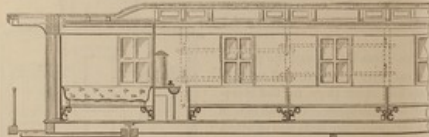


Fig. 7.—Longitudinal section of a part of one of the hospital cars of the Army of the Potomac.—(Orrin.)

The cars were 45 feet long and 8½ broad, inside measure. Six and a half feet were partitioned off at one end of the car for the medical officer in charge of the car. This apartment was fitted up with a desk, shelves for books and medicines, revolving chair and lounge. In the rest of the car, ten beds were constructed, by placing seats like those used in passenger cars, but without backs, at suitable intervals. On these, slats were laid for the reception of mattresses. Ten beds were thus formed,

which, however, were narrower than those of the hospital car of the Army of the Cumberland, (viz., thirty inches wide,) being intended for the reception of a single patient each. A passage-way three and a half feet wide was thus left. Above each of these beds two ordinary field stretchers, with their handles shortened, were suspended in the following manner: Opposite the middle of each of the seats supporting the lower beds, an upright wooden post was erected, extending from the floor to the roof, and firmly fastened at each extremity. Each stretcher was supported in its place by means of two iron hooks, (one at each end,) fastened to the side of the car, and two leather loops, (one at each end,) fastened to the upright posts. Beds were thus provided for thirty patients in all. Two stoves, a water-cooler, and a water-closet completed the outfit, and in order to give ready access to the severely wounded, carried on stretchers, the door at the end of the car, intended for patients, was made three and a-half feet wide.



Fig. 8.—Transverse section of one of the hospital cars of the Army of the Potomac.—(Orrin.)

No. 5. *Freight Car fitted up for the Transportation of the Sick and Wounded.*—This model is intended to represent the plan devised by Grund, a German master machinist, and adjudged the most suitable for freight cars by the Prussian Commission of 1868.

It consists "in supporting three ordinary field stretchers in the front, and three in the rear part of the freight car, twenty feet long, by means of transverse wooden bars, resting on semi-elliptical plate springs. The springs are spiked at one end to the flooring, to keep the bars stationary, while at the other end are rollers, to permit the yielding of the springs. The latter are surmounted by U pieces, or clips to receive the



Fig. 9.—Enlarged view of the spring used in Grund's system, and adopted in the Bavarian trains, for the support of stretchers.—(Orrin.)

cross-bars. Four cross beams and eight springs constitute the outfit requisite for the reception of six litters." Figure 9 represents one of these springs, which are three feet in length. Figure 10 is a longitudinal section of a part of the freight car arranged in this manner, showing a stretcher in position. The freight car represented in the model is the ordinary box car of the Pennsylvania railroad, which is twenty-seven feet long by seven and a half broad, inside measure. By a different arrangement of the springs, eight stretchers might be accommodated, as is shown in a partial

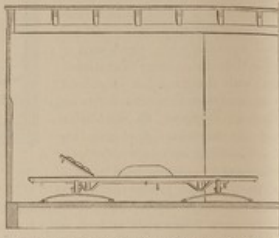
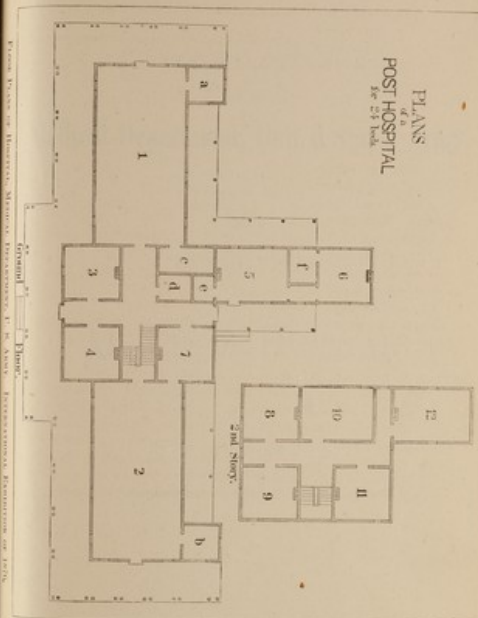


FIG. 10.—Longitudinal section of a part of a freight car arranged on Grand's system.—(Otis.)

model, representing the floor of a car of the same size. Assistant Surgeon Otis has recommended that, in any future war, the Quartermaster's Department of our army should be authorized to keep on hand a supply of these semi-elliptical springs. Trains going to the front with provisions, forage, or ammunition, should then each carry, suspended under the roof, a sufficient number of these springs, with the spikes required, to enable the car on its return, instead of going back empty, to carry comfortably, on beds improvised by means of the ordinary field stretchers, a number of sick or wounded, corresponding to its size. Assistant Surgeon Otis has also suggested that these springs might be utilized in connection with field stretchers for the comfortable conveyance of the wounded in ordinary army wagons.



International Exhibition of 1876.

HOSPITAL

OF THE

Medical Department, United States Army.

No. 3

DESCRIPTION.

OF THE

MODELS OF HOSPITALS.

J. J. WOODWARD,

Assistant Surgeon, U. S. A.,

IN CHARGE OF THE REPRESENTATION OF THE MEDICAL DEPARTMENT, U. S. A.

Philadelphia, 1876.

INTERNATIONAL EXHIBITION OF 1876.

HOSPITAL

OF

Medical Department, United States Army.

DESCRIPTION OF THE MODELS OF HOSPITALS.

This portion of the display of the Medical Department of the Army is intended to represent the system of hospital construction actually employed by the Medical Department in peace and war.

In time of peace, the little army of the United States, consisting of some 25,000 men, is scattered over a vast extent of territory, and distributed in about two hundred permanent or temporary posts and garrisons.

The close of the war of 1861-'5 found a portion of these posts provided with hospitals of the old style in use before the war, while in others wooden-barrack hospitals had been constructed during the war, and at others, which had just been occupied, hospitals had yet to be constructed.

In order to secure uniformity in the plan of hospital construction at the new posts, and with the view of gradually replacing the older structures by more suitable buildings, a plan for the construction of post hospitals was prepared at the Surgeon-General's Office, which was rendered authoritative by an order issued by the War Department, by Secretary E. M. Stanton, April 22, 1867. (Circular No. 4, Surgeon-General's Office, April 27, 1867.)

According to this plan, post hospitals were to be constructed with twelve, twenty-four, or forty-eight beds. The twenty-four-bed hospital

was the unit of the system. It consisted of a central administration building two stories high, with a one-storied back-building for the kitchen, and two one-storied wings as wards; each ward was to accommodate twelve beds, and was to be 33 feet long by 24 wide, inside measure; 15 feet high in the clear from floor to eaves; with ridge ventilation for summer, and shafts, like those used in the war hospitals, (*vide*, p. 11, *infra*,) for winter ventilation. The twelve-bed hospital was constructed on the same plan, except that one ward was omitted. The forty-eight-bed hospital was also to be constructed on the same plan, except that the wings were to be lengthened, making each ward 66 feet by 24 in the clear, and to contain twenty-four beds each. The administration building was to remain the same in each of the three cases. These plans aimed at the extreme economy consistent with securing the application of those principles of hospital construction which experience during the war of 1861-'5 had shown to be desirable.

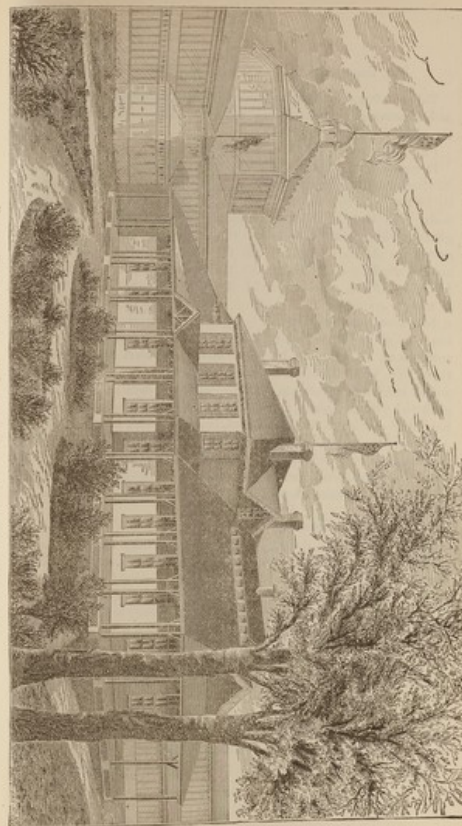
A number of hospitals were built in accordance with these plans, but it was thought on trial that they erred somewhat in the direction of extreme economy, and various minor alterations and improvements were suggested by the medical officers who superintended their construction and use, in consequence of which the Surgeon-General directed new and somewhat more elaborate plans to be prepared. These were approved by the Secretary of War, and issued as Circular No. 2, of the Surgeon-General's Office, July 27, 1871. This circular gave plans and specifications for three classes of hospitals:

1.—*Regulation Post Hospital of twenty-four beds*, constructed on nearly the same plan as the twenty-four-bed hospital of the former circular, but with larger apartments, with a veranda surrounding the building, and other improvements and modifications. This form of hospital is that described on the next page.

2.—*Regulation Post Hospital of twelve beds*.—This is a two-story building, with rooms for administrative purposes on the first floor and a ward of twelve beds in the second story.

3.—*Provisionary Hospitals*.—The circular also gave ground-plans for provisional hospitals of twelve beds, one plan representing a one-story building, the other representing a two-story building with the ward in the second story.

One of these regulation post hospitals for twenty-four beds has been erected on the Exhibition grounds, for the double purpose of serving as a model to illustrate the plan of hospitals recommended by the Medical Department, and adopted by the War Department, for our military posts in time of peace, and of affording space for the greater portion of the other articles exhibited by the Medical Department.



THE REGULATION POST HOSPITAL FOR TWENTY-FOUR BEDS.

This is a frame building, with shingle roof, surrounded by a veranda, and constructed in accordance with the plans and specifications of the circular of July 27, 1871.

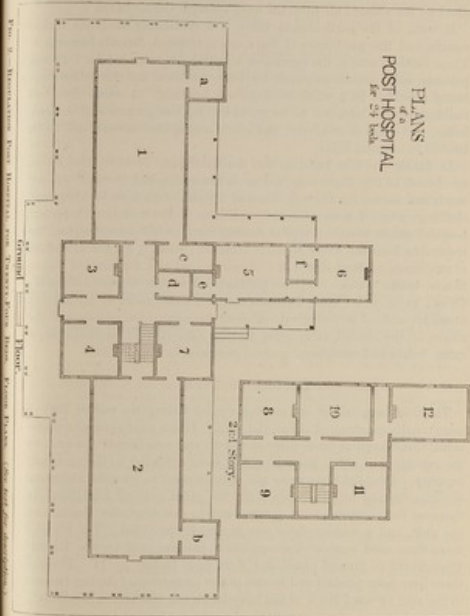
Fig. 1 is a front view; Fig. 2, the floor plans.

It consists of a central administration building, 35 feet front by 39 deep, and two stories high, with a two-storied back-building 40 by 14 feet, and two wings 45 feet by 24, one for each ward of twelve beds. The floor of the whole building is raised three feet above the ground, and is well supported on timber posts. The general arrangements are shown in Fig. 2. In the plan of the ground floor, 1, 2 are the wards, each 24 ft. by 45; 3, dispensary, 14 ft. by 15; 4, office, 14 ft. by 15; 5, mess-room, 14 ft. by 20; 6, kitchen, 14 ft. by 14; 7, nurses' room, 14 ft. by 15; a, b, earth closets, each 9 ft. by 9; c, bath-room and lavatory; d, e, closets; f, pantry, 8 ft. by 10. In the plan of the second story, 8 is the steward's room, 14 ft. by 15; 9, spare room, 14 ft. by 15; 10, attendants' room, 14 ft. by 19; 11, store-room, 14 ft. by 15; 12, room for violent patients, 14 ft. by 20. The above are all inside measurements. All the walls and ceilings are lathed and plastered with two coats, the finishing coat being plaster of Paris, and the entire woodwork usually painted, is covered with two coats of paint.

The wards are 15 ft. high in the clear from floor to ceiling. Ridge ventilation is provided for the summer months by means of two boxed openings in each ward, carried from the middle line of the ceiling to the ridge. These openings are 10 feet apart, and are each 10 feet long by 2½ feet wide.

In the winter months the opening at the ridge is to be closed, and ventilation effected in the following manner: A large stove is placed in the middle of the ward. Fresh air is introduced by an air-box 18 inches square, which passes underneath the floor of the ward from side to side, open at each extremity to the external air, and opens in the centre of the ward beneath the stove by means of a register; when a ventilating stove is used, the place of the register is occupied by a pipe, which connects the air-chamber of the stove with the air-box beneath the floor.

The pipe of the stove passes up through a close-fitting collar in the ceiling. One foot above the ceiling it enters a shaft or jacket about 24 inches in diameter, which pierces the roof, and extends four feet above; it is covered with a sheet-iron cap, pierced in its turn by the stove-pipe, which is capped in the same manner. At each end of the ward, and two feet from the centre, there is an opening in the ceiling one foot square, from which an air-box passes to a box enclosing the lower



mouth of the shaft surrounding the stove-pipe. The heat of the stove-pipe causes a continuous upward current in this shaft, which is supplied by the vitiated air from the ward through the air-boxes.

In each of the earth-closets there is a ventilating shaft six inches square, and the gas-burner of the room is situated directly beneath it. These earth-closets in the regulation hospitals are intended for very sick patients only, accommodations for other patients and the attendants being provided in a suitable detached building. A small detached building is also intended to be provided for the purposes of a dead house, and cases of small pox and other contagious diseases are to be treated in hospital tents.

In fitting up this building for the Exhibition of 1876, the rooms numbered in Fig. 2 are occupied as follows: Room 1 is fitted up as a ward, and serves for the exhibition of hospital furniture, bedding, and clothing; room 2 serves for the exhibition of the models of hospitals, hospital steam vessels, hospital railway cars, ambulances, &c., and for specimens from the Army Medical Museum; room 3, for the exhibition of medicines, medical stores, and chemicals; room 4, for surgical instruments, books, blanks, and the publications of the Surgeon-General's Office; room 5, for mess furniture and utensils; room 6, for kitchen utensils; room 7 is the private office of the surgeon in charge, and the rooms in the second story serve for the exhibition of prosthetic apparatus, litters and stretchers, medical panniers, knapsacks, &c.

THE HOSPITAL TENTS.

The field hospitals of the moving armies during the war of 1861-5 were usually constructed of hospital tents. In the most general arrangement, three hospital tents pitched end to end constituted the unit, by the repetition of which these hospitals were extended to the necessary capacity. Hospital tents were also largely used to provide additional accommodations in connection with the great general hospitals. In this case four hospital tents pitched end to end very often constituted the unit, and a wooden floor was frequently provided. The hospital tents thus used were of the regulation pattern used by the Medical Department in time of peace, and were each 15 feet by 14. Three of them have been pitched end to end in the manner used during the war in the rear of ward No. 2 of the hospital on the Exhibition grounds.

THE BARRACK HOSPITALS OF THE WAR OF 1861-5.

These are represented by five models, viz., a model of the barrack ward which served as the unit, by the repetition of which to the neces-

sary extent the "General Hospitals" were formed; and four models representing four of these general hospitals, viz.: The Lincoln, Hicks, McClellan, and Mower Hospitals. All these models are exhibited in room 2 of the Post Hospital building.

1.—MODEL OF A BARRACK WARD.

This model was constructed by Mr. Charles Seltsman, of Washington, D. C., and being on the scale of half an inch to the foot, is 7 ft. 9½ inches long. All details of framing and construction are faithfully represented, except that the roof is hinged, so as to be lifted for the inspection of the interior.

The form of ward represented is that which was finally adopted by the War Department in the summer of 1864, as set forth in the following order, which is given in full because it describes not merely the barrack ward, but also the general plan of hospital construction, particular instances of which are illustrated by the four models described below:

WAR DEPARTMENT, July 20, 1864.

The following instructions are promulgated for the information of officers charged with the construction of general hospitals, and will be deviated from only in cases of imperative necessity: Buildings will not be taken or occupied for hospital purposes until after full examination and approval by a medical inspector, or other officer of the Medical Corps detailed for this purpose; and all alterations will be made in accordance with plans submitted by him and approved by the Surgeon-General.

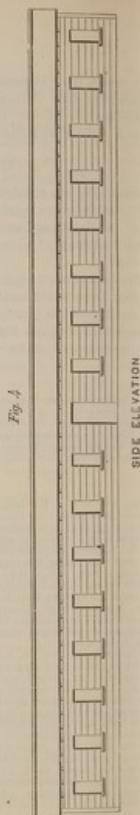
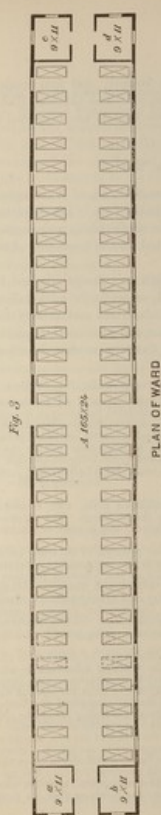
E. M. STANTON,

Secretary of War.

Sites.—The site of the hospital should be a well-drained plain, with a subsoil of gravel, and sufficiently extensive to accommodate the buildings. The situation should be elevated, as remote as possible from marshes or other sources of malaria, and must have a convenient supply of pure water.

Plan.—General hospitals will be constructed on the principle of detached pavilions, each ward being in a separate building, with beds for sixty patients. Besides the wards, there will be detached buildings for each of the following purposes: General Administration Building, Dining-room and Kitchen for Patients, Dining-room and Kitchen for Officers, Laundry, Commissary and Quartermaster's Store-house, Knapsack-house, Guard-house, Dead-house, Quarters for Female Nurses, Chapel, Operating-room, and Stable. The wards, administration building, kitchens, dining-rooms, and chapel are to be connected by covered walks, which will have doors, but no sides.

No general plan for the arrangement of the buildings can be directed, as the varying character and dimensions of sites render an uniform adherence to any one impracticable. Wards may be arranged "en echelon" in two converging lines, forming a V—in this case, the administration building should be at the apex of the V, the other buildings between the wings; or as radii from the periphery of a circle, ellipse, or rounded oblong—in this case, the administration building should be one of the radii, the other buildings within the enclosure; or parallel to each other—in this case, the administration building should be in the centre of the row, the other buildings in the rear. Other plans may be rendered necessary by the special features of the ground. In any case, the important points to be observed are, to place the buildings far enough apart, (at least thirty feet should intervene between two parallel buildings,) and to locate them in such a manner that no one shall interfere with the ventilation of another. It is preferable to locate the wards so that the long diameter may run north and south, or nearly so.



Each ward will be a ridge-ventilated pavilion 187 by 24 feet. At each extremity, two small rooms 9 by 11 feet, one on each side of a passage, 6 feet wide, will be partitioned off. The space remaining for patients will be 165 by 24 feet, see Figure 3, A, which gives the location of the beds and position of the doors and windows. The small rooms are occupied as follows: Figure 3, a, chief nurse; b, closet for medicines, etc.; c, bathroom; d, closet for close stools. Figure 4 is the side elevation.

The wards will be 14 feet high from floor to eaves—the pitch of the roof to vary in accordance to the materials composing it. The floor to be elevated at least 18 inches from the soil, with free ventilation beneath it. A ward thus constructed will accommodate 60 patients, allowing more than 1,000 cubic feet of air-space to each. The number of wards will be regulated by the number of patients the hospital is intended to accommodate. A hospital of 1200 beds will require 20 wards.

Administration Building.—For a hospital of 900 to 1200 beds, this will be a ridge-ventilated building, 38 by 132 feet, and two stories high; the first 14 and the second 12 feet high in the clear. This building contains the general office, office of surgeon in charge, linen and store rooms, dispensary, chaplain's office, lodging-rooms for officers, etc.

Dining-Room and Kitchen for Patients.—The dining-room will be a ridge-ventilated building, large enough to seat a number equal to two-thirds the number of beds. The most convenient form is a long parallelogram, into which the kitchen opens in the centre of the long side. The kitchen will be divided into two unequal parts—the larger for the preparation of ordinary diet, the smaller for the extra diet—the cooking in both to be done on ranges. Where there is an engine, steam may be advantageously used for boiling.

Dining-Room and Kitchen for Officers.—A small building for this purpose will be situated near the administration building.

Laundry.—A building two stories high, with lodging for the laundresses on the second floor. The roof should be flat, with posts for stretching clothes-lines.

Commissary and Quartermaster Store-Room.—A small two-story building, furnished with boxes and shelves for the various parts of the ration—having an ice-house connected with it for the preservation of meats and other perishable articles, and a room for clothing. The second story to contain bedding-rooms for the cooks.

Knapack-House.—A building to receive the effects of the patients while in hospital. It will contain as many pigeon-holes, each 2 feet square, as there are beds in the hospital.

Guard-House.—A detached building to lodge the guard, with a guard-room for prisoners.

Boat-House.—A small building containing two apartments, located so as not to be observed from the wards, and lighted by sky-lights.

Quarters for Female Nurses.—A detached building containing lodging-rooms, dining-room, and kitchen for the female nurses.

Chapel.—A detached building, fitted for the purpose of religious services, so arranged as to be used also as a library and reading room.

Operating-Rooms.—Two rooms, each 15 feet square; one well lighted by sky-lights, the other by windows. The first for surgical operations, the second for discharge-holds, etc. It should be situated near the administration building.

Stable.—For ambulance and officers' horses.

Water Supply.—Where practicable, a large tank will be erected and kept supplied from wells or springs by pump worked by a steam-engine. The engine, if possible, will be situated near the kitchen and laundry, in which case the steam may be made serviceable in cooking, and the power may be employed in working the washing and wringing machines.

Sinks.—Where the supply of water is adequate, water-closets may be constructed in one of the small rooms in each ward; but where this is not the case, privies will be built at a convenient distance from the wards, furnished with water-tight boxes, which must be emptied every night.

Ventilation.—During warm and mild weather the wards will be ventilated by the ridge (Figs. 5 and 6,) but during winter the ridge will be closed, (Fig. 7,) and ventilation by shafts substituted. Four stoves will be allowed to a ward, each partly surrounded by a jacket of zinc or sheet-iron, with an air-lock opening beneath it to

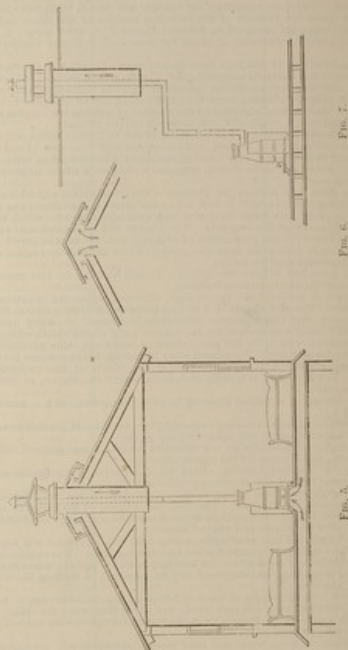


FIG. 7.

FIG. 6.

FIG. 5.

furnish the supply of fresh air. At 8 feet from the stove will be a shaft, properly capped, through which the stove-pipe will ascend. Figure 8 gives a section and Figure 9 a side view of the arrangement. The shaft should be 18 inches square, and should not come below the tie-beams.

2.—MODEL OF THE LINCOLN HOSPITAL, WASHINGTON, D. C.

This is a block model, on the scale of 30 feet to the inch, and represents the arrangements of the wards and other buildings of this hospital, of which the following description was furnished by Surgeon J. C. McKee, U. S. A., who was for a long time in charge:

Lincoln Hospital, Washington, D. C., is located about a mile east of the Capitol building. Its site is a gently undulating, uncultivated plain, without shade-trees. East and south of the hospital, the plain declines towards the Eastern Branch of the Potomac, which is about half a mile distant. The soil is a light sandy loam, resting on a deep stratum of gravel. The hospital covers an area of thirty acres of ground, and consists of twenty detached pavilion wards, arranged "en echelon" in the shape of the letter V, the apex of which looks westerly. The administration building is at the apex of the V. The buildings for kitchen, dining-rooms, etc., are in the space between the two sides of the letter. The whole is surrounded by a picket-fence, five feet high, between which and the wards is a wide road for ambulances. (See Figure 8.)

The Wards are pavilion barracks, built of rough boards, white-washed, with roofs of boards covered with tarred paper; they are 29 in number, 10 on each wing. Each ward is 187 feet by 24, 16 feet to the eaves and 20 to the ridge, at which there is the usual ridge-ventilation the whole length of the ward. They are plastered on the inside for about 8 feet above the floor. At the west end of each are 4 rooms, occupying 15 feet in length. These are used for clothing, baths, nurses, and sinks. Each ward contains 34 windows and 4 doors, one at each end and two in the middle, opposite each other. Four ventilating gratings, at regular distances in the floor of the ward, communicate by wooden flues under the floor with the air outside, thus giving a full supply of fresh air whenever the weather requires the doors and windows to be closed. With 62 patients, there are 72 square feet of floor and 1447 cubic feet of air-space for each. Thirty-one beds are arranged on each side, with a chair and bed-side table between each pair. An avenue of 11 feet is left between the two rows of beds. The wards are lighted at night by kerosene lamps, and heated by stoves in winter. On the inner side of the two wings of the hospital, and running the whole length of each, is a raised covered walk or corridor, on which is laid a railway track 2 feet wide and 2156 feet long. Box-cars convey the food from the main and extra kitchens to each ward.

The Administration building, at the apex of the triangle, is 184 by 38 feet, 22 feet to the ridge and 16 to the eaves. A hall, 8 feet wide, runs the entire length of the first floor. On the left side of the hall are the following rooms: office of surgeon in charge, 14 by 14; office of military assistant, 11 by 14, (employs two clerks); principal office, 56 by 14, (employs fourteen clerks); printing-office, 19 by 14, (employs two men); quartermaster's store-room for clothing, etc., 44 by 14, (employs two clerks); wardmaster's room, 13 by 14; bath-room, 4 by 14; post-office, 7 by 14, (employs a postmaster and assistant). On the other side of the hall, and on the right of the entrance door, are the office of the officer of the day, 15 by 14; office of the officer of the guard, 11 by 14, (four clerks); office of surgical records, 11 by 14, (one clerk); private office of surgeon in charge, 12 by 14; office of medical inspector, 11 by 14; linen-room, 62 by 14; all washed clothing and bed-linen is sent from the laundry to this room, and thence distributed to the different wardmasters: one clerk and four women are employed here, the latter in mending, etc. The medical store-room, 11 by 14, adjoins the dispensary, and is used for storing supplies. The dispensary, 25 by 14, usually employs four men: the medicines for the whole hospital are compounded here, under the charge of a hospital steward. Lastly, the laboratory,

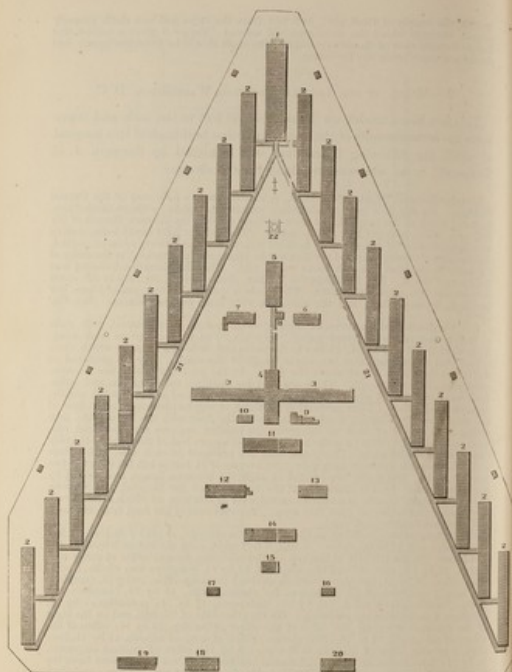


FIG. 5.—GENERAL PLAN OF LINCOLN GENERAL HOSPITAL, WASHINGTON, D. C. Scale, 200 feet to the inch. 1, Administration building; 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 234, 235, 236, 237, 238, 239, 240, 241, 242, 243, 244, 245, 246, 247, 248, 249, 250, 251, 252, 253, 254, 255, 256, 257, 258, 259, 260, 261, 262, 263, 264, 265, 266, 267, 268, 269, 270, 271, 272, 273, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293, 294, 295, 296, 297, 298, 299, 300, 301, 302, 303, 304, 305, 306, 307, 308, 309, 310, 311, 312, 313, 314, 315, 316, 317, 318, 319, 320, 321, 322, 323, 324, 325, 326, 327, 328, 329, 330, 331, 332, 333, 334, 335, 336, 337, 338, 339, 340, 341, 342, 343, 344, 345, 346, 347, 348, 349, 350, 351, 352, 353, 354, 355, 356, 357, 358, 359, 360, 361, 362, 363, 364, 365, 366, 367, 368, 369, 370, 371, 372, 373, 374, 375, 376, 377, 378, 379, 380, 381, 382, 383, 384, 385, 386, 387, 388, 389, 390, 391, 392, 393, 394, 395, 396, 397, 398, 399, 400, 401, 402, 403, 404, 405, 406, 407, 408, 409, 410, 411, 412, 413, 414, 415, 416, 417, 418, 419, 420, 421, 422, 423, 424, 425, 426, 427, 428, 429, 430, 431, 432, 433, 434, 435, 436, 437, 438, 439, 440, 441, 442, 443, 444, 445, 446, 447, 448, 449, 450, 451, 452, 453, 454, 455, 456, 457, 458, 459, 460, 461, 462, 463, 464, 465, 466, 467, 468, 469, 470, 471, 472, 473, 474, 475, 476, 477, 478, 479, 480, 481, 482, 483, 484, 485, 486, 487, 488, 489, 490, 491, 492, 493, 494, 495, 496, 497, 498, 499, 500, 501, 502, 503, 504, 505, 506, 507, 508, 509, 510, 511, 512, 513, 514, 515, 516, 517, 518, 519, 520, 521, 522, 523, 524, 525, 526, 527, 528, 529, 530, 531, 532, 533, 534, 535, 536, 537, 538, 539, 540, 541, 542, 543, 544, 545, 546, 547, 548, 549, 550, 551, 552, 553, 554, 555, 556, 557, 558, 559, 560, 561, 562, 563, 564, 565, 566, 567, 568, 569, 570, 571, 572, 573, 574, 575, 576, 577, 578, 579, 580, 581, 582, 583, 584, 585, 586, 587, 588, 589, 590, 591, 592, 593, 594, 595, 596, 597, 598, 599, 600, 601, 602, 603, 604, 605, 606, 607, 608, 609, 610, 611, 612, 613, 614, 615, 616, 617, 618, 619, 620, 621, 622, 623, 624, 625, 626, 627, 628, 629, 630, 631, 632, 633, 634, 635, 636, 637, 638, 639, 640, 641, 642, 643, 644, 645, 646, 647, 648, 649, 650, 651, 652, 653, 654, 655, 656, 657, 658, 659, 660, 661, 662, 663, 664, 665, 666, 667, 668, 669, 670, 671, 672, 673, 674, 675, 676, 677, 678, 679, 680, 681, 682, 683, 684, 685, 686, 687, 688, 689, 690, 691, 692, 693, 694, 695, 696, 697, 698, 699, 700, 701, 702, 703, 704, 705, 706, 707, 708, 709, 710, 711, 712, 713, 714, 715, 716, 717, 718, 719, 720, 721, 722, 723, 724, 725, 726, 727, 728, 729, 730, 731, 732, 733, 734, 735, 736, 737, 738, 739, 740, 741, 742, 743, 744, 745, 746, 747, 748, 749, 750, 751, 752, 753, 754, 755, 756, 757, 758, 759, 760, 761, 762, 763, 764, 765, 766, 767, 768, 769, 770, 771, 772, 773, 774, 775, 776, 777, 778, 779, 780, 781, 782, 783, 784, 785, 786, 787, 788, 789, 790, 791, 792, 793, 794, 795, 796, 797, 798, 799, 800, 801, 802, 803, 804, 805, 806, 807, 808, 809, 810, 811, 812, 813, 814, 815, 816, 817, 818, 819, 820, 821, 822, 823, 824, 825, 826, 827, 828, 829, 830, 831, 832, 833, 834, 835, 836, 837, 838, 839, 840, 841, 842, 843, 844, 845, 846, 847, 848, 849, 850, 851, 852, 853, 854, 855, 856, 857, 858, 859, 860, 861, 862, 863, 864, 865, 866, 867, 868, 869, 870, 871, 872, 873, 874, 875, 876, 877, 878, 879, 880, 881, 882, 883, 884, 885, 886, 887, 888, 889, 890, 891, 892, 893, 894, 895, 896, 897, 898, 899, 900, 901, 902, 903, 904, 905, 906, 907, 908, 909, 910, 911, 912, 913, 914, 915, 916, 917, 918, 919, 920, 921, 922, 923, 924, 925, 926, 927, 928, 929, 930, 931, 932, 933, 934, 935, 936, 937, 938, 939, 940, 941, 942, 943, 944, 945, 946, 947, 948, 949, 950, 951, 952, 953, 954, 955, 956, 957, 958, 959, 960, 961, 962, 963, 964, 965, 966, 967, 968, 969, 970, 971, 972, 973, 974, 975, 976, 977, 978, 979, 980, 981, 982, 983, 984, 985, 986, 987, 988, 989, 990, 991, 992, 993, 994, 995, 996, 997, 998, 999, 1000.

which adjoins the dispensary, is 22 by 14 feet, used for preparing tinctures, ointments, plasters, etc.

On the second floor of the administration building is the knapsack-room, 111 by 37 feet. The effects, accoutrements, etc., of the patients coming into the hospital are deposited in this room for safe keeping. It employs two men, who receive the articles deposited, issue tickets for the same, credit them to depositors, and deliver them when the patients leave. There are 2184 boxes, arranged in parallel rows, reaching from the floor to the ceiling. Adjoining the knapsack-room is the extra-duty men's room, 50 by 37 feet, used as a sleeping-room by the men employed on extra duty, and a clerk's room, 25 by 25 feet, used by the clerks of the principal office for the same purpose.

Within the triangle formed by the two wings, and east of the administration building, is the Tank, resting upon a platform 25 feet high, and holding 12,000 gallons of water. It is supplied from a well under the engine-room, and the water forced into it by the engine, which drives the machinery of the laundry. This tank supplies each ward with water by means of pipes. There are four other wells in the enclosure, used for drinking and culinary purposes.

Twenty yards east of the tank is the Laundry, 61 by 24 feet. The building runs east and west, is two stories high, and has a platform for drying clothes on the roof. Seven men and twelve women are employed in its various departments. The washing is done by steam-power, as is also the drying and ironing. The average wash is 5000 pieces daily—has been pushed to 7000. On the first floor of the laundry is the washing apparatus, consisting of a mangle, steam-boiler, revolving drum for wringing, rinsing-boxes, roller and ironing table; on the second floor is the steam drying-room, 56 by 123 feet. This is in addition to the drying arrangements on the roof. Separated by a partition from the laundry, on the first floor, is a sleeping-room for women, 22 by 24 feet; a kitchen for the same, 94 by 17; a dining-room, 94 by 18. The engine is in a building adjoining the laundry on the east; it is of six-horse power, and employs one engineer and an assistant. It supplies power for the tank as well as for the laundry. The well which supplies the tank is 40 feet deep, with usually 4 feet of water; its diameter is 6 feet. The steam pump can raise 2000 gallons of water per hour.

The building for Sisters' Quarters is 22 by 51 feet, with a wing 16 by 28, forming a letter "L." It is divided into chapel, sitting-room, kitchen, etc. Twenty-eight Sisters of Charity were on duty, and I must bear evidence to their efficiency and superiority as nurses. The extra-diet kitchen is under the care of a sister, and one is detailed by the superior for each ward. They administer medicine, diet, and stimulants, are under the orders of the ward surgeon, and are responsible to him alone. They have been beloved and respected by the men.

The Stewards' Quarters are 18 feet north of the engine-room, are two stories high—contain dining-room, kitchen, sleeping-rooms, etc. Five stewards generally occupied this building.

The Operating-room is 25 feet east of the engine-room. It is 17 feet square, and lighted by a skylight on the north side of the roof. A revolving-table is in the centre of the room; also a cupboard for instruments, sponges, microscope, etc., with a sink in the northwest corner. The Examining-room adjoining it is 17 feet 7 inches square, and communicates by a door with the operating-room.

The Extra-Diet Kitchen is under the same roof with the general kitchen. It is 18 by 21 feet—has in it a Harrison's European range, 8 feet front, 3 feet 6 inches deep. A room 18 by 12 feet adjoins on the south. This kitchen is under the supervision of a sister, who is generally assisted by from four to six men.

The Main Kitchen is 77 by 24 feet. It contains a cooking-range, 28 feet 10 inches long and 3 feet 2 inches wide; also three of "Peters' and Johnson's bake-ovens or roasters," two boilers for tea and coffee, each with a capacity of 120 gallons, five boilers or cauldrons for soup or hash, (60 gallons each,) and two for heating water, (one 60 gallons, the other 22 gallons.) Full diet is prepared here for all the men in the hospital.

On either side of the kitchen, opening from it north and south, are the Dining-rooms, each 146 by 24 feet, with three tables running the whole length of each, capable of seating in all 800 men. At the distal end of each room a door opens on a corridor and raised walk, so that the patients are protected from the weather in

coming to their meals. Cars, with cans fitted in them, are run around the corridors to the several wards with the food for those unable to come to the dining-room.

On the northwest corner of the kitchen is a room 20 feet long, 14 feet wide, and 10 feet high, used for washing dishes, roasting coffee, etc. From 40 to 50 men are usually employed in the various departments of the kitchen.

Opposite the centre of the northern dining-room and distant to the west 20 feet, is the *Fire-Engine and Hose-House*, 36 by 20 feet—contains one fire-engine, three hose-carriages, carrying 1850 feet of hose, 34 ladders, 22 hooks, 278 axes, and 360 buckets.

Thirteen feet south of the kitchen is the *Meat-shop*, 14 by 23. In its centre is an ice-box, 34 by 14, and 4 feet deep, lined with zinc. The allowance of ice per day is one pound for each man.

East of the kitchen, and connected by a covered way, is the *Commissary Building*, which is two stories high; the upper story is used to lodge attendants; the lower story, used for commissary store-room, is 82 by 23, and is under a commissary steward. In the northeastern corner is the liquor-room, 84 by 13, heavily planked and secured against marauders. All liquor is issued here on the orders of the ward surgeons. The vegetable room is in the northwestern corner, and is 9 by 13. An office, 9 by 15, adjoins the liquor-room. The books and accounts are kept in this office. The store-room is provided with a counter 52 feet long, and gives employment to one steward, one clerk, and two men. At the southern end is the bread-room, 14 by 23, which employs two men cutting bread for the tables. Adjoining, on the east, is the bakery, 14 by 23. The oven is 10 by 16 feet.

The *Chapel* is situated 63 feet east of the commissary building. It is a structure shaped like the letter "T," one story in height, with a cupola on top. The main building is 24 by 78 feet. The northern end is used during the week as a reading-room. The left wing, 18 by 26 feet, is used as a library; it contains 3,000 volumes, contributed to the hospital from various sources. The right wing is the same size, and is used as a school for the freedmen employed in the hospital, who are instructed by two female teachers.

Twenty-four feet south of the chapel is the *Sutler's Store*, 24 by 68. The *Stables*, 25 by 101, are 72 feet east of the sutler's shop; they contain 18 horses, 3 wagons, 2 ambulances, 3 carts, and 1 night-cart. Thirteen men are employed as hostlers, drivers, etc. One hundred and twenty-one feet northeast of the stables is the *Guard-House*, 15 by 47 and one story high. South of this are the *Oil-Room* and *Frederick's Quarters*, 25 by 65 feet. The oil and lamp room is in the northern part. Kerosene oil was used in lighting the whole hospital, and all the lamps were filled and trimmed in this room. A corporal and two men were employed. Ninety-one feet southeast of the oil-room is the *Dead-House*, 15 by 40 feet. It is divided into two rooms—the northern one used in making post-mortem examinations, and the southern for plaster-casts, etc. Thirty-two feet south of this room is the *Photographic Gallery*, 16 by 24 feet. An operator is employed at \$100 per month, paid from the slash fund. Surgical cases, pathological specimens, etc., are taken; also likenesses of all men discharged on surgeon's certificate of disability, as a guard against fraud. On the base line of the triangle are the *Medical Officers' Quarters*, 63 by 24 and two stories in height; also, in the same line, the quarters for the *Veteran Zouave Corps*, a building two stories high, with an outside entrance-stairway to the second floor. Ninety feet further back, 100 hospital tents are pitched, placed four end to end, on substantial frames, with floors raised from the ground and a door at each end of the frame. The sides of these tents were always easily raised, and gave the best of ventilation; hence I selected some of them as gangrene-wards, and, I think, with the very best results. In winter, each ward was heated by two stoves, with pipes running to a shaft in the centre. Each ward of four tents contained 20 beds. The length of the fence around the hospital is 1458 yards. The distance of the fence from the tents at the base of the triangle is 124 feet. Sinks were arranged around the whole line of fence. They had movable boxes, which were regularly emptied and lined. Policing was done by a gang of about 20 freedmen. The hospital could accommodate 1240 patients in the 20 barrack wards. Its total capacity in January, 1865, was 2575 beds, including those in tents and the branch barracks, a short distance off.

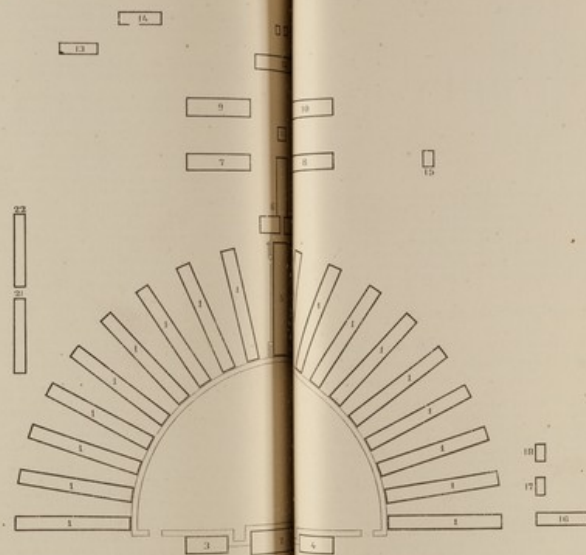


FIG. 9.—GROUND PLAN OF HAGAN'S GENERAL HOSPITAL, BALTIMORE. Scale, 1/4 inch = 10 feet to the inch. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100. 1, Administration building. 2, Linen-room, etc. 3, Dispensary and operating room. 4, Kitchen and laundry. 5, Ward for detailed men. 6, Knapsack-room. 7, Commissary store-house. 8, Quartermaster's office. 9, Tailor. 10, Steward's quarters. 11, Officer's quarters. 12, Quarters for guard. 13, Stables. 14, Wagon by entrance gate. 15, Saddle. 16, Steward's quarters. 17, Officer's quarters. 18, Quarters for guard. 19, Stables. 20, Wagon by entrance gate. 21, Workshop. 22, Commissary store-house. 23, Quartermaster's office. 24, Tailor. 25, Dispensary and operating room. 26, Linen-room, etc. 27, Administration building. 28, Knapsack-room. 29, Commissary store-house. 30, Quartermaster's office. 31, Tailor. 32, Steward's quarters. 33, Officer's quarters. 34, Quarters for guard. 35, Stables. 36, Wagon by entrance gate. 37, Saddle. 38, Steward's quarters. 39, Officer's quarters. 40, Quarters for guard. 41, Stables. 42, Wagon by entrance gate. 43, Saddle. 44, Steward's quarters. 45, Officer's quarters. 46, Quarters for guard. 47, Stables. 48, Wagon by entrance gate. 49, Saddle. 50, Steward's quarters. 51, Officer's quarters. 52, Quarters for guard. 53, Stables. 54, Wagon by entrance gate. 55, Saddle. 56, Steward's quarters. 57, Officer's quarters. 58, Quarters for guard. 59, Stables. 60, Wagon by entrance gate. 61, Saddle. 62, Steward's quarters. 63, Officer's quarters. 64, Quarters for guard. 65, Stables. 66, Wagon by entrance gate. 67, Saddle. 68, Steward's quarters. 69, Officer's quarters. 70, Quarters for guard. 71, Stables. 72, Wagon by entrance gate. 73, Saddle. 74, Steward's quarters. 75, Officer's quarters. 76, Quarters for guard. 77, Stables. 78, Wagon by entrance gate. 79, Saddle. 80, Steward's quarters. 81, Officer's quarters. 82, Quarters for guard. 83, Stables. 84, Wagon by entrance gate. 85, Saddle. 86, Steward's quarters. 87, Officer's quarters. 88, Quarters for guard. 89, Stables. 90, Wagon by entrance gate. 91, Saddle. 92, Steward's quarters. 93, Officer's quarters. 94, Quarters for guard. 95, Stables. 96, Wagon by entrance gate. 97, Saddle. 98, Steward's quarters. 99, Officer's quarters. 100, Quarters for guard.

This hospital was opened December 23, 1862, and closed August 22, 1865. During this period the movements of patients were as follows:

	ADMITTED.			Returned from furlough and desertion.	ADMITTED FROM OTHER HOSPITALS.	RESULTS.						
	Sick.	Wounded.	TOTAL.			Returned to duty and sent to general hospital.	Furloughed.	Transferred to other service Corps.	Discharged.	Died.	Total.	
White troops.....	22,901	25,127	48,028	3,365	23,793	77,181	5,411	4,490	398	2,933	286	10,660
Colored troops.....	13	5	18	.....	15	.....	48	.....	.....	.....	.....	101
Prisoners of War.....	124	970	1,094	.....	1,533	.....	294	.....	43	3	.....	340
Total.....	23,038	26,102	49,140	3,365	25,341	77,181	5,753	4,490	398	2,936	286	11,101

Deducting those sent to general hospital as cases not terminated, and considering that furloughed and deserted amounted to 4686, while only 2563 of these are reported as returned from furlough and desertion, we shall have the following statistics for the *terminated cases of white troops treated*:

Total to be accounted for, excluding those sent to other hospitals, 10,817; of whom 6329 were returned to duty, 852 mustered out of service at the close of the war, 1121 lost by desertion and failure to return from furlough, 1053 discharged for disability, 392 transferred to Veteran Reserve Corps, and 1060 died.

3.—MODEL OF THE HICKS' HOSPITAL, BALTIMORE, MD.

This is a block model on the scale of 30 feet to the inch. The following description of the hospital is taken from circular No. 6, Surgeon-General's Office, Nov. 1, 1865:

The Hicks' Hospital is situated on the continuation of Townsend street, in the western suburbs of Baltimore, near the city boundary. It was opened for the reception of patients June 9, 1865, and is therefore one of the most recently constructed hospitals. The plan was essentially the circular one referred to above, p. 9, but many important improvements and additions were devised by Surgeon Thomas Sim, U. S. Vols., under whose supervision the details of the plan were prepared. The original design contemplated a circular hospital, built on the War Department plan, with thirty-six radiating pavilion wards, each to accommodate 60 patients. The approach of the end of the war, however, prevented this from being executed, and the hospital, as completed, is a semi-circle, in which the wards radiate from a covered way. It is, however, both on account of the substantial character of the wooden buildings and the numerous conveniences which have been carefully supplied, one of the most complete of the hospitals built during the war. (See Fig. 9.)

The wards are built and ventilated as directed in the circular from the War Department. The administration building is 132 by 58 feet and two stories high; the first story contains offices for the surgeon in charge, executive officer, quartermaster, commissary, and their clerks; it also contains the hospital library and printing office. On the second floor are sleeping apartments for officers. This building is flanked on each end by a smaller one, 70 by 28 feet, one of which contains the linen-room and post-office, with the officers' dining-room, kitchen, and pantry. The other contains the dispensary, medical store-rooms, room of the discharge board, and an operating-room lighted by a skylight. The dining-room building is 187 by 48 feet,

and is two stories high. The dining-room, which is on the first floor, is capable of seating about 1,500 patients. The second floor, which is accessible by stairs on the outside, is occupied by the chapel and by dormitories for female nurses. At the end of the dining-room is a T-shaped building for kitchen and laundry. The general kitchen, extra-diet kitchen, and bakery occupy separate apartments; the former two each contains a suitable range and steam fixtures, the latter two bake-ovens. The laundry has a separate room for drying by steam, and immediately adjoins the engine-room, which is at the extremity of the building. There are, besides the foregoing, separate buildings for knapsack-room, quartermaster's store-house, commissary store-house, quarters for detailed men, barracks for guard, workshop, contagion ward, dead-house, stewards' quarters, and quarters for married officers. The buildings are plastered inside, are lighted by gas, to be warmed in the winter by stoves, and receive their water supply by pipes from the city water-works, besides which there is a tank for the purpose of keeping a stock of water constantly on hand in case of fire. For the purpose of extinguishing fire, there is abundant hose to fit the steam-pump. There are also water-buckets, axes, etc. At the distal end of each ward is a lavatory and bath-room and a water-closet. Each bath-room has in it a small stove, on which is a boiler for the supply of hot water. In the water-closets the excretions are received in troughs, into which a stream of water runs, and which are emptied by withdrawing a plug several times daily. They discharge into sewers constructed for the purpose, which carry all offensive matters entirely away from the hospital.

This hospital was opened for patients June 9, 1865; and closed March 31, 1866. The total number of white soldiers received up to this date was 1275, of whom 1011 were sick and 264 wounded. Of these, 494 were transferred to other general hospitals. The number of terminated cases, therefore, was 871, who are thus accounted for:

Total to be accounted for, excluding those transferred to other hospitals, 871; of whom 184 were returned to duty, 447 mustered out of service at the close of the war, 69 lost by desertion and failure to return from furlough, 119 discharged for disability, 2 transferred to Veteran Reserve Corps, and 50 died.

Besides the above, 290 colored soldiers were admitted, of whom 19 died.

4.—MODEL OF THE MCCLELLAN HOSPITAL, PHILADELPHIA, PA.

This is a block-model, on a scale of 30 feet to the inch. It was constructed, as was the model of the Mower Hospital, described below, by Mr. John McArthur, of Philadelphia, the architect by whom the plans for the construction of these hospitals were prepared. The following description is condensed from an inspection report by Medical Inspector John L. Le Conte, U. S. A.:

The McClellan Hospital is located on a portion of the old Logan estate, named Stenton, situated on the Germantown turnpike, within four miles of Philadelphia.

The ground upon which the hospital stands is a plateau, which slopes gently and regularly to Wingohocking creek.

This small creek has a succession of little falls and ripples, which, within the distance of half a mile, makes a descent of twenty-five feet or more. This creek provides one of the great requirements of a hospital—admirable drainage.

The hospital buildings were turned over to the Government on February 9, 1863. They are constructed entirely of wood, boarded outside and inside, the joints on the outside being battened. (See Fig. 10.)

The plan of the hospital is as follows: 18 wards radiate from a corridor 15 feet wide, arranged in the form of a parallelogram, with rounded extremities. In this corridor rails are placed, on which food-cars carry meals from the general kitchen to the doors of the wards. The wards are each 175 feet long, 20 feet wide, and 15 feet high to the eaves, with a pitch of 5 feet from the apex of the roof. Each ward contains 61 beds: 60 in the ward proper, and 1 in the ward-master's room. 5 beds out of the 61 are intended to be occupied by the nurses and attendants, thus leaving 56 beds for patients in each ward. It may be stated, however, that most of the nurse

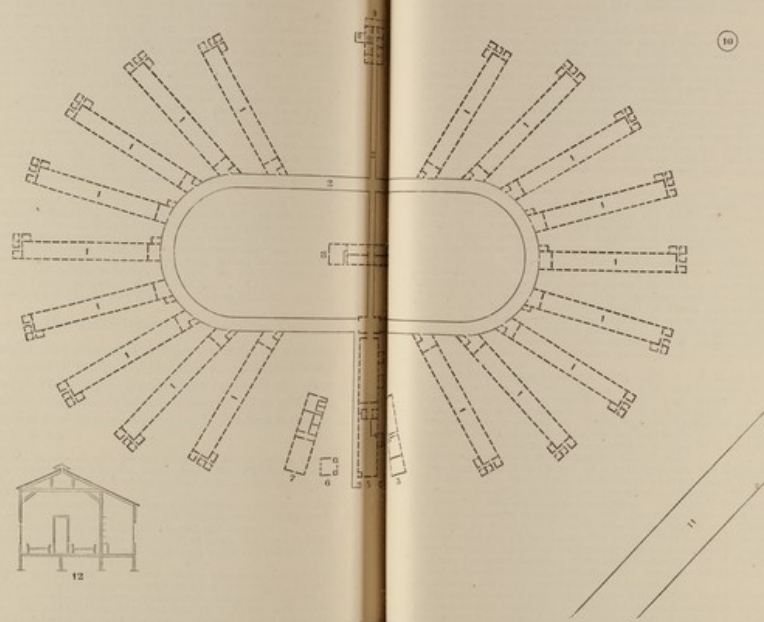


FIG. 6.—GROUND PLAN OF MCCLELLAN HOSPITAL, PHILADELPHIA, PA. Scale of feet. 1, 11 ft. Wards. 2, 20, Corridor. 3, Quartermaster's building. 4, Engine house. 5, Kitchen building. 6, Scullery. 7, Commissary building. 8, Administration building. 9, Porters. 10, Compass. 11, Germantown section. 12, Section through end of ward.

duty, &c., is performed by convalescents, who are really patients in the hospital. The greatest capacity of the hospital proper is 1008 beds. The present capacity of the hospital, however, is much greater, 200 beds having been placed in the corridors, and 800 in hospital tents pitched in the hospital grounds, thus making the total number of beds upwards of 2000. Each ward has a *dining-room* and *pantry* at its inner extremity next the corridor, and a *ward-master's room*, *latrine*, *water-closet*, and *bath-room* at its outer extremity.

In addition to these, small galleries have been put up in the outer extremities of the wards, covering the entries, &c., for the purpose of stowing away articles that might otherwise encumber the wards. In the ward-master's room are closets for placing the ward clothing, and in the extremity of the entry dividing the above little offices large closed boxes have been constructed for receiving soiled clothing. Dressing closets, boxes, and cupboards have been added from time to time to facilitate the working of the wards and provide every convenience for the inmates. Each ward is, in fact, a complete hospital within itself, except kitchen and dispensary.

The *Commissary building* is situated on the western front of the hospital. It is 111 feet long, 24 feet wide, and 25 feet high. It contains in the lower story two store-rooms, an ice-house and meat-room, cellar for keeping ale, porter, and milk, offices for the commissary steward, mess-room for the hospital stewards, and paint-shop. On the second floor it contains 2 knapsack-rooms, an office, bath-room, and dormitory.

The *Quartermaster's building* is situated on the western front of the hospital. It is 111 feet long, 24 feet wide, and 25 feet high, and contains 2 store-rooms well provided with shelving, an office, dormitory, and green-room on the first floor; on the second floor, a store-room, guard-barracks, and prison room.

The *Engine-house* is one story high, and is situated on the western front of the hospital, between the Quartermaster's building and laundry. It is 60 feet long, 19 feet wide, and 17 feet high. There is a small additional building attached to it, used as coal-bin, with a capacity of 20 tons. Fourteen feet of the main building is partitioned off for engineers' quarters, leaving the boiler-room 26 by 19 feet. There is a bench with vice attached, and all the necessary tools for making repairs. There are 2 tubular boilers, locomotive pattern, 10 feet long, with 36 two-inch tubes. The draft is through underground flues leading to the smoke-stack; the stack is 45 feet high. The boilers are 10-horse power each, and supply the steam for bathing, cooking, and washing purposes, and for running 2 steam pumps, 1 of 5-horse power, used in case of fire; the other, a 10-horse power pump, for supplying the building with water from the wells.

The *Kitchen building* is situated at the middle of the western front of the hospital. It is 172 feet long, 30 feet wide, and 28½ feet high, and is composed of 2 stories. The *Laundry* is situated at its western extremity. The cooking-room is 90 feet long; a small store-room is attached to it, and it is well provided with sinks, hot and cold water, cupboards, closets, &c. The arrangements are ample and convenient for the original capacity of the hospital, but the tent-wards have special cooking arrangements. The cooking in the general kitchen is done by means of 2 large ranges, 2 cooking-stoves, and 2 double-jacketed steam-boilers.

The laundry is 74 feet long. It is well furnished, and the washing accommodations are ample, there being 24 stationary wash-tubs, each having 2 facets, 1 for cold water, the other for the steam with which it is heated. There are 2 large steam-boilers for boiling clothes and making soap. The laundry contains also an office for the chief matron, a drying-room, ironing-room, and the room for dirty clothing; above the laundry, in the second story, is the linen-room. The whole laundry is divided from the kitchen by a 6-foot entry. Five thousand pieces of clothing per week have been washed in the laundry, with an average of 25 washing women.

It may be added, however, that a considerable amount of clothing has now to be issued to laundries outside of the hospital. Over the kitchen and laundry are dormitories for the employees of those departments.

The *stable* is also situated at the western front of the hospital, between the laundry and commissary building. It is convenient and comfortable, having stalls for four horses, carriage-house, and now above capable of holding 10,000 lbs. of straw.

The *Printing office* and *Paint shop* are on the first floor of the commissary building; the former is furnished with a small press, with chase 9 by 11 inches. It is well supplied with type and all printing appliances. All the printing of the hospital

is done here. The paint shop is a small room next the printing office. It is well supplied with painting materials.

A small building has been constructed north of the commissary building, to be used as a *Carpenter's shop*. All the necessary repairs for the hospital are prepared here.

The *Officers' quarters* are situated at the eastern front of the hospital, and are well located, convenient, and pleasant. The building is 2 stories in height, with 7 chambers, kitchen, bath-room, and water-closet on the first floor, and 7 chambers, bath-room, and water-closet on the second.

The *Dormitories for Cooks and Matrons* are situated over the kitchen and laundry. The guard are quartered in hospital tents.

The *Administration building* is situated in the middle of the centre oval, and is connected with the main corridor and officers' quarters by a transverse corridor running at right angles to the long diameter of the oval. In it are situated most of the offices of the hospital, viz: The offices of the surgeon in charge, executive officer, assistant executive officer, military assistant, general office for clerks, reception-room for officer of the day, officers' mess-room, dispensary, and store-room. The offices are all small, but being centrally situated, are very convenient to all parts of the hospital.

The dispensary is well arranged and ample.

The *Kitchens* are on the second floor of the commissary building. It is provided with boxes for every bed, and is conveniently arranged. Each ward has metal checks, with the number of the ward and number of the bed stamped upon them. When patients are received these checks are placed upon their baggage, and it is then stored away in the appropriate boxes.

The water of the hospital is supplied by the Germantown water-works. The water bills are all estimated on the basis of 20 gallons per diem for each inmate of the hospital. Wells are now being dug, which it is supposed will supply all the water needed. Two of the wells are already constructed, and about 8,000 gallons per day are pumped from them. The water from the wells is of very good quality.

The water is distributed through the hospital by means of galvanized-iron pipes, and in case of accident or fire two main reserve tanks, with a capacity of 20,000 gallons, are kept filled to supply deficiencies.

Over the northern and southern portions of the corridor are placed 2 large tanks, with a capacity of 3800 gallons each, the water in which is heated by steam; these supply the hot-water for bathing, pantry, and other purposes.

A similar tank of the same size, heated by steam, is placed over the kitchen, to supply it with hot-water.

The *drainage* of the hospital is arranged as follows: One line of 12-inch tile pipe surrounds the whole of the hospital buildings, just outside of the line of the fence, with 4-inch pipes leading into the same from the lavatories, bath-rooms, and water-closets of each ward. Another line of 12-inch pipe surrounds the inner oval at the margin of the corridor, with 4-inch pipes leading into it from the kitchen sinks, laundry, wash-tubs, and water-closets. Both 12-inch mains connect on the southeastern portion of the hospital, and empty into a cess-pool about 150 yards in the rear. The cess-pool is 20 feet in diameter. The overflow from it is led by means of a drainage tile into the Winglocking creek. The solid materials are cleaned out from time to time as the pool becomes filled.

Ventilation, Heating, &c.—Each building is furnished with ridge ventilation, and in the wards there are also floor ventilators between the windows, capable of being closed by sliding frames. The openings are flush with the floor and 8 inches square; there are 27 to each ward. The openings in the ridge are covered by falling shutters, which are elevated and lowered by pulleys.

The hospital is heated by 256 stoves; these are watched at night during the cold season by an organized fire-guard, the same guard doing duty in the wards and corridors as watchers during the warm weather.

The hospital is lighted by gas from the Germantown gas-works. The *water-closets* are 2 feet 5 inches long by 6 feet wide. The apparatus consists of a cast-iron sink 5 feet long and 12 inches wide, covered by a board pierced with 5 holes; a faucet supplies the water, and a trap removes it whenever it becomes necessary.

Each ward has also a cast-iron drip or sink for washing dishes and other work.

The apparatus for subduing fire consists of 2000 feet of 2½-inch india-rubber hose, with couplings complete, 8 fire-plugs, and one 5-horse power force pump.

Two large reserve tanks, holding 50,000 gallons of water, are placed over the main corridor, on brick walls, for the purpose of furnishing an extra amount of water should the supply from the main be insufficient.

In addition to the above, each ward has a 20-foot section of inch hose, with couplings and branch pipe, that can be attached in a moment to a small plug in the water-closet. Each ward has also in the dining-room a fire-axe, and three fire-buckets kept constantly filled. It has been stated before that an organized fire-guard patrols the hospital at night.

This hospital was opened March 12, 1863, and closed July 30, 1865. During this period the movements of patients were as follows:

	ADMITTED.			RESULTS.									
	Sick.	Wounded.	Total.	Returned from furlough and desertion.	AMOUNT.	Returned to duty.	Manicured out.	Sent to other general hospitals.	Furloughed.	Transferred to Veteran Reserve Corps.	Discharged.	Deceased.	Died of disease.
White troops.	1389	151	1540	1189	10652	1303	700	1728	1392	111	598	624	71
Colored troops.	34	4	38	—	26	37	—	4	—	—	—	—	—
Prisoners of War.	—	25	25	—	25	—	—	—	—	—	—	—	—
Total.	1423	180	1603	1189	10703	1340	700	1732	1392	111	598	624	71

Deducting those sent to other hospitals as cases not terminated, and considering that the furloughed and deserted amounted to 2883, while only 1119 of these are reported as having returned, we shall have the following statistics for the terminated cases of white troops treated:

Total to be accounted for, excluding those sent to other hospitals, 3793; of whom 3320 were returned to duty, 729 were mustered out of service at the close of the war, 764 lost by failure to return from furlough and desertion, 698 discharged for disability, 111 transferred to the Veteran Reserve Corps, and 107 died.

5.—MODEL OF THE MOWER HOSPITAL, PHILADELPHIA, PA.

This is a block-model on the scale of 30 feet to the inch. The following description is condensed from an inspection report by Medical Inspector John L. Le Conte, U. S. A.:

The Mower Hospital is situated on an elevated plateau in the village of Chestnut Hill, about 9 miles north of the city of Philadelphia. It is on the eastern side of the railroad, and trains from Philadelphia pass every two hours. The total capacity of the hospital is 3000 beds.

It is constructed of wood in the best manner, lined with smooth planks on the inside, and lathed and plastered on the outside. It consists of 50 pavilions, radiating from a corridor of a rectangular form, with rounded angles. The corridor is 16 feet wide and 2400 feet long, enclosing a space of 7 acres. The Administration Building is located in the center of the enclosed space. This building is connected with the wards by a transverse corridor. (See Fig. 11.)

A third corridor connects the entrance to the hospital with the administration building, thus dividing the enclosure into three sections. Within the enclosure are the chapel and Bible-class room, laboratory, carpenter's shop, dining-room for attendants, boiler-room, general and extra-diet kitchen, butcher's-house, milk-house, operating-room, and dead-house, guard-house, and sutler's shop.

In the rear and on each side of the hospital are two buildings, each in the form of the letter L, and each connected with body of hospital by means of a corridor.

One-half of the one located on the northeastern extremity of hospital is used as a barracks for convalescents. The lower floor of the other half is occupied by the Quartermaster's and Medical Purveyor's stores, while the upper floor is used for offices and quarters of officers of *Veteran Reserve Corps*.

One-half of the other L-shaped building, which is situated in the northwestern extremity of hospital, is used as barracks for the non-commissioned officers and privates of the *Veteran Reserve Corps*, the other half as a dining-room for the occupants of both barracks.

Forty-seven of the pavilions are used as wards for patients. Each pavilion is 175 feet long, 30 feet wide, 13 feet high to the eaves, and 19 feet to the ridge. The Dining-room at the entrance to each ward is 10 by 20 feet; the Scullery adjoining, 8 by 10 feet. At the opposite end of building is a ward-master's room 10 by 12 feet, a Wash-room 8 by 10 feet, Water-closet 12 by 6 feet, and in an adjoining building, 10 by 12 feet, a Bath-room.

The ward proper is 150 by 20 feet. Each ward contains 61 beds. The offices are located in the Administration building, on the first floor. In addition to those belonging to the surgeon in charge, there is an executive office and an office for the transaction of the general business of the hospital.

Adjoining the general office is the dispensary, 14 by 60 feet, with a Store-room in the rear 29 by 20 feet. Opposite the general office is the Medical Officers' mess-room 14 by 79 feet.

The second story is divided into 32 rooms, used as quarters for Medical Officers.

The Operating-room is in a separate building, 25 by 40 feet, situated to the right of the corridor connecting the entrance with the administration building. This building is divided into two rooms. The rear room is a lecture-room, containing seats for 100 persons, where all operations are performed. This room contains closets for instruments, dressings, &c., and the medical library and pathological cabinet of the hospital. The front room, 13 by 25 feet, is used as a Dead-house, and contains all the conveniences for post-mortem examinations, and a vault 8 feet long, 4 feet wide, and 12 feet deep, with windlass and dumb-water, for the reception of deceased soldiers preparatory to their burial.

Near the operating room is the Guard-house, which is strongly built, and contains a room 30 by 15 feet, for the guards, and six small cells for prisoners; it is also provided with a water-closet. Alongside of the guard-house is the Sutter's shop, 16 by 20 feet, connecting by a passage way with the main corridor.

The pavilion to the right of the entrance is divided into 3 rooms; the front and largest is used as a *Amputee-room*; the two smaller ones are used by the band. The pavilion on the left of the entrance is two stories high. On the lower floor is the reception-room, mess-room for stewards, closets, &c., and the Laundry. The second story is used as a *Barracks for Attendants*. The pavilion next on the left of this is used for the commissary stores, bread-room, and quarters for stewards.

On the left of corridor connecting the entrance with the administration building is the General Kitchen, 30 by 110 feet. It contains three large-sized hotel ranges, and three London kitcheners, eight double-jacketed steam kettles for soup, and three large-sized cooking-stoves. At one end of the kitchen is the steward's room and pantry, and the other the surgeon's kitchen. In the rear of the general kitchen is the boiler-room, 29 by 29 1/2 feet, containing two large boilers, a steam force-pump and fire-engine. On the left of the general kitchen is a large Dining-room, 150 by 30 feet, for attendants, the Carpenter's shop, 20 by 50 feet, and the Chapel, 60 by 75 feet, the latter connected with main corridor by means of a passage way. The chapel is used as a *Reading-room* by the patients during week-days, and contains a Library of 2400 books. In the rear of the chapel is a *Bible-class room*, 25 by 30 feet.

In the angle formed by the union of main corridor with corridor leading from chapel are the Post-office and Barber shop. To the right of the corridor connecting entrance with the administration building is the extra-diet Kitchen, 30 by 20 feet, containing one large London kitchener complete. The Milk-house and Butcher shop are also on the right of the corridor.

The supply of water is received from the Chestnut Hill water-works into four large tanks, in the second story of the administration building, capable of holding 18,000

gallons each, and into two large tanks at the junction of the transverse with the main corridor, which hold 15,000 gallons each.

The sewerage consists of two large drains, one extending around the outside of the hospital, which is a brick culvert 20 by 20 inches in diameter, into which the water-closets, wash-rooms, and bath-rooms of the wards empty. The second runs outside of the corridor but within the enclosure, and is a drain of terra-cotta pipe 14 inches in diameter, which carries off the waste water from the sculleries of the wards. Emptying into this smaller drain are others leading from the different buildings of the hospital. Both these drains unite at the southeastern extremity of the hospital, forming one large sewer, which empties its liquid contents into a creek distant from hospital half-a-mile. The solid contents of sewer are removed once every four months.

The hospital is ventilated by the "ridge" method, and by square holes through the sides of the wards flush with the floor. It is heated by coal stoves, and lighted by gas.

The hospital is well supplied with all necessary apparatus for subduing fire. The enclosure is divided into four districts, and each district and ward is connected with the administration building by means of a telegraph. In case of fire, the alarm is struck by pulling the wire in the corridor, the bell striking the number corresponding with the number of the district in which the fire exists.

There is one hose-carriage in each fire-quarter, and each district is well supplied with hose, fire-buckets, fire-axes, and ladders. A well organized fire-brigade exists in the hospital, the members of which are drilled regularly three times a week.

The tanks inside of the corridor and outside within the enclosure are constantly kept filled with water.

This hospital was opened December 24, 1862, and closed November 14, 1865. During this period the movements of patients were as follows:

	ADMITTED.				RESULTS.							
	Sick.	Wounded.	TOTAL.	Returned from furlough and desertion.	AMOUNTS.	Returned to duty.	Mastered out.	Sent to other general hospitals.	Furloughed.	Transferred to <i>Veteran Reserve Corps</i> .	Discharged.	Died of Disease.
White troops	11727	10025	21752	4437	16932	10008	135	4720	4499	865	1917	545
Colored troops	89	17	106	2	104	8	1	16	22	12	—	—
Total	11816	10042	21858	4439	17036	10016	136	4736	4521	877	1917	545

Deducting those sent to other general hospitals as cases not terminated, and considering that the furloughed and deserted amounted to 6194, while only 4437 of those are reported as having returned, we shall have the following statistics for the terminated cases of white troops treated:

Total to be accounted for, excluding those sent to other hospitals, 16,956; of whom 10,106 were returned to duty, 1989 mastered out of service at the close of the war, 1737 lost by failure to return from furlough and desertion, 1937 discharged for disability, 865 transferred to the *Veteran Reserve Corps*, and 522 died.

International Exhibition of 1876.

HOSPITAL

OF THE

Medical Department, United States Army.

No. 4.

DESCRIPTION

OF THE

MODELS OF HOSPITAL STEAM-VESSELS

EXHIBITED IN ROOM NO. 2.

J. J. WOODWARD,

Assistant Surgeon, U. S. A.,

IN CHARGE OF THE REPRESENTATION OF THE MEDICAL DEPARTMENT, U. S. A.

Philadelphia, 1876.

INTERNATIONAL EXHIBITION OF 1876.

HOSPITAL

Medical Department, United States Army.

DESCRIPTION OF THE MODELS OF HOSPITAL STEAM-VESSELS.

THESE models are intended to illustrate the plans actually employed during the war of 1861-5 for adapting the ordinary steamboats of the interior rivers of the United States, and the merchant steam-vessels of the Atlantic coast, to the transportation of sick and wounded soldiers.

It was, of course, on the Mississippi river and its tributaries, in the rear of the great western armies, that the methods of fitting up river-boats were brought to the greatest perfection. The military operations in the Mississippi valley, during the greater part of the war, were so related to these streams that they offered the most convenient and economical routes of transportation, and the numerous large river-steam-boats, which in times of peace are occupied in transporting merchandise and passengers on these waters, required comparatively little alteration to convert them into commodious hospital-boats, well adapted to the transportation of the sick and wounded.

From the capacious dimensions of these boats, and their smooth motion through the waters of the broad streams on which they floated, his method of transportation undoubtedly secured greater comfort to the patients than was possible in the case of the railroads, or of coast-wise transportation. Indeed, on emergencies, as after battles, these boats often served, without any special fitting up, to convey the wounded in comparative comfort to the base hospitals. But early in the war several of the most spacious and commodious of the Mississippi river passenger steamboats were specially devoted to the service of the sick

Model of the U. S. Army Hospital Steamboat D. A. January.—This model was constructed under the immediate supervision of Assistant Surgeon A. H. Hoff, U. S. Army, who was for a long time surgeon-in-charge. It is five feet long, being on the scale of one-fourth of an inch to the foot, and represents the whole vessel, with beds, &c., in position, all details being carefully worked out. The following statement with regard to this vessel was furnished by Dr. Hoff:

"The hospital steamer, *D. A. January*, was built in Cincinnati, Ohio, in 1856. She was a side-wheel steamboat of 450 tons burthen, 235 feet in length, 35 feet beam, and extreme width 65 feet. She had two high pressure engines, 22-inch cylinders, and seven feet stroke; also a donkey-engine connecting with a steam-pump as a protection against fire.

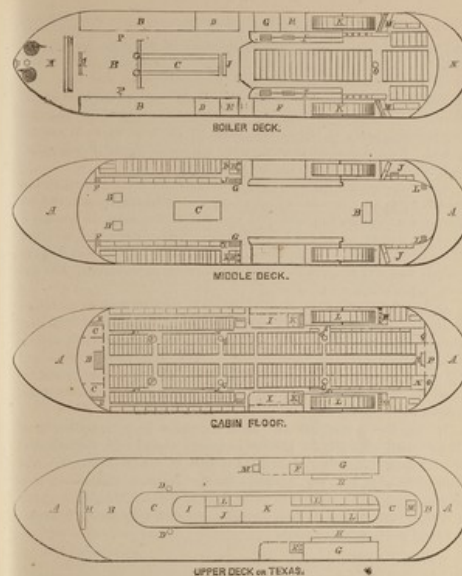
"She was purchased by the Government in the spring of 1862: underwent some alterations, and made her first trip in April, 1862, arriving at Pittsburg Landing in the midst of the battle of Shiloh, loaded with a large supply of hospital stores for the purveyor at that point.

"In the fall of 1862 she was completely fitted up, as shown in the model, with all the requirements of a general hospital, with a capacity of 400 beds. (See *Fig. 1*.)

"The medical officers consisted of one surgeon and three assistant surgeons, with the necessary attendants, nurses, cooks, &c.

"The Commanding General, by order, arranged the running of all hospital steamers so that they could not be interfered with by the subordinate commanders, and once under way with their load of sick and wounded were not disturbed until their destination was reached. Our flag was considered a flag of truce, fully protected us, and gave us an opportunity of keeping the hospitals always in order. No persons were allowed passage on the steamers except those connected directly with the medical department of the army.

"To overcome the difficulty as to supplies, and the prompt payment of men employed on the boat, the 'surgeon-in-charge' was made an 'acting assistant quartermaster' and 'commissary of subsistence,' and this arrangement worked most satisfactorily, and enabled the boat to be always in readiness to leave at a moment's notice.

[illegible]

"A large quantity of ice was carried in the hold of the vessel; this was taken advantage of by an arrangement of pipes to convey 'ice water' to the different parts of the hospital. A tank was placed on the upper deck forward, connected with the steam pump, and kept constantly filled with water; pipes from this ran down into the hold of the vessel to a coil embedded in the ice, whence the cold water made its way through pipes to the several parts of the boat where it was required. This worked admirably, giving all hands plenty of ice water, and with great economy in the use of the ice.

A fan ran through the whole length of the main ward, worked by the machinery below; it made about ninety revolutions a minute, and as the transom-windows opened just above it at the sides, it created a pleasant current of air, and had besides another effect that was not taken in consideration at the time the fan was ordered, viz., that it drove out all flies and mosquitos. The fan is seen in the model, but the water pipes could not be shown."

Assistant-Surgeon A. H. Hoff, U. S. Army, then surgeon U. S. volunteers, was assigned to the command of this boat by order of Major-General Halleck, April 6, 1862, and continued to render efficient service as the surgeon-in-charge until February, 1864, when he was succeeded by Surgeon Lewis C. Rice, U. S. volunteers, who continued in charge until the boat made her last trip and was turned over to the quartermaster at St. Louis, Missouri, September 25, 1865.

During this period the boat made numerous trips from the rear of the western armies to St. Louis, Cincinnati, Mound City, Keokuk, and other points. Moreover, during the months of March, April, May, and June, 1863, she lay near Milliken's Bend, Louisiana, and served as a floating hospital for the armies under General Grant. Altogether 23,738 patients were carried by her, of whom 530 died *en route*, as is shown by the following list of trips:

List of Trips of the Hospital Steamer D. A. January.

PLACE AND DATE OF EMBARKATION.	PLACE AND DATE OF LANDING.	Number Carried.	Died on the way.
Pittsburg Landing, Tenn. 1862.	St. Louis, Mo. 1862.	431	17
Pittsburg Landing, Tenn. April 11.	Keokuk, Iowa. April 23.	374	4
Pittsburg Landing, Tenn. May 2.	New Albany, Ind. May 4.	250	29
Pittsburg Landing, Tenn. May 10.	Cincinnati, Ohio. May 6.	264	7
Pittsburg Landing, Tenn. May 10.	Jefferson Barracks, Mo. May 11.	264	7
Total.		1399	67

PLACE AND DATE OF EMBARKATION.	PLACE AND DATE OF LANDING.	Number Carried.	Died on the way.
Brought forward.		1399	67
Pittsburg Landing, Tenn. 1862.	Jefferson Barracks, Mo. June 12.	325	1
Pittsburg Landing, Tenn. June 19.	Paducah, Ky. June 20.	459	3
Pittsburg Landing, Tenn. June 19.	Jefferson Barracks, Mo. June 22.	459	3
Paducah, Ky. July 5.	Keokuk, Iowa. June 23.	287	2
Paducah, Ky. July 5.	Evansville, Ind. July 7.	287	2
Paducah, Ky. July 5.	Louisville, Ky. July 8.	287	2
Helena, Ark. July 17.	Jefferson Barracks, Mo. July 11.	327	10
Paducah, Ky. July 25.	Jefferson Barracks, Mo. July 27.	998	—
Paducah, Ky. Aug. 4.	St. Louis, Mo. Aug. 6.	444	—
Helena, Ark. Aug. 20.	Mound City, Ill. Aug. 23.	260	1
Paducah, Ky. Aug. 23.	Mound City, Ill. Aug. 23.	30	—
Helena, Ark. Sept. 29.	St. Louis, Mo. Oct. 3.	386	14
Helena, Ark. Oct. 7.	St. Louis, Mo. Oct. 10.	272	6
Columbus, Ky. Oct. 12.	St. Louis, Mo. Oct. 13.	374	—
Columbus, Ky. Oct. 12.	Mound City, Ill. Oct. 13.	88	—
Columbus, Ky. Oct. 20.	Keokuk, Iowa. Nov. 4.	328	1
Columbus, Ky. Nov. 18.	St. Louis, Mo. Nov. 21.	470	2
Columbus, Ky. Nov. 28.	Jefferson Barracks, Mo. Nov. 30.	435	—
Helena, Ark. Dec. 9.	St. Louis, Mo. Dec. 16.	440	13
Arkansas Post, Ark. 1863.	Memphis, Tenn. Jan. 18.	439	54
Arkansas Post, Ark. Jan. 14.	St. Louis, Mo. Jan. 18.	439	54
Served as receiving hospital at Milliken's Bend, La., during the months of	Transferred to other hospitals, etc.	1224	46
March.	Transferred to other hospitals, etc.	1460	79
April.	Transferred to other hospitals, etc.	756	49
May.	Transferred to other hospitals, etc.	1925	35
June.	Transferred to other hospitals, etc.	378	16
Milliken's Bend, La. Aug. 11.	St. Louis, Mo. Aug. 18.	378	16
Vicksburg, Miss. Aug. 27.	Memphis, Tenn. Aug. 31.	372	2
Vicksburg, Miss. Sept. 1.	Memphis, Tenn. Sept. 6.	377	9
Vicksburg, Miss. Sept. 15.	Memphis, Tenn. Sept. 18.	444	5
Vicksburg, Miss. Sept. 29.	Memphis, Tenn. Oct. 7.	75	1
New Orleans, La. Oct. 28.	Calumet, Ill. Nov. 2.	100	2
Memphis, Tenn. Nov. 23.	Calumet, Ill. Nov. 25.	345	3
Nashville, Tenn. Dec. 9.	St. Louis, Mo. Nov. 27.	345	3
Nashville, Tenn. Dec. 9.	Evansville, Ind. Dec. 12.	345	3
Total.		1399	67

PLACE AND DATE OF EMBARKATION.	PLACE AND DATE OF LANDING.	Number Carried	Board on
	Brought forward	13491	411
New Albany, Ind. 1864.	Jefferson Barracks, Mo. Feb. 13.	97	
Louisville, Ky. Feb. 11.			
Louisville, Ky. Mar. 15, 50	Madison, Ind. March 19	473	
Louisville, Ky.			
New Albany, Ind. April 7.	Madison, Ind. April 8.	350	
Jeffersonville, Ind.			
Vicksburg, Miss. April 17.	Memphis, Tenn. May 1, 2.		
Memphis, Tenn. May 1.	Cairo, Ill. May 3.		
Cairo, Ill. May 3.	Louisville, Ky. May 8.	338	1
Mound City, Ill. May 3.	New Albany, Ind. May 9.		
Mound City, Ill. May 11.	Jefferson Barracks, Mo. May 17.	459	
Nashville, Tenn. May 12.	New Albany, Ind. May 16.	739	
Mound City, Ill. June 10.	Jefferson Barracks, Mo. June 22.	120	
Louisville, Ky. June 21.	Evansville, Ind. June 22.		
Evansville, Ind. June 21.	Jefferson Barracks, Mo. June 23.	478	
Memphis, Tenn. Aug. 16.	Jefferson Barracks, Mo. Aug. 16.	345	6
Memphis, Tenn. Aug. 17.	Jefferson Barracks, Mo. Aug. 17.	399	1
Helena, Ark. Sept. 7.	Jefferson Barracks, Mo. Sept. 9.	337	1
Helena, Ark. Sept. 19.			
Memphis, Tenn. Sept. 20.	Jefferson Barracks, Mo. Sept. 24.	359	1
Duval's Bluff, Ark. Oct. 12.	(Mound City, Ill. Oct. 19, 20.)		
	(Jefferson Barracks, Mo. Oct. 21.)	407	21
Mouth of the White river, Ark. Nov. 3.	Cairo, Ill. Nov. 6.	107	
Mouth of the White river, Ark. Nov. 10.	Mound City, Ill. Nov. 14.	45	
Nashville, Tenn. Nov. 25.	Evansville, Ind. Nov. 29.	361	1
Nashville, Tenn. Dec. 1.	Jefferson Barracks, Mo. Dec. 3.	416	1
Louisville, Ky.	(Covington, Ky.)		
Jeffersonville, Ind. Dec. 19.	(Cincinnati, Ohio. Dec. 21.)	543	
	(Camp Dennison, Ohio.)		
Louisville, Ky.	(Cincinnati, Ohio.)		
Jeffersonville, Ind. Dec. 26.	(Covington, Ky. Dec. 27.)	496	
Louisville, Ky. 1865.	Cairo, Ill., (for transfer to St. Louis.)		
Jeffersonville, Ind. Jan. 5.	Evansville, Ind. Jan. 9.	426	1
Eastport, Miss. Jan. 27, 1865.	Mound City, Ill. Feb. 5.		
Waterloo, Ala. Feb. 4.	Memphis, Tenn. Feb. 8.	373	30
	Total	20304	453

PLACE AND DATE OF EMBARKATION.	PLACE AND DATE OF LANDING.	Number Carried	Board on
	Brought forward	20304	453
Eastport, Miss. 1865.			
Waterloo, Ala. Feb. 12.		1365.	
New Albany, Ind. Feb. 14.			
Jeffersonville, Ind. Feb. 14.			
Nashville, Tenn. Feb. 16.			
Chickasaw, Ala. Mar. 12-29	Jeffersonville, Ind. March 27.	354	8
New Orleans, La. April 13.	Baton Rouge, La. April 14.	190	
New Orleans, La. Apr. 17, 18.	(St. Louis, Edgar Carroll at New Orleans, La. (Vicksburg, Miss. April 25.)	169	
Selma, Ala. May 6.			
Mobile, Ala. May 8.	New Orleans, La. May 15.		
Fort Gaines, Ala. May 9.	Mound City, Ill. May 21.	369	11
New Orleans, La. May 15.			
Vicksburg, Miss. June 5.			
New Orleans, La. May 21.	Memphis, Tenn. June 8.		
Vicksburg, Miss. June 1.	St. Louis, W. Butler at Cairo, Ill., for transfer to Nashville	360	
New Orleans, La. June 10.			
Baton Rouge, La. June 21.	Cairo, Ill. June 29.	299	7
Vicksburg, Miss. June 23.	Jefferson Barracks, Mo.		
New Orleans, La. July 17.	Cairo, Ill. July 14.		
Baton Rouge, La. July 18.	Jefferson Barracks, Mo. July 26.	308	3
Cairo, Ill. July 24.			
New Orleans, La. Aug. 3, 9	Cairo, Ill. Aug. 15.		
Baton Rouge, La. Aug. 10.	Jefferson Barracks, Mo. Aug. 15.	429	11
Vicksburg, Miss. Aug. 12.			
New Orleans, La. Aug. 16.			
Baton Rouge, La. Aug. 27.	Cairo, Ill. Sept. 2.		
Vicksburg, Miss. Aug. 18.	Jefferson Barracks, Mo. Sept. 4.	439	1
	Total	23,778	130

Model of the U. S. Army Hospital Steamship J. K. Barnes.—On the Atlantic coast a certain number of river steamboats were employed in the transportation of the sick and wounded, especially from the Army of the Potomac to Alexandria, Washington, D. C., and Baltimore. But it was also necessary to employ ocean transportation on a very considerable scale, and both in the conveyance of patients from the Army of the Potomac and from the various coast expeditions, the merchant steamships ordinarily used in the coastwise trade served for this purpose. Here, too, in times of emergency, the vessels chartered by the quartermaster's department for the transportation of stores often served to transport the sick and wounded, but a number of vessels were also devoted exclusively to this service and were fitted up as hospital steamships. The model of the U. S. Army hospital steamship *J. K. Barnes* is intended to illustrate the mode of fitting up vessels of this class which was found most convenient.

This model was constructed by Mr. Charles Hemé, of New York, under the supervision of Assistant-Surgeon A. H. Hoff, U. S. Army, who also directed the original fitting up of the vessel. The model is seven feet long, being on a scale of three-eighths of an inch to the foot, and represents one lateral half of the vessel, the section being made longitudinally through the median line, thus permitting the display of the interior arrangement of bunks, &c.

The U. S. Army hospital steamship *J. K. Barnes* was fitted up in New York city during the latter part of 1864, and on her completion Assistant-Surgeon Thomas McMillin, U. S. A., was assigned as surgeon-in-charge, December 5, 1864. December 23d, the *Barnes* was ordered to report to the Medical Director of the Department of the South, at Hilton Head, S. C., where she took her first load of sick on board January 1, 1865.

The *Barnes* was 223 feet in length, beam 35 feet 2 inches, depth of hold 22 feet 9 inches. She was of 1,253 tons burthen. Diameter of cylinder 60 inches, stroke of piston 10 feet. In fitting her up, an orlop deck was introduced, and a mess-room was built on the forward deck, in front of the galley. The arrangement of bunks, &c., is shown in Figure 2.

Assistant-Surgeon Thomas McMillin, U. S. A., continued to act as surgeon-in-charge of this vessel until November, 1865. During this time 3,655 patients were carried, of whom 29 died *en route*. The following is a list of the trips:

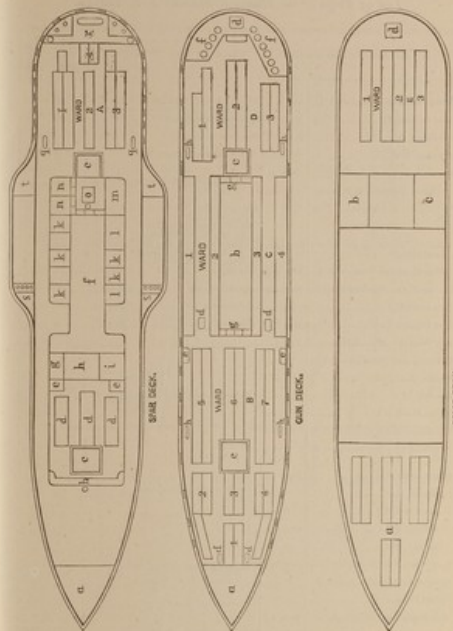
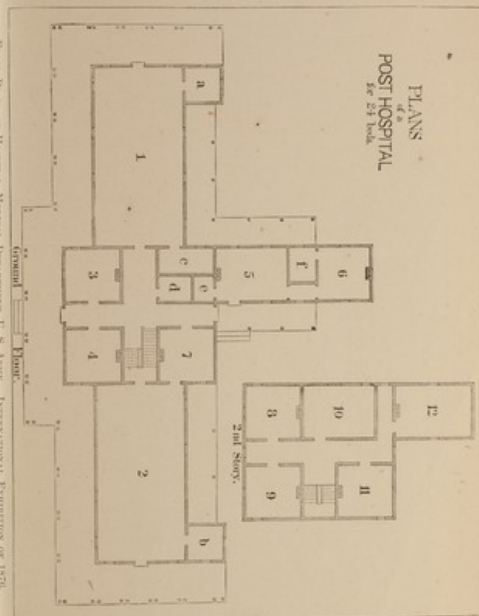


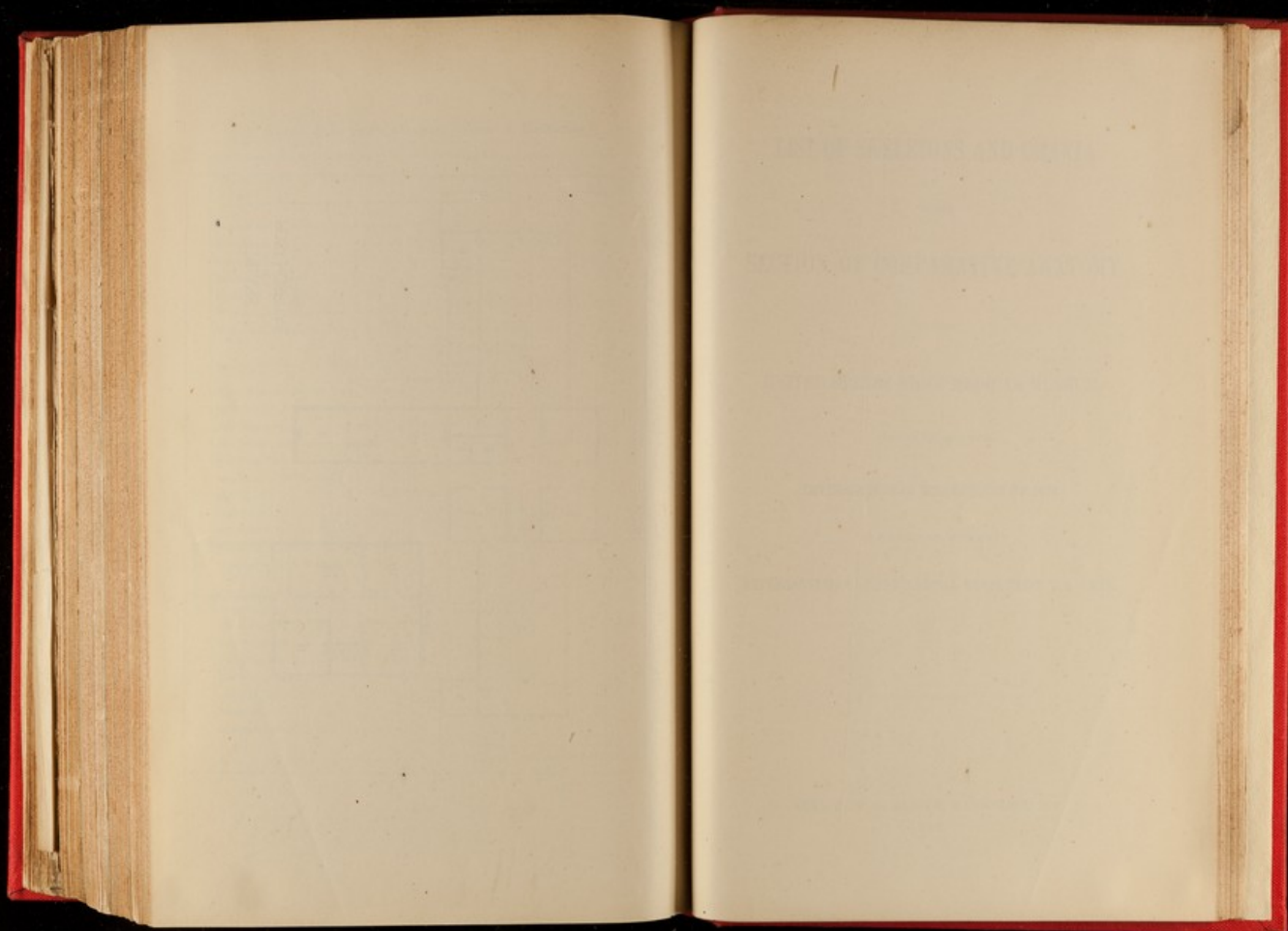
FIG. 2.—DECK PLAN OF THE U. S. ARMY HOSPITAL STEAMSHIP *J. K. BARNES*. Scale, $\frac{3}{8}$ inch to the foot.
Star Deck.—Forecastle, *b*, Table, *c*, Hatch, *d*, *e*, Mess-tables and mess-room, *f*, *g*, Patients, *h*, Officers' mess, *i*, Galley, *j*, Lin house, *k*, *l*, *m*, Quarters of medical officers, *n*, *o*, Linen-room, *p*, Saloon, *q*, *r*, Wine-room and office, *s*, Table, *t*, *u*, *v*, Heaters, *w*, Bath-room and wash-closet, *x*, *y*, Water-closets, *z*, *aa*, Ward A, *bb*, *cc*, *dd*, *ee*, *ff*, *gg*, *hh*, *ii*, *jj*, *kk*, *ll*, *mm*, *nn*, *oo*, *pp*, *qq*, *rr*, *ss*, *tt*, *uu*, *vv*, *ww*, *xx*, *yy*, *zz*, *aaa*, *bbb*, *ccc*, *ddd*, *eee*, *fff*, *ggg*, *hhh*, *iii*, *jjj*, *kkk*, *lll*, *mmm*, *nnn*, *ooo*, *ppp*, *qqq*, *rrr*, *sss*, *ttt*, *uuu*, *vvv*, *www*, *xxx*, *yyy*, *zzz*, *aaa*, *bbb*, *ccc*, *ddd*, *eee*, *fff*, *ggg*, *hhh*, *iii*, *jjj*, *kkk*, *lll*, *mmm*, *nnn*, *ooo*, *ppp*, *qqq*, *rrr*, *sss*, *ttt*, *uuu*, *vvv*, *www*, *xxx*, *yyy*, *zzz*, *aaa*, *bbb*, *ccc*, *ddd*, *eee*, *fff*, *ggg*, *hhh*, *iii*, *jjj*, *kkk*, *lll*, *mmm*, *nnn*, *ooo*, *ppp*, *qqq*, *rrr*, *sss*, *ttt*, *uuu*, *vvv*, *www*, *xxx*, *yyy*, *zzz*, *aaa*, *bbb*, *ccc*, *ddd*, *eee*, *fff*, *ggg*, *hhh*, *iii*, *jjj*, *kkk*, *lll*, *mmm*, *nnn*, *ooo*, *ppp*, *qqq*, *rrr*, *sss*, *ttt*, *uuu*, *vvv*, *www*, *xxx*, *yyy*, *zzz*, *aaa*, *bbb*, *ccc*, *ddd*, *eee*, *fff*, *ggg*, *hhh*, *iii*, *jjj*, *kkk*, *lll*, *mmm*, *nnn*, *ooo*, *ppp*, *qqq*, *rrr*, *sss*, *ttt*, *uuu*, *vvv*, *www*, *xxx*, *yyy*, *zzz*, *aaa*, *bbb*, *ccc*, *ddd*, *eee*, *fff*, *ggg*, *hhh*, *iii*, *jjj*, *kkk*, *lll*, *mmm*, *nnn*, *ooo*, *ppp*, *qqq*, *rrr*, *sss*, *ttt*, *uuu*, *vvv*, *www*, *xxx*, *yyy*, *zzz*, *aaa*, *bbb*, *ccc*, *ddd*, *eee*, *fff*, *ggg*, *hhh*, *iii*, *jjj*, *kkk*, *lll*, *mmm*, *nnn*, *ooo*, *ppp*, *qqq*, *rrr*, *sss*, *ttt*, *uuu*, *vvv*, *www*, *xxx*, *yyy*, *zzz*, *aaa*, *bbb*, *ccc*, *ddd*, *eee*, *fff*, *ggg*, *hhh*, *iii*, *jjj*, *kkk*, *lll*, *mmm*, *nnn*, *ooo*, *ppp*, *qqq*, *rrr*, *sss*, *ttt*, *uuu*, *vvv*, *www*, *xxx*, *yyy*, *zzz*, *aaa*, *bbb*, *ccc*, *ddd*, *eee*, *fff*, *ggg*, *hhh*, *iii*, *jjj*, *kkk*, *lll*, *mmm*, *nnn*, *ooo*, *ppp*, *qqq*, *rrr*, *sss*, *ttt*, *uuu*, *vvv*, *www*, *xxx*, *yyy*, *zzz*, *aaa*, *bbb*, *ccc*, *ddd*, *eee*, *fff*, *ggg*, *hhh*, *iii*, *jjj*, *kkk*, *lll*, *mmm*, *nnn*, *ooo*, *ppp*, *qqq*, *rrr*, *sss*, *ttt*, *uuu*, *vvv*, *www*, *xxx*, *yyy*, *zzz*, *aaa*, *bbb*, *ccc*, *ddd*, *eee*, *fff*, *ggg*, *hhh*, *iii*, *jjj*, *kkk*, *lll*, *mmm*, *nnn*, *ooo*, *ppp*, *qqq*, *rrr*, *sss*, *ttt*, *uuu*, *vvv*, *www*, *xxx*, *yyy*, *zzz*, *aaa*, *bbb*, *ccc*, *ddd*, *eee*, *fff*, *ggg*, *hhh*, *iii*, *jjj*, *kkk*, *lll*, *mmm*, *nnn*, *ooo*, *ppp*, *qqq*, *rrr*, *sss*, *ttt*, *uuu*, *vvv*, *www*, *xxx*, *yyy*, *zzz*, *aaa*, *bbb*, *ccc*, *ddd*, *eee*, *fff*, *ggg*, *hhh*, *iii*, *jjj*, *kkk*, *lll*, *mmm*, *nnn*, *ooo*, *ppp*, *qqq*, *rrr*, *sss*, *ttt*, *uuu*, *vvv*, *www*, *xxx*, *yyy*, *zzz*, *aaa*, *bbb*, *ccc*, *ddd*, *eee*, *fff*, *ggg*, *hhh*, *iii*, *jjj*, *kkk*, *lll*, *mmm*, *nnn*, *ooo*, *ppp*, *qqq*, *rrr*, *sss*, *ttt*, *uuu*, *vvv*, *www*, *xxx*, *yyy*, *zzz*, *aaa*, *bbb*, *ccc*, *ddd*, *eee*, *fff*, *ggg*, *hhh*, *iii*, *jjj*, *kkk*, *lll*, *mmm*, *nnn*, *ooo*, *ppp*, *qqq*, *rrr*, *sss*, *ttt*, *uuu*, *vvv*, *www*, *xxx*, *yyy*, *zzz*, *aaa*, *bbb*, *ccc*, *ddd*, *eee*, *fff*, *ggg*, *hhh*, *iii*, *jjj*, *kkk*, *lll*, *mmm*, *nnn*, *ooo*, *ppp*, *qqq*, *rrr*, *sss*, *ttt*, *uuu*, *vvv*, *www*, *xxx*, *yyy*, *zzz*, *aaa*, *bbb*, *ccc*, *ddd*, *eee*, *fff*, *ggg*, *hhh*, *iii*, *jjj*, *kkk*, *lll*, *mmm*, *nnn*, *ooo*, *ppp*, *qqq*, *rrr*, *sss*, *ttt*, *uuu*, *vvv*, *www*, *xxx*, *yyy*, *zzz*, *aaa*, *bbb*, *ccc*, *ddd*, *eee*, *fff*, *ggg*, *hhh*, *iii*, *jjj*, *kkk*, *lll*, *mmm*, *nnn*, *ooo*, *ppp*, *qqq*, *rrr*, *sss*, *ttt*, *uuu*, *vvv*, *www*, *xxx*, *yyy*, *zzz*, *aaa*, *bbb*, *ccc*, *ddd*, *eee*, *fff*, *ggg*, *hhh*, *iii*, *jjj*, *kkk*, *lll*, *mmm*, *nnn*, *ooo*, *ppp*, *qqq*, *rrr*, *sss*, *ttt*, *uuu*, *vvv*, *www*, *xxx*, *yyy*, *zzz*, *aaa*, *bbb*, *ccc*, *ddd*, *eee*, *fff*, *ggg*, *hhh*, *iii*, *jjj*, *kkk*, *lll*, *mmm*, *nnn*, *ooo*, *ppp*, *qqq*, *rrr*, *sss*, *ttt*, *uuu*, *vvv*, *www*, *xxx*, *yyy*, *zzz*, *aaa*, *bbb*, *ccc*, *ddd*, *eee*, *fff*, *ggg*, *hhh*, *iii*, *jjj*, *kkk*, *lll*, *mmm*, *nnn*, *ooo*, *ppp*, *qqq*, *rrr*, *sss*, *ttt*, *uuu*, *vvv*, *www*, *xxx*, *yyy*, *zzz*, *aaa*, *bbb*, *ccc*, *ddd*, *eee*, *fff*, *ggg*, *hhh*, *iii*, *jjj*, *kkk*, *lll*, *mmm*, *nnn*, *ooo*, *ppp*, *qqq*, *rrr*, *sss*, *ttt*, *uuu*, *vvv*, *www*, *xxx*, *yyy*, *zzz*, *aaa*, *bbb*, *ccc*, *ddd*, *eee*, *fff*, *ggg*, *hhh*, *iii*, *jjj*, *kkk*, *lll*, *mmm*, *nnn*, *ooo*, *ppp*, *qqq*, *rrr*, *sss*, *ttt*, *uuu*, *vvv*, *www*, *xxx*, *yyy*, *zzz*, *aaa*, *bbb*, *ccc*, *ddd*, *eee*, *fff*, *ggg*, *hhh*, *iii*, *jjj*, *kkk*, *lll*, *mmm*, *nnn*, *ooo*, *ppp*, *qqq*, *rrr*, *sss*, *ttt*, *uuu*, *vvv*, *www*, *xxx*, *yyy*, *zzz*, *aaa*, *bbb*, *ccc*, *ddd*, *eee*, *fff*, *ggg*, *hhh*, *iii*, *jjj*, *kkk*, *lll*, *mmm*, *nnn*, *ooo*, *ppp*, *qqq*, *rrr*, *sss*, *ttt*, *uuu*, *vvv*, *www*, *xxx*, *yyy*, *zzz*, *aaa*, *bbb*, *ccc*, *ddd*, *eee*, *fff*, *ggg*, *hhh*, *iii*, *jjj*, *kkk*, *lll*, *mmm*, *nnn*, *ooo*, *ppp*, *qqq*, *rrr*, *sss*, *ttt*, *uuu*, *vvv*, *www*, *xxx*, *yyy*, *zzz*, *aaa*, *bbb*, *ccc*, *ddd*, *eee*, *fff*, *ggg*, *hhh*, *iii*, *jjj*, *kkk*, *lll*, *mmm*, *nnn*, *ooo*, *ppp*, *qqq*, *rrr*, *sss*, *ttt*, *uuu*, *vvv*, *www*, *xxx*, *yyy*, *zzz*, *aaa*, *bbb*, *ccc*, *ddd*, *eee*, *fff*, *ggg*, *hhh*, *iii*, *jjj*, *kkk*, *lll*, *mmm*, *nnn*, *ooo*, *ppp*, *qqq*, *rrr*, *sss*, *ttt*, *uuu*, *vvv*, *www*, *xxx*, *yyy*, *zzz*, *aaa*, *bbb*, *ccc*, *ddd*, *eee*, *fff*, *ggg*, *hhh*, *iii*, *jjj*, *kkk*, *lll*, *mmm*, *nnn*, *ooo*, *ppp*, *qqq*, *rrr*, *sss*, *ttt*, *uuu*, *vvv*, *www*, *xxx*, *yyy*, *zzz*, *aaa*, *bbb*, *ccc*, *ddd*, *eee*, *fff*, *ggg*, *hhh*, *iii*, *jjj*, *kkk*, *lll*, *mmm*, *nnn*, *ooo*, *ppp*, *qqq*, *rrr*, *sss*, *ttt*, *uuu*, *vvv*, *www*, *xxx*, *yyy*, *zzz*, *aaa*, *bbb*, *ccc*, *ddd*, *eee*, *fff*, *ggg*, *hhh*, *iii*, *jjj*, *kkk*, *lll*, *mmm*, *nnn*, *ooo*, *ppp*, *qqq*, *rrr*, *sss*, *ttt*, *uuu*, *vvv*, *www*, *xxx*, *yyy*, *zzz*, *aaa*, *bbb*, *ccc*, *ddd*, *eee*, *fff*, *ggg*, *hhh*, *iii*, *jjj*, *kkk*, *lll*, *mmm*, *nnn*, *ooo*, *ppp*, *qqq*, *rrr*, *sss*, *ttt*, *uuu*, *vvv*, *www*, *xxx*, *yyy*, *zzz*, *aaa*, *bbb*, *ccc*, *ddd*, *eee*, *fff*, *ggg*, *hhh*, *iii*, *jjj*, *kkk*, *lll*, *mmm*, *nnn*, *ooo*, *ppp*, *qqq*, *rrr*, *sss*, *ttt*, *uuu*, *vvv*, *www*, *xxx*, *yyy*, *zzz*, *aaa*, *bbb*, *ccc*, *ddd*, *eee*, *fff*, *ggg*, *hhh*, *iii*, *jjj*, *kkk*, *lll*, *mmm*, *nnn*, *ooo*, *ppp*, *qqq*, *rrr*, *sss*, *ttt*, *uuu*, *vvv*, *www*, *xxx*, *yyy*, *zzz*, *aaa*, *bbb*, *ccc*, *ddd*, *eee*, *fff*, *ggg*, *hhh*, *iii*, *jjj*, *kkk*, *lll*, *mmm*, *nnn*, *ooo*, *ppp*, *qqq*, *rrr*, *sss*, *ttt*, *uuu*, *vvv*, *www*, *xxx*, *yyy*, *zzz*, *aaa*, *bbb*, *ccc*, *ddd*, *eee*, *fff*, *ggg*, *hhh*, *iii*, *jjj*, *kkk*, *lll*, *mmm*, *nnn*, *ooo*, *ppp*, *qqq*, *rrr*, *sss*, *ttt*, *uuu*, *vvv*, *www*, *xxx*, *yyy*, *zzz*, *aaa*, *bbb*, *ccc*, *ddd*, *eee*, *fff*, *ggg*, *hhh*, *iii*, *jjj*, *kkk*, *lll*, *mmm*, *nnn*, *ooo*, *ppp*, *qqq*, *rrr*, *sss*, *ttt*, *uuu*, *vvv*, *www*, *xxx*, *yyy*, *zzz*, *aaa*, *bbb*, *ccc*, *ddd*, *eee*, *fff*, *ggg*, *hhh*, *iii*, *jjj*, *kkk*, *lll*, *mmm*, *nnn*, *ooo*, *ppp*, *qqq*, *rrr*, *sss*, *ttt*, *uuu*, *vvv*, *www*, *xxx*, *yyy*, *zzz*, *aaa*, *bbb*, *ccc*, *ddd*, *eee*, *fff*, *ggg*, *hhh*, *iii*, *jjj*, *kkk*, *lll*, *mmm*, *nnn*, *ooo*, *ppp*, *qqq*, *rrr*, *sss*, *ttt*, *uuu*, *vvv*, *www*, *xxx*, *yyy*, *zzz*, *aaa*, *bbb*, *ccc*, *ddd*, *eee*, *fff*, *ggg*, *hhh*, *iii*, *jjj*, *kkk*, *lll*, *mmm*, *nnn*, *ooo*, *ppp*, *qqq*, *rrr*, *sss*, *ttt*, *uuu*, *vvv*, *www*, *xxx*, *yyy*, *zzz*, *aaa*, *bbb*, *ccc*, *ddd*, *eee*, *fff*, *ggg*, *hhh*, *iii*, *jjj*, *kkk*, *lll*, *mmm*, *nnn*, *ooo*, *ppp*, *qqq*, *rrr*, *sss*, *ttt*, *uuu*, *vvv*, *www*, *xxx*, *yyy*, *zzz*, *aaa*, *bbb*, *ccc*, *ddd*, *eee*, *fff*, *ggg*, *hhh*, *iii*, *jjj*, *kkk*, *lll*, *mmm*, *nnn*, *ooo*, *ppp*, *qqq*, *rrr*, *sss*, *ttt*, *uuu*, *vvv*, *www*, *xxx*, *yyy*, *zzz*, *aaa*, *bbb*, *ccc*, *ddd*, *eee*, *fff*, *ggg*, *hhh*, *iii*, *jjj*, *kkk*, *lll*, *mmm*, *nnn*, *ooo*, *ppp*, *qqq*, *rrr*, *sss*, *ttt*, *uuu*, *vvv*, *www*, *xxx*, *yyy*, *zzz*, *aaa*, *bbb*, *ccc*, *ddd*, *eee*, *fff*, *ggg*, *hhh*, *iii*, *jjj*, *kkk*, *lll*, *mmm*, *nnn*, *ooo*, *ppp*, *qqq*, *rrr*, *sss*, *ttt*, *uuu*, *vvv*, *www*, *xxx*, *yyy*, *zzz*, *aaa*, *bbb*, *ccc*, *ddd*, *eee*, *fff*, *ggg*, *hhh*, *iii*, *jjj*, *kkk*, *lll*, *mmm*, *nnn*, *ooo*, *ppp*, *qqq*, *rrr*, *sss*, *ttt*, *uuu*, *vvv*, *www*, *xxx*, *yyy*, *zzz*, *aaa*, *bbb*, *ccc*, *ddd*, *eee*, *fff*, *ggg*, *hhh*, *iii*, *jjj*, *kkk*, *lll*, *mmm*, *nnn*, *ooo*, *ppp*, *qqq*, *rrr*, *sss*, *ttt*, *uuu*, *vvv*, *www*, *xxx*, *yyy*, *zzz*, *aaa*, *bbb*, *ccc*, *ddd*, *eee*, *fff*, *ggg*, *hhh*, *iii*, *jjj*, *kkk*, *lll*, *mmm*, *nnn*, *ooo*, *ppp*, *qqq*, *rrr*, *sss*, *ttt*, *uuu*, *vvv*, *www*, *xxx*, *yyy*, *zzz*, *aaa*, *bbb*, *ccc*, *ddd*, *eee*, *fff*, *ggg*, *hhh*, *iii*, *jjj*, *kkk*, *lll*, *mmm*, *nnn*, *ooo*, *ppp*, *qqq*, *rrr*, *sss*, *ttt*, *uuu*, *vvv*, *www*, *xxx*, *yyy*, *zzz*, *aaa*, *bbb*, *ccc*, *ddd*, *eee*, *fff*, *ggg*, *hhh*, *iii*, *jjj*, *kkk*, *lll*, *mmm*, *nnn*, *ooo*, *ppp*, *qqq*, *rrr*, *sss*, *ttt*, *uuu*, *vvv*, *www*, *xxx*, *yyy*, *zzz*, *aaa*, *bbb*, *ccc*, *ddd*, *eee*, *fff*, *ggg*, *hhh*, *iii*, *jjj*, *kkk*, *lll*, *mmm*, *nnn*, *ooo*, *ppp*, *qqq*, *rrr*, *sss*, *ttt*, *uuu*, *vvv*, *www*, *xxx*, *yyy*, *zzz*, *aaa*, *bbb*, *ccc*, *ddd*, *eee*, *fff*, *ggg*, *hhh*, *iii*, *jjj*, *kkk*, *lll*, *mmm*, *nnn*, *ooo*, *ppp*, *qqq*, *rrr*, *sss*, *ttt*, *uuu*, *vvv*, *www*, *xxx*, *yyy*, *zzz*, *aaa*, *bbb*, *ccc*, *ddd*, *eee*, *fff*, *ggg*, *hhh*, *iii*, *jjj*, *kkk*, *lll*, *mmm*, *nnn*, *ooo*, *ppp*, *qqq*, *rrr*, *sss*, *ttt*, *uuu*, *vvv*, *www*, *xxx*, *yyy*, *zzz*, *aaa*, *bbb*, *ccc*, *ddd*, *eee*, *fff*, *ggg*, *hhh*, *iii*, *jjj*, *kkk*, *lll*, *mmm*, *nnn*, *ooo*, *ppp*, *qqq*, *rrr*, *sss*, *ttt*, *uuu*, *vvv*, *www*, *xxx*, *yyy*, *zzz*, *aaa*, *bbb*, *ccc*, *ddd*, *eee*, *fff*, *ggg*, *hhh*, *iii*, *jjj*, *kkk*, *lll*, *mmm*, *nnn*, *ooo*, *ppp*, *qqq*, *rrr*, *sss*, *ttt*, *uuu*, *vvv*, *www*, *xxx*, *yyy*, *zzz*, *aaa*, *bbb*, *ccc*, *ddd*, *eee*, *fff*, *ggg*, *hhh*, *iii*, *jjj*, *kkk*, *lll*, *mmm*, *nnn*, *ooo*, *ppp*, *qqq*, *rrr*, *sss*, *ttt*, *uuu*, *vvv*, *www*, *xxx*, *yyy*, *zzz*, *aaa*, *bbb*, *ccc*, *ddd*, *eee*, *fff*, *ggg*, *hhh*, *iii*, *jjj*, *kkk*, *lll*, *mmm*, *nnn*, *ooo*, *ppp*, *qqq*, *rrr*, *sss</*

List of Trips of the Hospital Steamer J. K. Barnes.

PLACE AND DATE OF EMBARKATION.	PLACE AND DATE OF LANDING.	Number Carried.	Dead on the way.
Hilton Head and Beaufort, S. C.	1865. David's Island, De Camp G. H., N. Y.	Jan. 5, 6	268
New Orleans, La.	Jan. 31. Willet's Point, Grant G. H., N. Y.	Feb. 9.	119
Savannah, Ga.	Feb. 23. Beaufort, S. C.	Feb. 26.	9
Beaufort, S. C.	" 26. St. M's Northern Light, Port Royal.	" 27.	66
Beaufort, S. C.	" 13. Fort Schuyler, McDougall G. H., N. Y.	Mar. 19.	380
Wilmington and Morehead City, N. C.	April 3. David's Island, De Camp G. H., N. Y.	April 11.	489
Beaufort, Newberne, and Morehead City, N. C.	April 24. David's Island, De Camp G. H., N. Y., Willet's Point, Grant G. H., N. Y., Fort Schuyler, McDougall G. H., N. Y., Washington, D. C.	April 26.	449
Hilton Head and Beaufort, S. C.	May 7. Alexandria, Va.	May 11.	375
Savannah, Ga., Hilton Head, S. C.	May 19. Philadelphia, Pa.	May 23.	371
New Orleans, La.	June 9. New York city.	June 12.	317
New Orleans, La.	July 8.	July 11.	21
Key West, Fla.	Aug. 5.		
Barranca and Fort Pickens, Fla.	" 20.		
Mobile, Ala.	" 21.		
Beaufort, S. C.	" 26. David's Island, De Camp G. H., N. Y.	Aug. 23.	343
Hilton Head, S. C.	" 27.		
Charleston, S. C.	" 29.		
Morehead City and Newberne, N. C.	" 29.		
New Orleans, La.	Sept. 19. David's Island, De Camp G. H., N. Y.	Oct. 1.	378
Savannah, Ga.	" 26.		
Hilton Head, S. C.	" 27.		
New Orleans, La.	Oct. 23.		
Pensacola, Fla.	" 23.		
Key West, Fla.	" 27.		
Savannah, Ga.	" 30.		
Hilton Head, S. C.	" 31.		
Morehead City, N. C.	Nov. 3.		
Total.		2553	79

PLAN OF HOSPITAL, MEDICAL DEPARTMENT, U. S. ARMY. INTERNATIONAL EXHIBITION OF 1876.





LIST OF SKELETONS AND CRANIA
IN THE
SECTION OF COMPARATIVE ANATOMY
OF THE
UNITED STATES ARMY MEDICAL MUSEUM,
FOR USE DURING THE
INTERNATIONAL EXHIBITION OF 1876
IN CONNECTION WITH THE
REPRESENTATION OF THE MEDICAL DEPARTMENT U. S. ARMY.

ARMY MEDICAL MUSEUM, WASHINGTON, D. C.
1876.

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755 Jayne Street.

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THIS list of the skeletons and crania in the Section of Comparative Anatomy of the United States Army Medical Museum was prepared by Dr. H. C. YARNOW, and is intended for distribution, during the Centennial Exhibition, among naturalists and others interested in comparative anatomy, for the purpose of showing the deficiencies of our collection, and soliciting contributions.

This collection constitutes one section of the Army Medical Museum, which, at present, is divided into six sections, as follows:—

In charge of Assistant Surgeon G. A. OTIS, U. S. A., Curator,

Surgical section	6539 specimens.
Anatomical section	1254 "
Miscellaneous section	240 "

In charge of Assistant Surgeon J. J. WOODWARD, U. S. A. :—

Medical section	1279 specimens.
Microscopical section	7275 "
Comparative Anatomy section	1522 "

The Army Medical Museum was created primarily for the purpose of preserving specimens illustrative of the wounds and diseases which produce death and disability during war, with the view of thereby facilitating the study of methods for diminishing mortality and alleviating suffering among soldiers. It is now the desire of the Surgeon General that, so far as the means placed at his disposal will permit, the collection shall be extended so as to embrace all forms of injuries and disease, so that it shall eventually become a general Pathological Museum, accessible for study to all medical men who are prosecuting original inquiries. Of the great usefulness of such a collection, it is unnecessary here to speak, or to point out how vain all hopes have proved that any large collection of this kind can be created except with the aid

and support of government. A cabinet of comparative anatomy furnishes the means for useful collateral studies, subordinate to the general purposes of a Pathological Museum: hence, such cabinets are found in connection with most of the great Pathological Collections of Europe, and one has been commenced at the Army Medical Museum.

The appropriations for the support of the Museum have been hitherto too limited to permit the expenditure of any considerable sum on the collection of comparative anatomy. The specimens enumerated in the following list were for the most part collected by medical and other officers of the army on duty at frontier posts. For the present, any increase of the collection can only be expected from such donations, which will thankfully be received from army officers or others, or from exchanges of duplicate specimens, which, however, as yet are only possible to a very limited extent.

Specimens presented need not be thoroughly cleaned and mounted. This laborious work is done in the Museum by Dr. F. SCHAFHIRT, by whom the greater part of the specimens enumerated in the following list were prepared. It will be sufficient, in the case of large skeletons or crania, if the flesh is roughly dissected from bone and the viscera, brain, &c., removed. The preparation thus prepared can be packed in a mixture of sawdust and salt, or simply dried, for transportation. Small animals are best preserved in alcohol, in which case an incision should be made along the middle line of the abdomen to give the alcohol access to the viscera.

J. J. WOODWARD,

Assistant Surgeon U. S. A.

In charge of the Medical, Microscopical, and Comparative Anatomy Sections, Army Medical Museum.

and of
The Representation of the Medical Department U. S. Army,
at the International Exhibition.

LIST OF CRANIA AND SKELETONS OF NORTH AMERICAN MAMMALS.

Note.—In the preparation of this list the classification adopted is substantially the same as that of Dr. Theo. Gill in his paper entitled "Arrangement of the Families of Mammals," Smithsonian Miscellaneous Collections, No. 230, 1872, and the nomenclature of the species is in accordance, for the most part, with the more recent views of prominent American Mammalogists.

CLASS MAMMALIA.

SUB-CLASS Placentalia.

SUPER-ORDER EDUCABILIA.

ORDER Fera.

SUB-ORDER FISSIPEDIA.

FAMILY FELIDÆ: Cats, etc.

Sub-Family *Felinae*: Typical Cats.

Cran.	Skel.	Lynx rufus (Gmelin), Raf.	Wild Cat.
952,			
1039,			
1100,			
1383.			
Cran.	Skel.	Lynx rufus maculatus, Cs. and Yar.	Texas Wild Cat.
10, 80,			
793.			
Cran.	Skel.	Lynx rufus fasciatus, Cs. and Yar.	Red Cat.
1396.			
Cran.	Skel.	Lynx canadensis (Geoff and Desm.), Raf.	Canada Lynx.
150.			
Cran.	Skel.	Felis concolor, Linn.	Panther; Painter; Puma; Cougar;
178,			
531.			American or California Lion.
179,			
828,			
954.			
Cran.	Skel.	Felis onca, Linn.	Jaguar; Mexican Tiger.
1412.			

Family CANIDÆ: Dogs, etc.

Sub-Family Canina: Wolves.

- Cran. Skel. Canis lupus occidentalis, Cs. and Yar. *American Wolf;*
 184, 712. *Timber or Buffalo Wolf; Lobo of the Mexicans.*
 185,
 713,
 714,
 1417,
 1418.
 Cran. Skel. Canis latrans, Say. *Coyote; Prairie Wolf.*
 180, 907,
 710, 1084.
 711,
 715.

Sub-Family Vulpina: Foxes.

- Cran. Skel. Vulpes vulgaris pennsylvanicus, Cs. *Red Fox.*
 189, 99,
 190,
 191,
 192.
 Cran. Skel. Vulpes macrotis, Baird. *Prairie Fox.*
 1161, 1196.
 Cran. Skel. Vulpes velox, Aud. and Bach. *Kit Fox; Swift Fox.*
 955, 1314.
 Cran. Skel. Vulpes littoralis, Baird. *Island Fox.*
 1046.
 Cran. Skel. Urocyon cinereo-argenteus (Schreber), Cs. *Gray Fox.*
 193,
 194,
 195,
 196.

Family MUSTELIDÆ: Weasels, etc.

Sub-Family Mustelina: Martins.

- Cran. Skel. Mustela pennanti, Erx. *Fisher; Black Cat.*
 108.
 Cran. Skel. Mustela americana, Turton. *Pine Martin; American Sable.*
 197,
 957.
 Cran. Skel. Putorius longicauda, Rich. *Long-tailed Ermine.*
 852,
 1424.
 Cran. Skel. Putorius erminea, (Linn.), Cov. *White Weasel; Ermine.*
 1058, 722,
 1075.

- Cran. Skel. Putorius vison, Rich. *Brown Mink.*
 199,
 595,
 1315,
 1316.

- Cran. Skel. Gulo luscus, Sabine. *Wolverine.*
 200.
 Sub-Family Melina: Badgers.

- Cran. Skel. Taxidea americana (Bodd), Baird. *Missouri Badger.*
 203, 795,
 612,
 834,
 959,
 1419.

Sub-Family Mephitina: Skunks.

- Cran. Skel. Mephitis mephitis (Shaw), Baird. *American Skunk.*
 825, 161,
 202,
 704,
 956,
 1193.

Sub-Family Lestrina: Otters.

- Cran. Skel. Lutra canadensis (Tartou), Cov. *American Otter.*
 201,
 951.

Family URSIDÆ: Bears.

- Cran. Skel. Ursus arctos horribilis (Ord.), Cs. and Yar. *Griazly Bear.*
 205, 1042,
 672,
 1006,
 1043.
 Cran. Skel. Ursus americanus, Pallas. *Black Bear.*
 206, 1210,
 207,
 208,
 209,
 210.
 Cran. Skel. Thalarctos maritimus (Linn.), Gray. *White or Polar Bear.*
 211.

Family PROCTONIDÆ: Raccoons, etc.

Sub-Family Procyonina: Typical Raccoons.

- Cran. Skel. Procyon lotor (Linn.), Starr. *Common Raccoon.*
 209, 154,
 613,
 1063.

SUB-ORDER PINNIPEDIA.

Family OTARIDÆ: Eared Seals.

Cran. Skel. *Callirhinus ursinus* (Schreber), Gray. *Fur Seal*.
1057.

Cran. Skel. *Eumetopias stelleri* (Fischer), Gray. *Sea Lion*.
1048.

Cran. Skel. *Zalophus gilliespi* (MacBain), Gill. *Sea Dog*.
261.

Family PHOCIDÆ: Hair Seals.

Sub-Family Phocinae.

Cran. Skel. *Phoca vitulina*, Linn. *Common Seal*; *Harbor Seal*.
259.

Cran. Skel. *Erignathus barbatus* (O. Fabr.), Gill. *Square-Flipper Seal*.
258.

Sub-Family Cystophorinae: Crested Seals.

Cran. Skel. *Cystophora cristata* (Erxl.), Nilsson. *Hooded Seal*.
266.

Family MONARIDÆ: Walrus.

Cran. Skel. *Monachus obesus* (Illiger), Gill. *Atlantic Walrus*.
888. 1053.

ORDER Ungulata.

SUB-ORDER ARTIODACTYLI.

Family BOVIDÆ: Bovinae.

Sub-Family Bovinae: Typical Bovinae.

Cran. Skel. *Bos americanus* (Gmelin), *American Buffalo*.
832. 686.
959.

Sub-Family Ovina: Sheep.

Cran. Skel. *Ovis montana*, Cuvier. *Rocky Mountain Sheep*; *Bighorn*.
671. 1051.
1049.
1422.

Family ANTILOPIDÆ: American Antelopes.

Cran. Skel. *Antilocapra americana* (Ord.), *Antelope*; *Prong-horn*
Antelope; *Cubree*.
252.
253.
632.
633.
680.

Family CERVIDÆ: Deer.

Sub-Family Cervinae: Typical Deer.

Cran. Skel. *Cervus canadensis*, Erxl. *American Elk*; *Wapiti*.
247. 1009.

1022.

1077.

1525.

1537.

Cran. Skel. *Caracus macrotis* (Say), Gray. *Mule, or Black-tailed Deer*.
248. 1545.

1594.

Cran. Skel. *Caracus virginianus* (Bodd), Gray. *Virginia Deer*; *Red*
Deer.
249. 634.

250.

251.

622.

635.

Cran. Skel. *Caracus virginianus macrotis* (Raf.), Cs. *White-tailed*
Deer.
833. 1544.

1295.

Family Dicotylidæ: Pecorines.

Cran. Skel. *Dicotyles torquatus*, Cuvier. *Pecorpy*.
244. 829.

ORDER Cete.

SUB-ORDER DENTICETE.

Family DELPHINIDÆ: Dolphins, etc.

Sub-Family Delphininae: Typhical Dolphin.

Cran. Skel. *Delphinus delphis*, Linn.
262. 1308.

SUB-ORDER INEDUCABILIA.

ORDER Chiroptera.

SUB-ORDER ANIMALIVORA.

Family NOCTILIONIDÆ: Free-tailed Bats.

Cran. Skel. *Nyctinomus nasutus* (Spix.), Temes. *Sooty Bat*.
601.

Family VESPERTILIONIDÆ: Ordinary Bats.

Cran. Skel. *Corynorhinus macrotis* (Le Conte), Allen. *Big-eared Bat*.
986.

Cran. Skel. *Antrozous pallidus* (Le Conte), Allen. *Pale Bat*.
981. 848.

Cran. Skel. *Atalapha* (*Nyctioglossus*) *crepuscularis* (Le Conte), Cs.
1192. 1009. *Twilight Bat*.

- Cran. Skel. *Atalapha (Lasiurus) noveboracensis* (Erxl.), Cs. *Red Bat*;
1353, 1198. *New York Bat*.
Cran. Skel. *Vespertilio subulatus*, Say. *Little Brown Bat*.
962,
966,
967,
1208.
Cran. Skel. *Vespertilio (Vesperugo) fuscus*, Beauv. *Carolina Brown Bat*.
1008, 174,
854.
Cran. Skel. *Vespertilio (Vesperugo) georgianus*, F. Cuv. *Georgia Bat*.
1124, 849.

ORDER INSECTIVORA.

SUB-ORDER INSECTIVORA VERA.

Family TALPIDÆ: Moles.

Sub-Family Talpina: Typical Moles.

- Cran. Skel. *Scalops aquaticus* (Linn.), Cuvier. *Common Mole*.
112.
Cran. Skel. *Condylura cristata* (Linn.), Illiger. *Star-nosed Mole*.
1106.

Family SORICIDÆ: Shrews.

- Cran. Skel. *Sorex personatus*, Geoff. *Musked Shrew*.
232.

ORDER GLIRES.

SUB-ORDER SIMPLICIDENTATA.

Family ZAPODIDÆ: Jumping Mice.

- Cran. Skel. *Zapus hudsonius* (Zimm.), Cs. *Jumping Mouse*.
1326.

Family MURIDÆ: Mice.

Sub-Family Murina: Typical Mice.

- Cran. Skel. *Mus decumanus*, Pallas. *Common Rat*.
130, 19,
221,
223,
552.
Cran. Skel. *Mus tectorum*, Savt. *White bellied Rat*.
984,
985.
Cran. Skel. *Mus musculus*, Linn. *Common House Mouse*.
225, 69,
226,
227.
Cran. Skel. *Neotoma floridana* (Say), Ord. *Wood Rat*.
221,
983.

- Cran. Skel. *Neotoma cinerea* (Ord.), Baird. *Rocky Mountain Rat*.
1356.
Cran. Skel. *Sigmodon hispidus* (Say), Ord. *Cotton Rat*.
967,
968,
969,
970.
Cran. Skel. *Hesperomys (Vesperinus) leucopus* (Raf.). *White-footed Mouse*.
597, 1406.
1928.
Sub-Family Arvicolina: Field Mice.
Cran. Skel. *Arvicola (Myonomys) riparius*, Ord. *Field Mouse*.
608,
1049,
1404.
Cran. Skel. *Fiber zibethicus* (Linn.), Cuvier. *Musk Rat*.
228,
229,
230,
1194.
Family SACCONTIDÆ: Pouch'd Mice.
Sub-Family Dipodomysina
Cran. Skel. *Dipodomys phillipsi ordii* (Woodh.), Cs. *Kangaroo Rat*.
681,
1137.
Cran. Skel. *Onychomys leucogaster*, Baird. *Western Mouse*.
990.
Family GEOMIDIDÆ: Gophers.
Cran. Skel. *Geomys bursarius*, Shaw. *Pouch'd Gopher*.
719,
827.
Cran. Skel. *Thomomys talpoides* (Rich.), Baird. *Port Union Gopher*.
1310.
Cran. Skel. *Thomomys talpoides umbrinus* (Rich.), Cs. *Black-faced Gopher*.
1001,
1002.
Family CASTORIDÆ: Beavers.
Cran. Skel. *Castor canadensis*, Kuhl. *American Beaver*.
220,
1081,
221, 1082.
794,
822.
Family SCIURIDÆ: Squirrels, etc.
Sub-Family Sciurina: Typical Squirrels.
Cran. Skel. *Sciurus aberti*, Woodh. *Tuft-eared Squirrel*.
975, 1357.

- Cran. Skel. *Sciurus hudsonicus*, Pallas. *Red Squirrel*.
216, 1855.
- Cran. Skel. *Sciurus vulgaris*, Gmelin. *Southern Fox Squirrel*.
623,
624.
- Cran. Skel. *Sciurus cinereus*, Linn. *Fox or Cat Squirrel of Middle States*.
214,
215.
- Cran. Skel. *Sciurus carolinensis*, Gmelin. *Gray Squirrel*.
14.
- Cran. Skel. *Pteromys volucella*, Cuv. *Flying Squirrel*.
175.
- Cran. Skel. *Pteromys volucella oregonensis* (Bach). *Oregon Flying Squirrel*.
896.
- Cran. Skel. *Tamias striatus* (Linn.). *Chipmunk*.
593, 561.
- Cran. Skel. *Tamias quadrivittatus* (Say), Rich. *Four-striped Squirrel*.
1861, 1862.
- Cran. Skel. *Tamias lateralis* (Say), Allen. *Rocky Mountain Chipmunk*.
1863.
- Cran. Skel. *Spermophilus grammurus* (Say), Bach. *Line-tail Squirrel*.
974,
1398.
- Cran. Skel. *Spermophilus tridecemlineatus* (Mitch.), Aud. and Bach. *Striped Prairie Squirrel*.
1312, 1311,
1313.
- Cran. Skel. *Spermophilus richardsoni* (Sabine), Bd. *Richardson's Gopher*.
1433.
- Cran. Skel. *Cynomys ludovicianus* (Ord.), Bd. *Prairie Dog*.
217, 905,
218, 1409,
853, 1410,
903,
904.
- Cran. Skel. *Cynomys columbianus* (Ord.), Allen. *Short-tailed Prairie Dog*.
1552.
- Sub-Family *Arctomyinae*: *Woodchucks*.
- Cran. Skel. *Arctomys monax*, Linn. *Woodchuck*.
219, 1205.
- Cran. Skel. *Arctomys flaviventer*, Aud. and Bach. *Yellow-bellied Marmot*.
1358.
- Family *HYSTRICIDAE*: *Porcupines*.
- Cran. Skel. *Erethizon dorsatus*, Cuvier. *Porcupine*.
978.

- Cran. Skel. *Erethizon epixanthus*, Brandt. *Yellow-haired Porcupine*.
231.
- SUB-ORDER **DUPLICIDENTATA**.
Family *LEPORIDAE*: *Hares*.
- Cran. Skel. *Lepus americanus*, Ersl. *Great Northern Hare*.
239.
- Cran. Skel. *Lepus callotis*, Wagler. *Jacksn Rabbit*.
237,
797,
1238,
1360.
- Cran. Skel. *Lepus sylvaticus*, Bach. *Eastern Gray Rabbit*.
249, 164,
241,
242,
243.
- Cran. Skel. *Lepus sylvaticus nuttalli* (Bach), Allen. *Sage Rabbit*.
972,
987,
988,
989.
- Cran. Skel. *Lepus palustris*, Bach. *Marsh Rabbit*.
238.
- SUB-CLASS **Didelphia**.
ORDER **Marsupialia**.
SUB-ORDER **DIDELPHIMORPHIA**.
Family *DIDELPHIDAE*: *Opossums*.
- Cran. Skel. *Didelphys virginiana*, Shaw. *Common Opossum*.
212, 1,
213, 162,
787, 163,
945.

LIST OF CRANIA AND SKELETONS OF FOREIGN
AND DOMESTIC MAMMALS.

- CLASS **MAMMALIA.**
SUB-CLASS **Placentalia.**
SUPER-ORDER **EDUCABILIA.**
ORDER **Primates.**
SUB-ORDER **ANTHROPOIDEA.**
FAMILY **SIMIIDÆ.**
Sub-Family **Simiina.**
Cran. Skel. *Simia satyrus*, Linn. *Orange Outang.*
1407.
FAMILY **CYTHOPITHECIDÆ.**
Sub-Family **Cynopithecina.**
Cran. Skel. *Cercopithecus fuliginosus*, Cuvier. *Moor Ape Monkey.*
1066.
Cran. Skel. *Cercopithecus pygerythrus*, Cuvier. *Vervet.*
1299.
Cran. Skel. *Macacus senicus* (Desm.), Gray. *Capped Macaque.*
1300.
Cran. Skel. *Macacus cynomolgus*, Desm. *The Kra.*
1382.
Cran. Skel. *Cynocephalus porcarius*, Desm. *Chacma.*
1297.
FAMILY **CEBIDÆ.**
Sub-Family **Myecina.**
Cran. Skel. *Myecetes seniculus*, Kuhl. *Golden Howler.*
1298.
Sub-Family **Cebina.**
Cran. Skel. *Ateles paniscus*, Geoff. *Spider Monkey.*
1296.
FAMILY **MONIDÆ.**
Cran. Skel. *Oellipsa titi*, Lesson. *Pinche.*
1302.
SUB-ORDER **PROSIMIÆ.**
FAMILY **TARSIIDÆ.**
Cran. Skel. *Tardius spectrum*, Geoff. *Tarsius.*
1301.

- ORDER **Feræ.**
SUB-ORDER **FISSIPEDIA.**
FAMILY **FELIDÆ:** *Cats, etc.*
Sub-Family **Feline:** *Typical Cats.*
Cran. Skel. *Felis domesticus*, Linn. *Common Cat.*
55, 59,
181, 684,
182, 680.
183.
Cran. Skel. *Felis tigris*, Cuv. *Bengal Tiger.*
1307.
FAMILY **CANIDÆ:** *Dogs, Wolves, etc.*
Sub-Family **Canina:** *Typical Dogs.*
Cran. Skel. *Canis familiaris*, Linn. *Common Dog.*
29, 55, 76.
187,
188,
739.
FAMILY **Mustelidæ:** *Martins, Weasels, etc.*
Sub-Family **Mustelina:** *Typical Weasels.*
Cran. Skel. *Mustela martes*, Brisson. *Forest Mink.*
723.
Cran. Skel. *Putorius fustidus*, Linn. *European Itis.*
724.
Cran. Skel. *Putorius vulgaris* (Brisson). *Field Weasel.*
730.
Cran. Skel. *Putorius erminea* (Linn.). *Great Weasel.*
732.
Sub-Family **Molina:** *Badgers.*
Cran. Skel. *Meles taxus*, Schreber. *European Badger.*
735.
Sub-Family **Lutrina:** *Otters.*
Cran. Skel. *Lutra vulgaris*, Linn. *European Otter.*
740.
ORDER **UNGULATA.**
SUB-ORDER **ARTIODACTYLI.**
FAMILY **Bovidæ:** *Bovines.*
Sub-Family **Bovina:** *Typical Bovines.*
Cran. Skel. *Bos taurus* (Linn.), Cuvier. *Ox.*
50, 802.
Sub-Family **Antilopina:** *European Antelope; Chamois, etc.*
Cran. Skel. *Rupicapra tragus*, Linn. *Chamois.*
788, 871.

Sub-Family *Caprinae*: Goats, etc.
 Cran. Skel. *Capra hircus*. Common Goat.
 254, 106.
 255.
 256.

Sub-Family *Ovinae*: Sheep.
 Cran. Skel. *Ovis aries*, Linn. Common Sheep.
 257.
 619.
 620.

Family *Phacoheridae*.
 Cran. Skel. *Phacoherus scilani*, Grett. Wart Hog.
 1369.

Family *Scidae*: Swine.
 Cran. Skel. *Sus scrofa*, Linn. Common Hog.
 47, 123.
 52, 853.
 245, 856.
 246.

SUB-ORDER PERISSODACTYLI.

Family *Equidae*: Horses, etc.
 Cran. Skel. *Equus caballus*, Linn. Horse.
 34, 801.
 Cran. Skel. *Equus asinus caballus*, Linn. Mule.
 1408.

SUPER-ORDER INEDUCABILIA.

ORDER Chiroptera.

SUB-ORDER ANIMALIVORA.

Family *Vesperilionidae*.

Sub-Family *Vesperilioninae*.

Cran. Skel. *Vesperugo noctula*, Blas. Slicing Bat.
 731.
 Cran. Skel. *Vesperugo pipistrellus*, Blas. Common European Bat.
 728.
 Cran. Skel. *Vesperugo discolor*, Blas. Parti-colored Bat.
 729.
 Cran. Skel. *Plecotus auritus* (Linn.), Geoff. Long-eared Bat.
 727.

ORDER Insectivora.

SUB-ORDER INSECTIVORA VERA.

Family *Talpidae*: Moles.

Sub-Family *Talpinae*: Typical Moles.

Cran. Skel. *Talpa europaea*, Linn. Black Mole.
 734.
 735.

Family *Soricidae*: Shrews.
 Cran. Skel. *Crocidura araneus* (Schreber.). Common Shrew.
 733.

Family *Ermacridae*: Hedgehogs.

Sub-Family *Erinaceinae*: Typical Hedgehogs.
 Cran. Skel. *Erinaceus europaeus*, Linn. Hedgehog.
 725.

ORDER Glires.

SUB-ORDER SIMPLICIDENTATI.

Family *Muridae*: Rats, Mice, etc.

Sub-Family *Murinae*: Typical Mice.

Cran. Skel. *Arvicola amphibius*, Linn. Water-Rat.
 726.
 Family *Caviidae*: Capies, etc.
 Cran. Skel. *Cavia caryaya*, Linn. Guinea Pig.
 869, 872.
 870.
 908.
 909.

SUB-ORDER DUPLICIDENTATI.

Family *Leporidae*: Rabbits, Hares, etc.

Cran. Skel. *Lepus timidus*, Linn. European Hare.
 737.
 Cran. Skel. *Lepus cuniculus*, Linn. English Rabbit.
 234, 48.
 235.
 236.
 1023.
 Cran. Skel. *Lepus madagascariensis*, Linn. Lap-eared Rabbit.
 818.

ORDER Bruta.

SUB-ORDER TARDIGRADA.

Family *Bradyrodinae*.

Sub-Family *Cholepodinae*.

Cran. Skel. *Cholepus hoffmanni*, Gray. Two-toed Sloth.
 1893.

SUB-CLASS **Didelphia.**ORDER **Marsupialia.**SUB-ORDER **SYNDACTYLI.**Family **Phalangistidae.**Sub-Family **Phalangistinae.**

- Cran. Skel. *Phalangista vulpina*, Desm. *Australian Opossum.*
1306.

SUB-CLASS **Ornithodelphia.**ORDER **Monotremata.**SUB-ORDER **TACHYGLOSSA.**Family **Tachyglossidae.**

- Cran. Skel. *Echidna aculeata*, Gray. *Porcupine Ant-eater.*
1305.

SUB-ORDER **PLATYPODA.**Family **Ornithorhynchidae.**

- Cran. Skel. *Ornithorhynchus anatinus*, Shaw. *Duck-bill Platypus.*
1304.

LIST OF CRANIA, SKELETONS, AND STERNA
OF BIRDS.

Note.—The Classification adopted is that of Dr. Elliot Coues, U. S. A., in his *Key to North American Birds*, 1872, and the nomenclature corresponds with his *Check List of North American Birds*, 1873.

CLASS **AVES.**ORDER **Passeres:** *Perchers.*SUB-ORDER **OSCINES:** *Singing Birds.*Family **Turdidae:** *Thrushes.*Sub-Family **Turdinae:** *Typical Thrushes.*

- Cran. Skel. *Turdus migratorius* (L.). *Robin.*
33, 56, 45.
294,
295.
Cran. Skel. *Turdus mustelinus*, Gm. *Wood Thrush.*
296,
297,
298.

- Cran. Skel. *Turdus pallasi*, Cab., var. *Nanus* (Aud.), Cs. *Dwarf Thrush.*
303.

- Cran. Skel. *Turdus swainsoni*, Cab. *Olive-backed Thrush.*
304.

- Cran. Skel. *Turdus fuscocens*, Steph. *Wilson's Thrush; Veery.*
299,
300,
301,
302.

Sub-Family **Mimidae:** *Mocking Thrushes.*

- Cran. Skel. *Mimus polyglottus* (L.), Bole. *Mockingbird.*
340,
341.

- Cran. Skel. *Mimus carolinensis* (L.), Gr. *Catbird.*
342,
343,
344,
345.

- Cran. Skel. *Harporhynchus rufus* (L.), Cab. *Brown Thrush; Thrasher.*
346,
347.

- Cran. Stern. *Harporhynchus curvirostris* (Sw.), Cab., var. *palmeri*, Ridg. *Curve-billed Thrush.*
1478.

- Cran. Stern. *Harporhynchus crissalis*, Henry. *Red-eared Thrush.*
1465.

Family **Saxicolidae:** *Stone Chats.*

- Cran. Skel. *Sialia sialis* (L.), Haldeman. *Eastern Bluebird.*
305,
1109.

- 306,
307.

Sub-Family **Polioptila:** *Gnatcatchers.*

- Cran. Skel. *Polioptila caerulea*, Sci. *Blue-Gray Gnatcatcher.*
355,
356.

Family **Paridae:** *Titmice.*

- Cran. Skel. *Lophophanes bl-color* (L.), Bp. *Tufted Titmouse.*
354.

- Cran. Stern. *Lophophanes inornatus* (Gamb.), Cass. *Plain Titmouse.*
1435. 1496.

- Cran. Stern. *Lophophanes wollweberi*, Bp. *Bridled Titmouse.*
1476.

- Cran. Skel. *Parus atricapillus*, L. *Black-capped Chickadee.*
357,
358.

- Cran. Skel. *Parus atricapillus*, L., var. *carolinensis* (Aud.), Cs. *Carolina Chickadee*.
1871,
1872,
1873,
1874.

Family SITTIDAE: *Nuthatches*.

- Cran. Skel. *Sitta carolinensis*, Gm. *White-bellied Nuthatch*.
350,
351.
Cran. Skel. *Sitta canadensis*, L. *Red-bellied Nuthatch*.
352,
353.

Family CERTHIDAE: *Creeper*.

- Cran. Stern. *Certhia familiaris*, L. *Brown Creeper*.
1507.
Cran. Skel. Stern. *Campylorhynchus brunneicapillus* (Lafc.), Gr. *Brown-headed Creeper-Wren*.
1516. 1402. 1517.

Family TROGLODYTIDAE: *Wrens*.

- Cran. Skel. *Troglodytes aedon*, V. *House Wren*.
349.
Cran. Skel. *Troglodytes aedon*, V., var. *parkmanni* (Aud.), Cs. *Western House Wren*.
1513.
Cran. Skel. *Telmatodytes palustris* (Nils.), Cab. *Long-billed Marsh Wren*.
348.
Cran. Skel. *Cistothorus stellaris* (Licht.), Cab. *Short-billed Marsh Wren*.
1348.

Family ALAUDIDAE: *Larks*.

- Cran. Skel. Stern. *Eremophila alpestris* (Forst.), Boie. *Horned Lark*; *Shore Lark*.
359. 1494. 1490.
913,
914.

Family SYLVICOLIDAE: *American Warblers*.

- Cran. Skel. *Parula americana* (L.), Bp. *Blue Yellow-backed Warbler*.
309,
310.
Cran. Stern. *Helminthophaga peregrina* (Wils.), Cal. *Tennessee Warbler*.
1849. 1559.
Cran. Stern. *Dendroica aestiva* (Gm.), Bd. *Summer Warbler*.
321. 1531.
822,
1859,
1882.
Cran. Skel. *Dendroica virens* (Gm.), Bd. *Black-throated Green Warbler*.
319.
Cran. Skel. *Dendroica cerulea* (L.), Bd. *Black-throated Blue Warbler*.
315.

- Cran. Skel. *Dendroica coronata* (L.), Gr. *Yellow-rumped Warbler*; *Myrtle Bird*.
325,
326.

- Cran. Skel. *Dendroica blackburniae* (Gm.), Bd. *Blackburnian Warbler*.
327.
Cran. Skel. *Dendroica striata* (Forst.), Bd. *Black-poll Warbler*.
323,
324.

- Cran. Skel. *Dendroica castanea* (Wils.), Bd. *Bay-breasted Warbler*.
317,
318.

- Cran. Skel. Stern. *Dendroica pennsylvanica* (L.), Bd. *Chautauk-sided Warbler*.
319. 1847. 1847.
320.

- Cran. Skel. *Dendroica discolor* (V.), Bd. *Prairie Warbler*.
328.

- Cran. Skel. *Geothlypis trichas* (L.), Cab. *Maryland Yellow-throat*.
311,
312,
313,
314.

- Cran. Stern. *Geothlypis macgillivrayi* (Aud.), Bd. *Macgillivray's Warbler*.
1431. 1432.

- Cran. Skel. *Icteria virens* (L.), Bd. *Yellow-breasted Chat*.
338.

- Cran. Skel. *Setophaga ruticilla* (L.), Sw. *Redstart*.
329,
330,
331,
332.

Family TANAGRIDAE: *Tanagers*.

- Cran. Skel. *Pyrranga rubra* (L.), V. *Scarlet Tanager*.
308.
Cran. Skel. *Pyrranga aestiva* (L.), V., var. *cooperi* (Ridg.), Cs. *Cooper's Tanager*.
1510.
Cran. Skel. *Pyrranga hepatica*, Sw. *Hepatic Tanager*.
1497.

Family HIRUNDINIDAE: *Swallows*.

- Cran. Skel. Stern. *Hirundo horreorum*, Barton. *Barn Swallow*.
1449. 187. 1521.
Cran. Skel. *Tachycineta bicolor* (V.), Cs. *White-bellied Swallow*.
335,
351,
1013,
1014.

Cran. Skel. *Petrochelidon lunifrons* (Say), Cab. *Cliff Swallow*; *Even Swallow*.

333, 334.
Cran. Stern. *Stelgidopteryx serripennis* (Aud.), Bl. *Rough-winged*

1514. 1515. *Swallow*.
Cran. Skel. *Freges purpurea* (L.), Boie. *Purple Martin*.

1565.
Family ANFELIDÆ: *Waxwings*.

Cran. Skel. *Ampelis cedrorum* (V.), Bl. *Cedar Bird*; *Cherry Bird*.

32, 62,
65, 336.

Family VIREONIDÆ: *Greenlets*.

Cran. Skel. *Vireo olivaceus* (L.), V. *Red-eyed Vireo*.

337,
338,
339,

Cran. Stern. *Vireo vicinior*, Coes. *Gray Vireo*.
1469, 1491.

Family LANIIDÆ: *Shrikes*.

Cran. Stern. *Collurio borealis* (V.), Bl. *Great Northern Shrike*; *Dutch-
lord*.

Family FRINGILLIDÆ: *Finches*.

Cran. Skel. *Carpodacus purpureus* (Gm.), Gr. *Purple Finch*.

382,
383,
384,

Cran. Skel. Stern. *Carpodacus frontalis* (Say), Gr. *Crimson-fronted*
1501. 1519. 1502. *Finch*; *House Finch*.

Cran. Skel. *Loxia curvirostra*, L., var. *americana* (Wils.), Co. *Common Crossbill*.

Cran. Skel. *Chrysomitris tristis* (L.), Bp. *American Goldfinch*; *Yellow-
bird*.

375,
376,
377,
378,

Cran. Stern. *Chrysomitris psaltria* (Say), Bp. *Arkansas Goldfinch*.

1495, 1494.

Cran. Stern. *Passerculus savanna* (Wils.), Bp. *Savannah Sparrow*.

383, 1335.

384,
385,

Cran. Skel. *Melospiza palustris* (Wils.), Bl. *Swamp Sparrow*.

369,
370,

Cran. Skel. *Melospiza melodia* (Wils.), Bl. *Song Sparrow*.

392,
393,

1879.

Cran. Skel. *Melospiza melodia* (Wils.), Bl. var. *fallax* (Bl.), Ridg.
975. *Gray Song Sparrow*.

Cran. Skel. *Junco hyemalis* (L.), Sel. *Snowbird*.

386,
387,
388,
389,

Cran. Skel. *Junco cinereus* (Sw.), Cab., var. *caniceps* (Woodh.), Co.

1518. *Chauvenet Snow Bird*.

Cran. Skel. *Spizella monticola* (Gm.), Bl. *Tree Sparrow*.

390,
391,
392,

Cran. Skel. *Spizella socialis* (Wils.), Bp. *Chipping Sparrow*.

381,

Cran. Skel. *Spizella socialis* (Wils.), Bp., var. *arizonae*, Co. *Arizona*

1488. *Chipping Sparrow*.

Cran. Stern. *Spizella pusilla* (Wils.), Bp. *Field Sparrow*.

380,
1448,

1447.

Cran. Stern. *Spizella pallida* (Sw.), Bp. var. *breweri* (Cass.), Co.

1503, 1505. *Brewer's Sparrow*.

1504.

Cran. Skel. *Zonotrichia albicollis* (Gm.), Bp. *White-throated Sparrow*.

371,
372,
373,
374,

1877.

Cran. Skel. *Passerella iliaca* (Merrem.), Sw. *Fox Sparrow*.

368,

Cran. Stern. *Calamospiza bicolor* (Townsend), Bp. *Lark Hunting*; *White-
winged Blackbird*.

1486, 1487.

Cran. Skel. *Eusapia americana* (Gm.), Bp. *Black-throated Bunting*.

367,

Cran. Skel. Stern. *Goniaphea ludoviciana* (L.), Bowdich. *Rose-
breasted Grosbeak*.

1345, 1335, 1346.

Cran. Stern. *Goniaphea melanocephala* (Sw.), ———. *Black-headed*

1511, 1512. *Grosbeak*.

Cran. Skel. *Cyanospiza cyanea* (L.), Bl. *Indigo Bird*.

391,

Cran. Stern. *Cardinalis virginianus* (Brisson), Bp. *Cardinal Redbird*.

40, 1278.

360,
361,
362,

- Cran. Skel. *Pipilo erythrophthalmus* (L.), V. *Towhee Dunting; Chickadee*.
363,
364,
365,
366,
1489.
- Family Icteridae: *American Starlings*.
- Cran. Skel. Stern. *Dolichonyx oryzivorus* (L.), Sw. *Bobolink; Red-bird; Ricebird*.
37, 79, 584. 1344.
394,
395,
- Cran. Skel. *Molothrus ater* (Gm.), Sw. *Cowbird*.
396, 1325.
- Cran. Skel. *Agelaius phoeniceus* (L.), V. *Red-winged Blackbird*.
70, 117.
397,
398,
399,
- Skel. Stern. *Xanthocephalus icterocephalus* (Br.), Bd. *Yellow-headed Blackbird*.
1492. 1479.
- Cran. Skel. *Sturnella magna* (L.), Sw. *Field-Lark; Meadow-Lark*.
400, 14.
401,
402.
- Cran. Stern. *Sturnella magna* (L.), Sw. var. *neglecta* (Aud.), All. *Western Field-Lark*.
1471.
- Cran. Skel. *Icterus baltimore* (L.), Daudin. *Baltimore Oriole*.
403.
- Cran. Skel. *Icterus bullockii* (Sw.), Bp. *Bullock's Oriole*.
1472,
1525,
- Cran. Skel. *Scolecophagus ferrugineus* (Gm.), Sw. *Rusty Grackle*.
404, 809.
405,
406,
- Cran. Stern. *Scolecophagus cyanocephalus* (Magl.), Cab. *Blue-headed Grackle*.
939. 1473.
- Cran. Skel. Stern. *Quiscalus purpureus* (Bartr.), Licht. *Purple Grackle; Crow Blackbird*.
39, 824. 1279.
407,
408,
409.

Family CORVIDAE: Crows.

Sub-Family CORVINAE: Ravens and Crows.

- Cran. Skel. *Corvus corax*, Linn. *Raven*.
410,
707,
927,
1467.
- Cran. Skel. *Corvus cryptoleucus*, Couch. *White-necked Raven*.
411.
- Cran. Skel. *Corvus americanus*, Aud. *Common Crow*.
412, 133.
413,
838.
- Cran. Skel. *Corvus ossifragus*, Wils. *Fish Crow*.
414.
- Cran. Skel. *Picicorvus columbianus* (Wils.), Bp. *Clark's Crow*.
926,
973,
1391.
- Cran. Skel. *Gymnokitta cyanocephala*, Maxim. *Blue Crow*.
971.
- Sub-Family GERRHINAE: Jays.
- Cran. Skel. *Pica melanoleuca*, V., var. *nuttalli* (Aud.), Cs. *Yellow-billed Magpie*.
1400.
- Cran. Skel. *Cyanurus cristatus* (L.), Sw. *Blue Jay*.
415, 115.
416,
417,
418.
- Cran. Stern. *Aphelocoma floridana* (Bartr.), Cab., var. *Woodhousei*.
1469. (Bd.), All. *Woodhouse's Jay*.
- Cran. Skel. *Perisoreus canadensis* (L.), Bp. *Canada Jay*.
419.
- SUB-ORDER CLAMATORES.
- Family TYRANNIDAE: *American Flycatchers*.
- Cran. Skel. Stern. *Tyrannus carolinensis* (L.), Bd. *Kingbird; Bewick's Wren*.
1339. 1842.
292,
1340,
1341.
- Cran. Skel. *Contopus virens* (L.), Cab. *Wood Pewee*.
293.
- Cran. Skel. Stern. *Contopus virens* (L.), Cab., var. *richardsonii*.
1508. 1498. 1509. (Sw.), Cs. *Western Wood Pewee*.

ORDER **PICARIAE**: Picarian Birds.SUB-ORDER **CYPSELI**: Cypseliform Birds.

Family CAPRINULIDAE: Goutchekers.

- Cran. Skel. *Anrostomus vociferus* (Wils.), Bp. *Whippoorwill*; *Night-Jar*.
861.

Family CYPSELIDAE: Swifts.

- Cran. Skel. *Panyptila saxatilis* (Woodh.), Cs. *White-throated Swift*.
1500.
Cran. Skel. *Chietura pelagica* (L.), Steph. *Chimney Swift*.
171.

Family TROCHILIDAE: Humming-Birds.

- Cran. Skel. *Trochilus colubris*, L. *Ruby-throated Humming-Bird*.
290.
Cran. Stern. *Trochilus alexandri*, Bourc. *Black-chinned Humming-Bird*.
1456, 1459.
1457,
1458.
Cran. Stern. *Selasphorus rufus* (Gm.), Sw. *Rufous-backed Humming-Bird*.
1453, 1455.
1454.
Cran. Stern. *Selasphorus platycercus* (Sw.), Gld. *Broad-tailed Humming-Bird*.
1449, 1452.
1450,
1451.
Cran. Stern. *Stellula calliope* (—), Gld. *Calliope Humming-Bird*.
1522.

Family ALCEDINIDAE: Kingfishers.

- Cran. Skel. *Ceryle alcyon* (L.), Boie. *Belted Kingfisher*.
155.

Family CUCULIDAE: Cuckoos.

- Cran. Stern. *Geococcyx californianus* (Less.), Bd. *Ground Cuckoo*;
1466, 1404. *Chaparral Cock*.
Cran. Skel. *Coccyzus erythrophthalmus* (Wils.), Bd. *Black-billed Cuckoo*.
281.
Cran. Skel. *Coccyzus americanus* (L.), Bp. *Yellow-billed Cuckoo*.
278,
279,
280.

Family PICIDAE: Woodpeckers.

- Cran. Skel. *Hylotomus pileatus* (L.), Bd. *Pileated Woodpecker*; *Long-cock*.
621, 550.
718.

- Cran. Skel. *Picus scalaris*, Wagl. var. *nuttalli* (Gamb.), Cs. *Nuttall's Woodpecker*.
1400.

- Cran. Skel. *Picus villosus*, L. *Hairy Woodpecker*.
602,
1570.

- Cran. Stern. *Picus villosus*, L., var. *harrisi* (Aud.), All. *Harris' Woodpecker*.
1491, 1477.
Cran. Skel. *Picus pubescens*, L. *Downy Woodpecker*.
282,
283.

- Cran. Stern. *Picoides americanus*, Brehm., var. *dorsalis* (Bd.), All. *Striped-backed Woodpecker*.
1475.

- Cran. Skel. Stern. *Sphyrapicus varius* (L.), Bd. *Yellow-bellied Woodpecker*.
1336, 811, 1276.

- Cran. Stern. *Sphyrapicus thyroideus* (Cass.), Bd. *Brown-headed Woodpecker*.
1397.

- Cran. Skel. *Ceoturus uropygialis*, Bd. *Gila Woodpecker*.
1483.

- Cran. Skel. Stern. *Melanerpes erythrocephalus* (L.), Sw. *Red-headed Woodpecker*.
284, 1106, 1338.

- 285,
1537.

- Cran. Skel. Stern. *Colaptes auratus* (L.), Sw. *Golden-winged Woodpecker*; *Picker*.
286, 118, 1327.

- 287,
288,
289.

- Cran. Stern. *Colaptes mexicanus*, Sw. *Red-shafted Woodpecker*.
1470.

ORDER **PSITTACI**: Parrots.

Family ARIDAE: Parrots.

- Cran. Skel. *Cebus carolinensis* (L.), Kuhl. *Carolina Parrot*.
277.

ORDER **RAPTORES**: Birds of Prey.

Family STRIGIDAE: Owls.

- Cran. Skel. *Strix flammea*, L., var. *americana* (Aud.), Cs. *Barn Owl*.
1351.

- Cran. Skel. *Bubo virginianus* (Gm.), Bp. *Great Horned Owl*.
270, 869.

837.
Cran. Skel. *Scops asio* (L.), Bp. *Screech Owl*; *Mottled Owl*.
274, 610.

- Cran. Skel. Stern. *Otus vulgaris* (L.), var. *wilsonianus* (Less.), All. *Long-eared Owl*.
603, 1241.

- Cran. Skel. *Brachyotus palustris* (Bechst.), Bp. *Short-eared Owl*.
273, 591.
788.
- Cran. Skel. *Syrnium nebulosum* (Forst.), Gr. *Barred Owl*.
272, 156.
- Cran. Skel. *Nyctea alba* (Daud.), Gr. *Snowy Owl*.
271.
- Cran. Skel. *Nyctale acadica* (Gm.), Bp. *Acadian Owl*; *Saw-whet Owl*.
897.
- Cran. Skel. *Glaucidium passerinum* (L.), Bp., var. *californicum* (Sel.),
1403. Ridg. *Pygmy Owl*.
- Family FALCONIDÆ: *Diurnal Birds of Prey*.
- Cran. Skel. *Circus cyaneus* (L.), Lacép., var. *hudsonius* (L.), Cs.
268, *Mereh Hawk*; *Harrier*.
921.
- Cran. Skel. *Stern. Accipiter fuscus* (Gm.), Bp. *Sharp-shinned*
949, 604, 1295. *Hawk*; *Pigeon Hawk*.
1294.
- Cran. Skel. *Accipiter cooperi*, Bp. *Cooper's Hawk*; *Chicken Hawk*.
296, 800.
717.
- Cran. Skel. *Astur atricapillus* (Wils.), Bp. *Goosewink*.
139.
- Cran. Skel. *Falco* (*Hierofalco*) *gyrfalco* (Linn.), var. *islandicus* Sabine.
922.
- Cran. Skel. *Falco mexicanus* (Licht.), var. *polyagrus*, Ridg. *Lanner*
1386. *Falcon*.
- Cran. Skel. *Falco communis Variorum*. *Peregrine Falcon*; *Duck Hawk*.
923.
- Cran. Skel. *Falco columbarius*, L. *Pigeon Hawk*.
924,
269.
- Cran. Skel. *Buteo borealis* (Gm.), V. *Red-tailed Buzzard*; *Hen Hawk*.
263, 15.
264,
716.
- Cran. Skel. *Stern. Buteo borealis* (Gm.), V., var. *calurus* (Cass.),
1485, 1369, 1462. Ridg. *Western Red-tailed Buzzard*.
- Cran. Skel. *Buteo lineatus* (Gm.), Jard. *Red-shouldered Buzzard*.
267,
768.
- Cran. Skel. *Stern. Buteo swainsoni*, Bp. *Swainson's Buzzard*.
1385.

- Cran. Skel. *Archibuteo lagopus* (Brisson.), Gr., var. *sancti-johannis*
935, (Gm.), Ridg. *Rough-legged Buzzard*.
937,
938.
- Cran. Skel. *Asturina plagiata*, Schlegel. *Gray Hawk*.
1463.
- Cran. Skel. *Pandion haliaetus* (L.), Savigny. *Fish Hawk*; *Oprey*.
135.
- Cran. Skel. *Aquila chrysaetos* (L.). *Golden Eagle*.
891, 796.
1197.
- Cran. Skel. *Haliaetus leucocephalus* (L.), Savigny. *White-headed Eagle*;
856, 583. *Bald Eagle*.
892,
893.
- Family CATHARTIDÆ: *American Vulturæ*.
- Cran. Skel. *Cathartes aura* (L.), Illiger. *Turkey Buzzard*.
769, 138.
- ORDER COLUMBÆ: *Pigeons, etc.*
Family COLUMBIDÆ: *Pigeons*.
- Cran. Skel. *Columba fasciata*, Say. *Band-tailed Pigeon*.
1490.
- Cran. Skel. *Ectopistes migratorius* (L.), Sw. *Wild Pigeon*.
424, 938.
- Cran. Skel. *Zenaidura macroura* (L.), Bp. *Carolina Dove*.
425, 114.
426,
427,
428.
- ORDER GALLINÆ: *Gallinae Birds*.
Family MELEAGRIDIDÆ: *Turkeys*.
- Cran. Skel. *Meleagris gallopavo*, L. *Turkey*.
429, 141.
430.
- Cran. Skel. *Stern. Meleagris gallopavo*, L., var. *americana* (Bartr.),
965, 1390, 1440. Cs. *Common Wild Turkey*.
966, 1445,
1446, 1446.
- Family TETRAONIDÆ: *Grouse, etc.*
Sub-Family TETRAONINÆ: *Grouse*.
- Cran. Skel. *Tetrao canadensis*, L. *Canada Grouse*; *Spruce Partridge*.
435.
- Cran. Skel. *Centrocercus urophasianus* (Bp.), Sw. *Sage Cock*; *Cock-*
1426, 1427. *of-the-plains*.

- Cran. Skel. *Pediocetes phasianellus* (L.), Ell. *Northern Sharp-tailed Grouse*.
436, 1428.
1429.
Cran. Skel. *Capidonia cupido* (L.), B4. *Pinnated Grouse; Prairie Hen*.
437, 140.
438.
439.
Cran. Skel. *Bonasa umbellus* (L.), Steph. *Ruffed Grouse; Partridge*.
126. *Pheasant*.
Cran. Skel. *Lagopus albus* (Gm.), Aud. *Willow Ptarmigan*.
940.

Sub-Family *Odentophorinae*: American Partridge.

- Cran. Skel. Stern. *Ortyx virginianus* (L.), Bp. *Virginia Partridge*.
31, 125, 1280. *Quail; Bob-white*.
77.
78.
440.
Cran. Skel. *Oreortyx pictus* (Doug.), B4. *Plumed Partridge*.
925.
Cran. Skel. *Lophortyx californicus* (Shaw), Bp. *California Partridge*.
973.
Cran. Skel. Stern. *Cyrtonyx montezumae* (Less.), Gm. *Montezuma Partridge*.
1392, 1389, 1393.

ORDER *Gallatores*: Wading Birds.SUB-ORDER *LIMICOLÆ*: Shore Birds.Family *CHARADRIIDÆ*: Plover.Sub-Family *Charadriinae*: True Plover.

- Cran. Skel. *Charadrius fulvus*, Gm., var. *virginicus* (Berk.), Cs. *Golden Plover*.
868, 867.
920.
Cran. Skel. *Egialitis vociferus* (L.), Cass. *Kildeer Plover*.
606, 150.
607.
991.

Family *RECURVITROSTIDÆ*: *Avocets*.

- Cran. Stern. *Recurvirostra americana*, Gm. *Avocet*.
1387.
Cran. Skel. *Himantopus nigricollis*, V. *Sill*.
1359.

Family *PHALAROPIDÆ*: *Phalaropes*.

- Cran. Stern. *Sieganopus wilsoni* (Sab.), Cs. *Wilson's Phalarope*.
1435, 1437.
1436.

Family *SCOLOPACIDÆ*: *Saups, etc.*

- Cran. Skel. *Philohela minor* (Gm.), Gr. *American Woodcock*.
449, 116.
Cran. Skel. Stern. *Gallinago wilsoni* (Temm.), Bp. *American Snipe*.
450, 151, 1292. *Wilson's Snipe*.
868.
Cran. Skel. Stern. *Ereunetes pusillus* (L.), Cass. *Semi-palmated Sandpiper*.
1481, 1480, 1482.
Cran. Skel. *Tringa maculata* V. *Pectoral Sandpiper*.
1343, 862.
Cran. Skel. *Tringa alpina*, L., var. *americana*, Cass. *American Dunlin*.
451.
Cran. Skel. *Limosa feldoa* (L.), Ord. *Great Marbled Godwit*.
456.
Cran. Skel. *Totanus melanoleucus*, Gm. *Greater Tattler*.
1293.
Cran. Skel. *Totanus flavipes*, Gm. *Yellow-Shanks*.
452, 102.
Cran. Skel. *Totanus solitarius*, Wils. *Solitary Tattler*.
453.
Cran. Skel. *Tringoides macularia* (L.), Gr. *Spotted Sandpiper*.
454, 455.
Cran. Skel. *Actitis bartramia* (Wils.), Bp. *Bartramian Sandpiper*.
1425. *Upland Plover*.
Cran. Skel. *Numenius longirostris*, Wils. *Long-billed Curlew*.
458, 459, 1079.
Cran. Skel. *Numenius hudsonicus*, Lath. *Hudsonian Curlew*.
457.
Cran. Skel. *Numenius borealis* (Forst.), Lath. *Esquimaux Curlew*.
928, 929.
SUB-ORDER *HERIODIONES*: *Herons and their allies*.
Family *TANTALIDÆ*: *Ibises, etc.*
Sub-Family *Ibidinae*: *True Ibises*.
Cran. Skel. *Ibis falcinellus*, Auct., var. *orbis* (Bp.), All. *Glossy Ibis*.
448.
Cran. Skel. *Ibis alba* (L.), V. *White Ibis*.
447, 1162.
Cran. Skel. *Pistula naja*, L. *Roseate Spoonbill*.
1016, 1163.

Family ARDEIDÆ: Herons.
Sub-Family Ardeina: True Herons.

- Cran. Skel. Ardea herodias, L. Great Blue Heron.
1012. 982.
Cran. Skel. Ardea leucogastra, Gm., var. leucopygma (Licht.), Cs.
442. Louisiana Heron.
Cran. Skel. Stern. Ardea virescens, L. Green Heron.
443. 511. 1281.
444.
445.
Cran. Skel. Nyctiardea grisea (L.), Steph., var. nuxia (Bodd.), Allen.
446. Night Heron.
Cran. Skel. Botaurus minor (Gm.). Bittern; Indian Hen.
1289.

SUB-ORDER ALECTORIDES: Cranes, Rails, etc.
Family GRUIDÆ: Cranes.

- Cran. Skel. Grus canadensis (L.), Temm. Brown Crane; Sandhill
441. Crane.

Family RALLIDÆ: Rails.
Sub-Family Rallina: True Rails.

- Cran. Skel. Rallus virginianus, L. Virginia Rail.
977.
Cran. Skel. Porzana carolina (L.), V. Carolina Rail; Sora; Otzelan.
461.
466.
Cran. Skel. Fulica americana, Gm. Coot.
462. 124.
463.
464.

ORDER LAMELLIROSTRES: Anserine Birds.
Family ANATIDÆ: Swans, Geese, and Ducks.

Sub-Family Cygnina: Swans.

- Cran. Skel. Cygnus americanus, Sharpless. Whistling Swan.
465. 12.
901.
902.

Sub-Family Anserina: Geese.

- Cran. Skel. Anser hyperboreus, Pall. Snow Goose.
920.
Cran. Skel. Branta bernicla, L. Brant Goose.
478.
479.

- Cran. Skel. Branta bernicla, var. nigricans (L.), Cs. Brant Goose.
941.
484a.

- Cran. Skel. Branta canadensis (L.) Canada Goose; Wild Goose.
470. 17.
471.
472.
1127.

- Cran. Skel. Branta canadensis (L.), var. hutchinsii (Rich.), Cs. Hutchins's Goose.
931.
932.
933.

Sub-Family Anatina: River Ducks.

- Cran. Skel. Anas boschas, L. Mallard.
477. 1115.
478.
889.

- Cran. Skel. Anas obscura, Gm. Dusky Duck.
479.

- Cran. Stern. Dafila acuta (L.), Jernys. Pintail; Sprigtail.
480. 1284.
481.

- Cran. Skel. Mareca americana (Gm.), Steph. American Widgeon;
480. 1114. Baldpate.
487.
488.
935.

- Cran. Skel. Querquedula carolinensis (Gm.). Green-winged Teal.
482. 1117.
483.

- Cran. Skel. Querquedula discors (L.), Steph. Blue-winged Teal.
934. 791.
Cran. Stern. Querquedula cyanoptera (V.), Cass. Cinnamon Teal.
1888.

- Cran. Skel. Spatula clypeata (L.), Boie. Skuasler.
484.
485.
942.
943.

- Cran. Skel. Aix sponsa (L.), Boie. Summer Duck; Wood Duck.
489. 109.
490.
491.

Sub-Family Fuligulina: Sea Ducks.

- Cran. Skel. Fuligula marila (L.), Steph. *Greater Blackhead*.
492.
- Cran. Skel. Fuligula affinis, Eyton. *Lesser Blackhead*.
493, 1124.
494.
495.
- Cran. Skel. Fuligula collaris (Donovan), Bp. *Ring-necked Duck*.
496.
497.
498.
- Cran. Skel. Fuligula ferina (L.), Sw. var. americana (Eyton), Cs. *Red-head; Pochard*.
499, 1123.
500.
501.
502.
503.
504.
- Cran. Skel. Stern. Bocephala clangula (L.), Gr. *Golden-eyed Duck*.
505, 1128. 1468.
506.
507.
508.
- Cran. Skel. Bucephala albeola (L.), Bd. *Buffle-headed Duck*.
509, 129.
510.
511.
512.
- Cran. Skel. Harvella glacialis (L.), Leach. *Long-tailed Duck*.
514, 1119.
515.
518.
- Cran. Skel. Histriornis torquatus (L.), Bp. *Harlequin Duck*.
513.
- Cran. Skel. Somateria spectabilis (L.), Leach. *King Eider*.
517.
- Cran. Skel. Edemia fusca (L.), Sw. (? var. *velutina*, Cass). *Velvet*.
528, 527. *Sister*.
1132.
- Cran. Skel. Edemia perspicillata (L.), Fleming. *Surf Duck*.
534.

- Cran. Skel. Eristomura rubida (Wils.), Bp. *Reddy Duck*.
516, 1111.
617.

Sub-Family Mergina: Mergansers.

- Cran. Skel. Stern. Mergus merganser, L. *Merganser; Goose-eater*.
614, 8. 1286.
840.
- Cran. Skel. Mergus serrator, L. *Red-breasted Merganser*.
1130.
- Cran. Skel. Mergus cucullatus, L. *Hooded Merganser*.
518, 1118.
519.

ORDER Steganopodes: Totipalmate Birds.

Family PELICANIDE: Pelicans.

- Cran. Skel. Pelecanus trachyrhynchus, Lath. *White Pelican*.
520.
1076.
- Cran. Skel. Pelecanus fuscus, L. *Brown Pelican*.
803.
1037.

Family PHALACROCORACIDE: Cormorants.

- Cran. Skel. Graculus carbo (L.), Gray. *Common Cormorant; Skog*.
521.
- Cran. Stern. Graculus leucostatus (Pall.), Bl. *Red-faced Cormorant*.
1287.
- Cran. Skel. Plotus aninga, L. *Aninga; Darter*.
522.

ORDER Longipennes: Long-winged Swimmers.

Family LARIDE: Gulls, Terns, etc.

Sub-Family Lestridinae: Jaegers, or Skua Gulls.

- Cran. Skel. Stercorarius parasiticus (Brunn.), Gray. *Rufous-backed Jaeger*.
916.

Sub-Family Larinae: True Gulls.

- Cran. Skel. Larus glaucescens, Licht. *Glaucous-winged Gull*.
900, 1249.
- Cran. Skel. Larus argentatus, Brunn. *Herring Gull; Common Gull*.
1053, 826.
- Cran. Skel. Larus delawarensis, Ord. *Ring-billed Gull*.
153.
- Cran. Stern. Larus tridactylus, L. *Kittiwake*.
1248.
- Cran. Skel. Larus philadelphia (Ord.), Cs. *Bonaparte's Gull*.
525, 899.

Sub-Family *Sternae*: Terns.

- Cran. Skel. *Hydrochelidon flaspes* (L.), Gray. *Black Tern*.
173.

Family PROCELLARIIDÆ: Petrels.

Sub-Family *Diomedea*: Albatrosses.

- Cran. Skel. *Diomedea nigripes*, Aud. *Black-footed Albatross*.
523.

Sub-Family *Procellariinae*: True Petrels.

- Cran. Skel. *Fregetta grallaria* (V.), Bp. *White-bellied Petrel*.
524.

ORDER *Pygopodes*: Diving Birds.

Family COLYMBIDÆ: Loons.

- Cran. Skel. *Colymbus torquatus*, Brunn. *Loon*; *Great Northern Diver*.
611.

- Cran. Skel. *Colymbus arcticus*, L. *Black-throated Diver*.
944.

- Cran. Skel. *Colymbus arcticus*, L., var. *pacificus* (Lawr.), Cs. *Pacific Diver*.
526.

- Cran. Skel. *Colymbus septentrionalis*, L. *Red-throated Diver*.
527.

Family PODICEPIDÆ: Grebes.

- Cran. Skel. *Podiceps grisegena* (Bodd.), Gray, var. *holboellii* (Reinh.), Cs. *Red-necked Grebe*.
919.

- Cran. Skel. *Podiceps cornutus* (Gm.), Lath. *Horned Grebe*.
1121. 1120.

- Cran. Skel. *Podilymbus podiceps* (L.), Lawr. *Pied-billed Dabchick*.
720.

Family ALCIDÆ: Auks.

- Cran. Stern. *Phalaris ptilaenula* (Pall.), Temm. *Paroquet Auk*.
1250.

- Cran. Stern. *Simorhynchus cristatellus* (Pall.), Merrem. *Crested Auk*.
1251.

- Cran. Stern. *Simorhynchus camtschaticus* (Lepech.), Schl. *Whiskered Auk*.
1249.

- Cran. Skel. *Uria*, sp.
1247.

LIST OF CRANIA AND SKELETONS OF FOREIGN AND DOMESTIC BIRDS.

SUB-CLASS *Carinatae*: Carinate Birds.ORDER *Passeres*: Passerine Birds.

Family FRINGILLIDÆ: Finches, etc.

- Cran. Skel. *Fringilla canaria*, Linn. *Canary Bird*.
377. 593.

378.

379.

1010.

- Cran. Skel. *Pyrrhula vulgaris*, Cav. *Redstart*.
1101.

- Cran. Skel. *Carduelis elegans*, Bp. *Goldfinch*.
1110.

ORDER *Psittaci*: Parrots.

Family PSITTACIDÆ: Typical Parrots.

- Cran. Skel. *Psittacus erythacus*, Linn. *Red-tailed Parrot*.
275.

- Cran. Skel. *Chrysotis ochrocephala* (Gm.). *Yellow-fronted Parrot*.
276.

ORDER *Columbae*: Pigeons, etc.

Family COLUMBIDÆ: Typical Pigeons.

- Cran. Skel. *Columba livia* (domestic), Linn. *Common Pigeon*.
420.

421.

422.

423.

ORDER *Gallinae*: Gallinaceous Birds.

Family PHASIANIDÆ: Pheasants.

- Cran. Skel. *Pavo cristatus*, Linn. *Pheasant*.
586. 1044.

- Cran. Skel. *Gallus bankivi* (var.), Temm. *Domestic Fowl*.
88. 41.

431. 1365.

432.

433.

Family NEMIDÆ: Guinea Fowls.

Cran. Skel. *Namida meleagris*, Linn. *Guinea Fowl*.
434. 27.

ORDER **Lamellirostræ**: Auarine Birds.Family ANATIDÆ: *Swans, Geese, etc.*Sub-Family *Anserinæ*: *Geese*.

Cran. Skel. *Anser ferus* (domesticus), Linn. *Common Goose*.
456,
457,
468,
469.

Cran. Skel. *Anser cygnoides*, Linn. *Swan Goose*.
149.

Sub-Family *Anatinæ*: *River Ducks*.

Cran. Skel. *Anas boschas* (domesticus), Linn. *Common Duck*.
97,
98,
475,
476.

SUB-CLASS **Ratitæ**: Struthious Birds.ORDER **Struthionæ**: Struthious Birds.Family STRUTHIONIDÆ: *Ostrich*.

Cran. Skel. *Struthio camelus*, Linn. *Ostrich*.
1458.

Family CASARIIDÆ: *Emus, etc.*Sub-Family *Dromionæ*: *Emus*.

Cran. Skel. *Dromæus nova-hollandiæ*, Lath. *Common Emu*.
1479.

LIST OF CRANIA AND SKELETONS OF NORTH AMERICAN BATRACHIA AND REPTILIA.

NOTE.—The classification and nomenclature adopted are according to Prof. Edward D. Cope, in his "Check List of North American Batrachia and Reptilia," Bull. U. S. Nat. Mus. No. 1.

CLASS **BATRACHIA**.ORDER **Anura**.SUB-ORDER **RANIFORMIA**.Family **RANIDÆ**: *Frogs*.

Cran. Skel. *Rana halerina halerina*, Hall. *Gold-striped Frog*; *Skad Frog*.
6.

Cran. Skel. *Rana palustris*, Le Conte. *Yellow-legged Frog*; *Marsh Frog*.
1107. 884.

Cran. Skel. *Rana pipiens* (Linn.), Holbrook. *Ball Frog*.
60.

SUB-ORDER **FIRMISTERNIA**.Family **ESCHERIDÆ**.

Cran. Skel. *Engystoma carolinense*, Holbrook. *Chestnut-colored Frog*.
1255. 93.

SUB-ORDER **BUFONIFORMIA**.Family **BUFORIDÆ**: *Toads*.

Cran. Skel. *Bufo microcephalus*, Cope. *Western Toad*.
1541. 1401.

Cran. Skel. *Bufo lentiginosus frontosus*, Cope.
1532. 1531.

Cran. Skel. *Bufo lentiginosus cognatus*, Say.
1539. 1538.

Cran. Skel. *Bufo lentiginosus americanus*, Le Conte. *American Toad*.
80.

Cran. Skel. *Bufo lentiginosus lentiginosus*, var. Latr. *Red-sided Toad*.
1102.

Cran. Skel. *Bufo quercicus*, Holbrook. *Oak Toad*.
1232.

SUB-ORDER **ARCIFERA**.Family **HYLIDÆ**: *Tree Toads*.

Cran. Skel. *Acris gryllus gryllus* (Holbrook), Gray. *Cricket Frog*.
167.

ORDER **Urodela.**Family **PLETHRODONTIDÆ**: *Salamanders, etc.*

- Cran. Skel. Plethodon glutinosus, Green. *Salamander.*
915.
Cran. Skel. Spelerpes ruber ruber, Daudin. *Red Trout.*
549.

Family **AMBLYSTOMIDÆ.**

- Cran. Skel. Amblystoma mavortium, Bt. *Spotted Salamander.*
964. 557,
363.
Cran. Skel. Amblystoma tigrinum, Green. *Axolotl.*
679.

Family **MEGALOPIDÆ.**

- Cran. Skel. Megalops alleganiensis, Harlan. *Alleghany Hell-Bender.*
165.

ORDER **Trachystomata.**Family **SIRENIDÆ**: *Sirens.*

- Cran. Skel. Siren lacertina, Linn. *Mad Eel or Siren.*
1322.

CLASS **REPTILIA.**ORDER **Crocodyli.**Family **CROCODYLIDÆ.**

- Cran. Skel. Alligator mississippiensis, Daud. *Common Alligator.*
819,
1185.

ORDER **Testudinata**: *Shield Reptiles.*SUB-ORDER **CRYPTODIRA.**Family **CHERTESTIDÆ**: *Sea Turtles.*

- Cran. Skel. Thalassochelys caerulea, Linn. *Hawksbill Turtle.*
528,
529,
577,
675.
Cran. Skel. Chelonia mydas, Schw. *Green Turtle.*
530,
682,
789.

Family **EMYDIDÆ**: *Tortoises.*

- Cran. Skel. Pseudemys rugosa, Shaw. *Red-bellied Terrapin.*
652, 9.
653,
654,
655.

- Cran. Skel. Pseudemys concinna, Le Conte.
1252.

- Cran. Skel. Pseudemys scabra, Linn.
533.

- Cran. Skel. Malacoclemmys concentrica. *Terrapin.*
532. 154.

- Cran. Skel. Chrysemys picta, Hern. *Painted Turtle.*
534, 1019.

535.

- Cran. Skel. Chelopus guttatus, Schneider. *Yellow-Spotted Turtle.*
172.

- Cran. Skel. Chelopus insculptus, Le Conte. *Wood Terrapin.*
533.

- Cran. Skel. Cistudo clausa clausa, Gmelin. *Common Land Turtle;*
536, 2. *Box Turtle.*
537.

Family **CHERYDIDÆ.**

- Cran. Skel. Chelydra serpentina, Linn. *Snapping Turtle.*
531, 49.

543,

547.

Family **CINOSTERNIDÆ.**

- Cran. Skel. Cinosternum pennsylvanicum pennsylvanicum, Rose.
666, 674. *Map Turtle.*
667,
668,
669.

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666, 674. *Map Turtle.*
667,
668,
669.

- Cran. Skel. *Sceloporus consobrinus*, Bl. and Girard. *Western Lizard*.
1540.
Cran. Skel. *Sceloporus spinosus*, Wiegmann. *Western Spring Lizard*.
1442. 1104.
Cran. Skel. *Phrynosoma cornutum*, Harlan. *Horned Lizard*.
1538. 82.
Cran. Skel. *Phrynosoma douglassii douglassii*, Bell. *Douglass's*
1443. 1399. *Horned Lizard*.
Cran. Skel. *Phrynosoma regale*, Girard. *Regal Horned Lizard*.
1534.
Cran. Skel. *Phrynosoma maclellani*, Hallowell. *MacCall's Horned*
1555. *Lizard*.

Family HELODERMIDÆ.

- Cran. Skel. *Heloderma suspectum*, Cope. *Gila Monster*.
156.

Family TEIIDÆ.

- Cran. Skel. *Cnemidophorus sex-lineatus*, Linn. *Six-lined Lizard*.
91, 92,
541,
1542,
1543.

Family SCINCIDÆ: Skinks.

- Cran. Skel. *Eumeces obsoletus*, Bl. and Gir. *Pale Lizard*.
1103. 962.
Cran. Skel. *Eumeces gutturalis*, Hallowell. *Spotted Lizard or Skink*.
998,
999.
Cran. Skel. *Eumeces fasciatus*, Linn. *Striped Lizard; Blue-tailed*
870, 1215. *Skink*.
1216,
1271,
1272,
1273,
1274.

ORDER Ophidia: Serpents.

Sub-ORDER ASINEA.

Family COLUBRIDÆ: Colubrine Serpents.

- Cran. Skel. *Carphophis amoenus*, Say. *Red Snake*.
859. 94.
Cran. Skel. *Tantilla nigriceps*, Kenn.
1020.
Cran. Skel. *Ophibolus dolatus dolatus*, Linn.
1098.
Cran. Skel. *Ophibolus dolatus gentilis* (Linn.), Bl. and Gir.
1091.

- Cran. Skel. *Ophibolus getulus getulus* (Linn.), Bl. and Gir. *Thunder*
701. *Snake; King Snake*.
Cran. Skel. *Ophibolus getulus boylii* (Linn.), Bl. and Gir. *Boyle's*
994. *Chain Snake*.
Cran. Skel. *Ophibolus getulus sayi*, Holbrook. *Say's Chain Snake*.
1090.
Cran. Skel. *Diadophis punctatus punctatus* (Linn.), Bl. and Gir.
1414. 706. *Ring-necked Snake*.
831.
Cran. Skel. *Diadophis punctatus amabilis* (Linn.), Bl. and Gir.
851.
Cran. Skel. *Cyclophis vernalis*, De Kay. *Green Snake*.
548,
590.
1231.
Cran. Skel. *Coluber vulpinus*, Bl. and Gir. *Fox Snake*.
743.
Cran. Skel. *Coluber obsoletus obsoletus* (Say), Kenn. *Pilot Black*
1018. *Snake; Racer*.
Cran. Skel. *Coluber obsoletus confinis* (Say), Bl. and Gir.
1087.
Cran. Skel. *Coluber guttatus*, Linn. *Chickens Snake*.
1233.
Cran. Skel. *Coluber emoryi*. Bl. and Gir. *Emory's Snake*.
1089.
Cran. Skel. *Ptyophis sayi mexicanus*, Dunn. and Bib. *Gopher Snake*.
1222. 1221.
Cran. Skel. *Ptyophis sayi bellona*, Bl. and Gir. *Bull Snake*.
960. 1223,
1536.
Cran. Skel. *Bascanium constrictor* (Linn.), Bl. and Gir. *Black*
53. *Snake*.
Cran. Skel. *Bascanium taniatum laterale*, Hall.
1530.
Cran. Skel. *Bascanium taniatum taniatum*, Hall.
1529.
Cran. Skel. *Bascanium flagelliforme testaceum* (Say.), Bl. and Gir.
702.
982.
Cran. Skel. *Eutaenia saurita* (Linn.), Bl. and Girard. *Ribbon Snake*.
705.
Cran. Skel. *Eutaenia fairleyi*, Bl. and Gir. *Fairley's Garter Snake*.
995. 1088.
Cran. Skel. *Eutaenia mearnsi*, Bl. and Gir. *Marcy's Garter Snake*.
147. 84.
1233.

- Cran. Skel. *Eutamias vagrans vagrans*, Bd. and Gird. *Common Western*
1528. 1527. *Garter Snake*.
Cran. Skel. *Eutamias sirtalis dorsalis*, Bd. and Gird. *Eastern Garter*
1318. 85. *Snake*.
Cran. Skel. *Eutamias sirtalis ordinata* (Linn.), Bd. and Gird.
1533. 1230.
Cran. Skel. *Eutamias sirtalis sirtalis* (Linn.), Bd. and Gird.
1228. 42.
546. 1227.
Cran. Skel. *Eutamias sirtalis parietalis* (Linn.), Say.
911.
Cran. Skel. *Eutamias elegans*, Bd. and Gird.
1229.
Cran. Skel. *Tropidonotus sipedon sipedon* (Linn.), Bd. and Gird.
629. 830. *Water Snake*.
1558.
Cran. Skel. *Tropidonotus grahamii*, Bd. and Gird. *Graham's Water*
858. *Snake*.
Cran. Skel. *Tropidonotus leberis* (Linn.), Bd. and Gird. *Yellow-*
598. *bellied Snake*.
Cran. Skel. *Tropidonotus sipedon woodhousei* (Linn.), Bd. and Gird.
1214. *Woodhouse's Snake*.
Cran. Skel. *Heterodon simus nasicus*, Bd. and Gird. *Hog-nosed*
1226. 768. *Snake: Sand Viper*.
Cran. Skel. *Heterodon platyrhinus* (Lata.), Bd. and Gird. *Western*
703. *Sand Viper*.
1086.

SUB-ORDER PROTEROGLYPHA.

Family ELAPIDÆ: *Vipers*.

- Cran. Skel. *Elaps fulvus fulvus* (Linn.), Bd. and Gird. *Harlequin*
1319. 90. *Snake*.

SUB-ORDER SOLENOGLYPHA.

Family CROTALIDÆ: *Rattlesnakes, etc.*

- Cran. Skel. *Crotalus horridus*, Linn. *Banded Rattlesnake; Northern*
545. *Rattlesnake*.
615.
Cran. Skel. *Crotalus adamanteus adamanteus* (Beauv.), Bd. and
700. *Gird. Diamond Rattlesnake*.
Cran. Skel. *Crotalus adamanteus atrox* (Beauv.), Bd. and Gird.
993.
Cran. Skel. *Aneides troidon contortrix*, Bd. and Gird. *Copper-head;*
1003. *Moccasin*.

LIST OF CRANIA AND SKELETONS OF FOREIGN
REPTILES.

CLASS REPTILIA.

ORDER OPHIDIA.

SUB-ORDER ASINEA.

Family BOIEI: *Boas*.

- Cran. Skel. *Boa constrictor*, Linn. *Boa*.
541.
543.
544.

ORDER LACERTILIA.

SUB-ORDER PLEURODONTA.

Family IGUANIDÆ: *Iguanas*.

- Cran. Skel. *Metapocetus coarctatus*, Wagler. *South American Lizard*.
44.
Cran. Skel. *Iguana tuberculata*, Wagler. *Banded Iguana*.
1444.

LIST OF CRANIA AND SKELETONS OF FISHES.

NOTE.—The classification adopted is that of Dr. Theodore Gill, in his paper "Arrangement of the Families of Fishes," Smithsonian Miscellaneous Collections, No. 247, 1872, and the nomenclature for marine forms is substantially in accordance with his "Catalogue of the Fishes of the East Coast of North America," Smithsonian Miscellaneous Collections, No. 283, 1873.

CLASS PISCES.

SUB-CLASS Teleostei.

ORDER Plectognathi.

SUB-ORDER GYMNOdontes.

Family TETRODONTIDÆ.

- Cran. Skel. *Chilichthys turgidus* (Mitch.), Gill. *Rough Puffer; Porcupine Fish; Blower.*
1413.

ORDER Pediculati.

Family LOPHIIDÆ.

- Cran. Skel. *Lophius americanus*, De Kay. *Goose Fish; Fishing Frog; Sea Devil.*
1156, 1164, 1157.

ORDER Teleocephali.

SUB-ORDER HETEROSOMATA.

Family PLACEROSTEIDÆ.

- Cran. Skel. *Pseudopleuronectes americanus* (Walb.) Gill. *Common Flounder.*
1153, 13.
Cran. Skel. *Chenopsetta ocellaris* (De Kay), Gill. *Long-toothed Flounder.*
107.
Cran. Skel. *Hippoglossus americanus*, Gill. *Haddock.*
152.

SUB-ORDER ANACANTHINI.

Family GADIDÆ.

- Cran. Skel. *Gadus morhua*, Linn. *Common Codfish.*
553, 111.
Cran. Skel. *Microgadus tomcoctus* (Walb.), Gill. *Tom Cod; Frost Fish.*
616.
Cran. Skel. *Melanogrammus aeglefinus* (Linn.), Gill. *Haddock.*
554, 26.

- Cran. Skel. *Brosmus americanus*, Gill. *European Cusk; Polar Cod.*
626. *Fish.*

Family MERLUCIDÆ.

- Cran. Skel. *Merluccius bilinearis* (Mitch.), Gill. *American Hake.*
1114.

Family CRYPTACANTHIDÆ.

- Cran. Skel. *Cryptacanthodes maculatus*, Storer. *Ghost Fish; Wry-mouth.*
81.

SUB-ORDER ACANTHOPTERI.

Family LABRIDÆ.

- Cran. Skel. *Tautoga onitis* (Linn.), Günther. *Black Fish; Tautog.*
576, 54.

Family SCARIDÆ.

- Cran. Skel. *Pseudocarus guamialis* (Cuv. and Val.), Günther. *Parrot Fish.*
812, 846.

Family SCOMBRIDÆ.

- Cran. Skel. *Scomber scombrus*, Linn. *Mackerel.*
1100, 59.
Cran. Skel. *Oreynus secundidorsalis* (Storer), Gill. *Horse Mackerel; Tunny.*
1169, 1868, 1170.

- Cran. Skel. *Cybium maculatum* (Mitch.), Cuv. *Spanish Mackerel.*
1092, 790.

Family CARANGIDÆ.

- Cran. Skel. *Trachinotus carolinus* (Linn.), Gill. *Pompano; Creville.*
1211.

Family SCLENIDÆ.

- Cran. Skel. *Cynoscion carolinensis* (Cuv. and Val.), Gill. *Salmon Trout; Spotted Sea Trout.*
1190, 1146.
Cran. Skel. *Cynoscion regalis* (Bloch), Gill. *Squeteague; Weak Fish; Gray Trout.*
556, 105, 110.

- Cran. Skel. *Pogonias chromis*, Lacep. *Drum.*
120, 1096.

- Cran. Skel. *Liostomus xanthurus*, Lacep. *Yellow Tail; Spot.*
578, 877, 886, 885, 887.

- Cran. Skel. *Solenops ocellatus* (Linn.), Gill. *Red Bass; Bass; Sea Bass; Red Fish; Ocellated Drum.*
559, 142.

- Cran. Skel. *Menticirrhus nebulosus* (Mitch.), Gill. *King Fish; Whiteing.*
1149, 1145, 1151, 1154.

- Cran. Skel. *Micropogon undulatus* (Linn.), Cav. and Val. *Croaker*;
1147. 1044. *Hick Fish*.

Family SPARIDÆ.

- Cran. Skel. *Archosargus probatocephalus* (Walb.), Gill. *Sheephead*.
574. 61.
Cran. Skel. *Stenotomus argyrops* (Linn.), Gill. *Scup*; *Porgy*.
1202. 1201.
1203. 1212.
1204.

Family SERRANIDÆ.

- Cran. Skel. *Centropomus atrarius* (Linn.), *Black Sea Bass*.
575. 11.

Family PERCIDÆ.

- Cran. Skel. *Perca flavescens* (Mitch.), *Yellow Perch*.
568. 24.
563.
Cran. Skel. *Stizostedion americanum*, Girard. *Fike Perch*.
148.
Cran. Skel. *Percina caprodes* (Raf.), Girard. *Hog Fish*.
170.
Cran. Skel. *Boleosoma fasciiforme*, Girard. *Darter*.
74.

Family LABRACIDÆ.

- Cran. Skel. *Morone americana* (Gmelin), Gill. *White Perch*.
558. 23.
Cran. Skel. *Roccus lineatus* (B. Schu.), Gill. *Striped Bass*; *Rock*
43. 3. *Fish*.

Family CENTRARCHIDÆ.

- Cran. Skel. *Lepomis auritus*, Gill. *Long-eared Sunfish*.
860. 5.
865.
Cran. Skel. *Pomoxis aureus*, Gill. *Common Sunfish*; *Pumpkin-seed*;
815. *Tobacco-bay*.
Cran. Skel. *Emmeacanthus obesus*, Gill. *Mottled Sunfish*.
1150. 817.
Cran. Skel. *Hyperlatus carolinensis*, Gill. *Black Spotted Sunfish*.
825.
Cran. Skel. *Micropterus salmoides* (Lac.), Gill. *Small-mouthed*
147. *Black Bass*; *Black Bass*.
Cran. Skel. *Micropterus floridanus* (Les.), Gill. *Owego Bass*.
1142.

Family ECHINURIDÆ.

- Cran. Skel. *Parehippus gigas*, Gill. *Moon Fish*.
850. 68.

Family POMATONIDÆ.

- Cran. Skel. *Pomatomus saltatrix* (Linn.), Gill. *Mockerel*; *Ship-Jack*.
67. 63.
555.
1158.

Family ECHINURIDÆ.

- Cran. Skel. *Leptecheneis naucrateoides* (Zuiew.), Gill. *Sucker*.
71.

SUB-ORDER PERCESOCES.

Family ATHERINIDÆ.

- Cran. Skel. *Chirostoma notata* (Mitch.), Gill. *Silversides*.
882.

SUB-ORDER SYNENTOGNATHI.

Family BELONIDÆ.

- Cran. Skel. *Belone longirostris* (Mitch.), Gill. *Silver Gar*; *Bill Fish*.
562. 55.

Family SCOMBEROIDEÆ.

- Cran. Skel. *Exocoetus exilis*, Gmelin. *Flying Fish*.
1054.

SUB-ORDER HAPLOMI.

Family ESOCIDÆ.

- Cran. Skel. *Esox reticulatus*, Lesueur. *Pickered*.
557. 16.
Cran. Skel. *Esox lucius*, Linn. *Lake Pike*; *Musculunge*.
609. 146.

Family CYPRINODONTIDÆ.

- Cran. Skel. *Fundulus heteroclitus* (Linn.), Gill. *Mummichog*.
1133. 880.
Cran. Skel. *Fundulus bairdii*, Agass. *Baird's Stone-tigger*.
103.
Cran. Skel. *Hydrargyra majalis* (Walb.), Val. *Mummichog*.
881.

SUB-ORDER ISOSPONDYLI.

Family MICROSTOMIDÆ.

- Cran. Skel. *Osmeterus mordax* (Mitch.), Gill. *Swelt*.
1064.

Family SALMONIDÆ.

- Cran. Skel. *Salmo fontinalis*, Mitch. *Brook Trout*.
571. 58.
Cran. Skel. *Salmo conifinis*, De Kay. *Lake Trout*.
1288. 144.
Cran. Skel. *Coregonus albus*, Les. *White Fish*.
131.

Family ELOPIDÆ.

- Cran. Skel. *Megalops thrissoides* (Bl. Sch.), Günther. *Jaw Fish*;
1140. *Turpan*.

Family CLEPIDÆ.

- Cran. Skel. *Alosa sapidissima* (Wilson), Storer. *Shad*.
570. 36.
Cran. Skel. *Pomolobus pseudoharengus* (Wilson), Gill. *Herring*;
1070, 1078. *Alcorife*.
1071.
1072.
1073.

Family DOROSOMIDÆ.

- Cran. Skel. *Dorosoma cepedianum* (Lac.), Gill. *Toothed Herring*.
567. 108.

SUB-ORDER EVENTOGNATHI.

Family CATOSTOMIDÆ.

- Cran. Skel. *Hylemyzon nigricans*, Agassiz. *Black Sucker*.
572. 57.
Cran. Skel. *Catostomus teres*, Lesueur. *Club*; *Sucker*.
602, 659.
663.
664.
665.
Cran. Skel. *Moxostoma oblongum*, Agassiz. *Horned Sucker*.
807. 806.

Family CYPRINIDÆ.

- Cran. Skel. *Carassius auratus*, Bleeker. *Goldfish*.
569. 28.
630.
Cran. Skel. *Semotilus pulchellus*, Gill. *Club*.
573.
Cran. Skel. *Semotilus rheithus*, Cope. *Full Fish*; *Sawmp Carp*.
866. 585.
Cran. Skel. *Hybognathus regius*, Girard. *Gudgeon*; *River Smelt*.
560. 75.
Cran. Skel. *Hypellepis cornutus*, Mitch. *Red-fish*.
804. 168.
Cran. Skel. *Hybopsis hudsonius*, Clinton.
879.
Cran. Skel. *Ceraticthys biguttatus*, Kirtland. *Horned Club*.
588. 592.
Cran. Skel. *Stilbe americana*, Linn. *Misow*; *Shiner*.
599.

- Cran. Skel. *Luxilus kentuckiensis*, Gill. *Gold-striped Dace*.
73.
Cran. Skel. *Exoglossum maxillingua*, Lesueur. *Tonguefish*.
587.

ORDER Nematognathi.

Family SILERIDÆ.

- Cran. Skel. *Amiurus nigricans*, Lesueur. *Lake Catfish*; *Black Catfish*.
563, 564. 21.
Cran. Skel. *Rhamdia brachypterus* (Cope), Gill. *Mexican Catfish*.
51.
Cran. Skel. *Amiurus atrarius*, DeKay. *Black Catfish*.
1143.

ORDER Apodes.

SUB-ORDER ENCHELYCEPHALI.

Family ANGUILLIDÆ.

- Cran. Skel. *Anguilla bostoniensis* (Lac.), DeKay. *Common Eel*.
1094, 1095. 25, 1105.

SUB-CLASS Ganoidei.

SUPER-ORDER HYOGANOIDEI.

ORDER Rhomboganoidei.

Family LEPIDOSTEIDÆ.

- Cran. Skel. *Lepidosteus ossens*, Lac. *Common Gar Fish*.
565, 566. 62.

SUPER-ORDER CHONDROGANOIDE.

ORDER Chondrostei.

Family ACIPENSERIDÆ.

- Cran. Skel. *Acipenser oxyrinchus*, Mitch. *Sturgeon*.
1152. 971.

SUB-CLASS Elasmobranchii.

SUPER-ORDER PLAGIOSTOMI.

ORDER Rajæ.

SUB-ORDER MASTICURA.

Family TETROIDÆ.

- Cran. Skel. *Trygon centrura* (Mitch.), Gill. *Sting Ray*; *Stingaree*.
1174. 1165.

SUB-ORDER PACHYURA.

FAMILY RAJIDÆ.

Cran. Skel. *Raja undulata*, Lacep. *Whip-tailed Ray*.

874.
Cran. Skel. *Raja levis*, Mitch. *Sharp-nosed Skate*.
1159.

FAMILY PRISTIDÆ.

Cran. Skel. *Pristis antiquorum* (Linn.), Lath. *Saw Fish*.
1015.
1063.
1135.

ORDER SQUALI.

SUB-ORDER GALEI.

FAMILY ODONTASPIDIDÆ.

Cran. Skel. *Engeophodus littoralis*, Gill. *Sand Shark; Shorel-nose*.
1171. 1166.

FAMILY GALEORHINIDÆ.

Cran. Skel. *Eulamia milbertii* (Müll. and Henle), Gill. *Blue Shark*.
673.
1269.

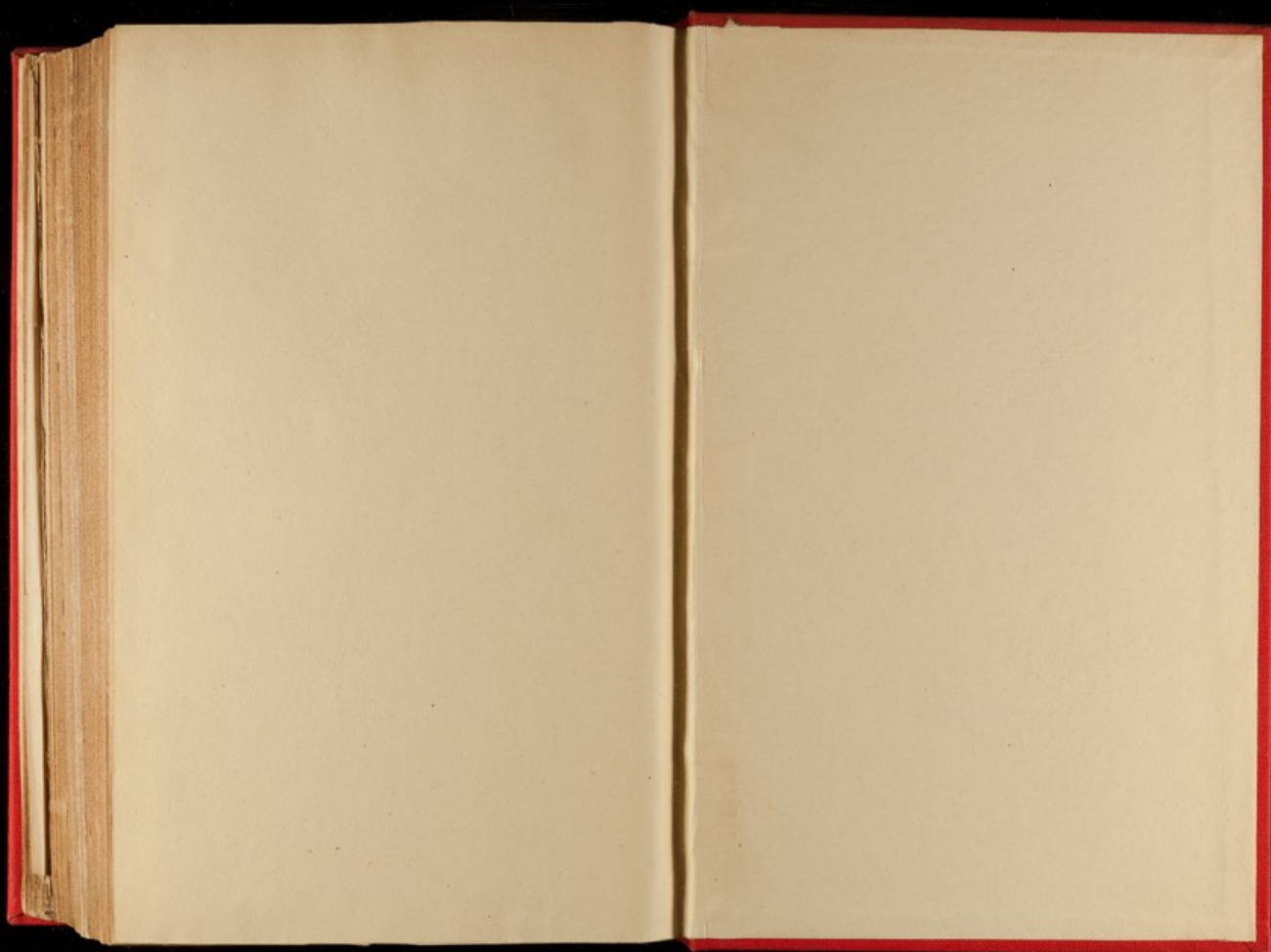
Cran. Skel. *Eulamia obscurus* (Lesueur), Gill. *Darky Shark*.
1172.
1262.

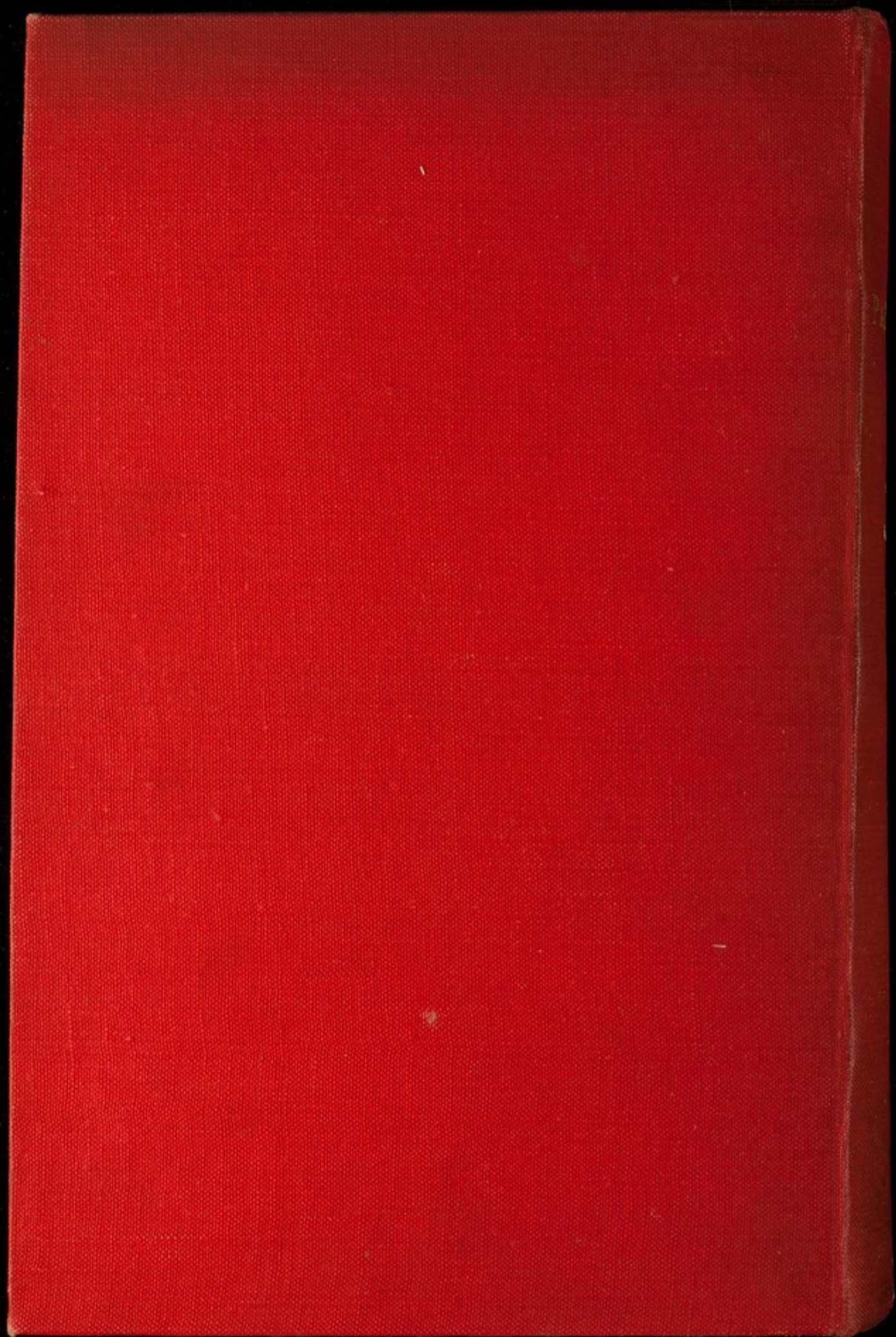
Cran. Skel. *Galeocerdo tigrinus*, Müll. and Henle. *Tiger Shark*.
1052.

Cran. Skel. *Mustela canis* (Mitch.), DeKay. *Smooth Dogfish*.
1167.

FAMILY SPINACIDÆ.

Cran. Skel. *Squalus americanus* (Storer), Gill. *Dogfish; Dog Shark*.
1155.





PAMPHLETS

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