THE

EXECUTIVE DOCUMENTS

OF THE

HOUSE OF REPRESENTATIVES

FOR THE

SECOND SESSION OF THE FIFTY-SECOND CONGRESS.

1892-'93.

IN THIRTY-FOUR VOLUMES.

WASHINGTON:
GOVERNMENT PRINTING OFFICE.
1893.

C

No.	Vol.
228	31
256	33
152	30
213	30
253	32
150	30
	15
	16
	17
30	28
31	28
71	28
12	28
153	30
167	30
175	30
185	30
205	
192	30
114	28
80	28
63	28
36	28
163	30
145	30
211	30
74	28
73	28
1	22
166	30

52D CONGRESS, 2d Session. } HOUSE OF REPRESENTATIVES. { Ex. Doc. 1, Part 2.

REPORT

OF THE

SECRETARY OF WAR;

BEING PART OF

THE MESSAGE AND DOCUMENTS

COMMUNICATED TO THE

TWO HOUSES OF CONGRESS

AT THE

BEGINNING OF THE SECOND SESSION OF THE FIFTY-SECOND CONGRESS

IN FOUR VOLUMES.

VOLUME I.

WASHINGTON:
GOVERNMENT PRINTING OFFICE.
1892.

A.—GENERAL RETURN OR EXHIBIT OF THE ACTUAL STRENGTH OF THE ARMY OF THE UNITED STATES, JUNE, 1892.

COMMISSIONED OFFICERS.

	Major-generals.	Brigadier-generals.	Colonels.	Lieutenant-colonels.	Majors.	Aides-de-camp.	Captains.	Adjutants (extra lieutenants).	Regimental quartermasters (extra lieutenants).	Battalion adjutant.	Battalion quartermaster.	First lieutenants.	Second lieutenants.	Additional second lieutenants.	Chaplains.	Military storekeepers.	Ordnance storekeepers.	Medical storekeepers.	Total.
General officers	3	5																	8
Aide-de-camp to general officers						a16													
Adjutant-General's Department			4	6	6														16
Inspector-General's Department		1	2	2	2														7
Judge-Advocate-General's Department		1	1	3	3														8
Quartermaster's Department		1	4	8	14		30									2			59
Subsistence Department		1	2	3	8		12												26
Medical Department		1	6	10	50		79					35						1	182
Pay Department		1	2	3	30														36
Corps of Engineers		1	6	12	24		30	b1	b1			26	10	10					119
Ordnance Department		1	3	4	10		24					12					4		58
Signal Corps		1			1		4												6
Post chaplains															28				28
Chief of Record and Pension Office			1																1
First Regiment of Cavalry			1	1	3		12	1	1			12	12						43
Second Regiment of Cavalry			1	1	3		12	1	1			12	12						43
Third Regiment of Cavalry			1	1	3		12	1	1			12	12	1					44
Fourth Regiment of Cavalry			1	1	3		12	1				12	12						42
Fifth Regiment of Cavalry			1	1	3		12	1	1			12	12						43
Sixth Regiment of Cavalry			1	1	3		12	1	1			12	12						43
Seventh Regiment of Cavalry			1	1	3		12	1	1			12	12						43
Eighth Regiment of Cavalry			1	1	3		12	1	1			12	12						43
Ninth Regiment of Cavalry			1	1	3		12	1	1			12	12		1				44
Tenth Regiment of Cavalry			1	1	3		12	1	1			12	12		1				44
Aggregate of cavalry			10	10	30		120	10	9			120	120	1	2				432
First Regiment of Artillery			1	1	3		12	1	1			24	13	1					57
Second Regiment of Artillery			1	1	3		12	1	1			24	13	1					57
Third Regiment of Artillery			1	1	3		12	1	1			24	13	1					57
Fourth Regiment of Artillery			1	1	3		12	1	1			24	13						56
Fifth Regiment of Artillery			1	1	3		12	1	1			24	13						56
Aggregate of artillery			5	5	15		60	5	5			120	65	3					283
First Regiment of Infantry			1	1	1		10	1	1			10	10						35
Second Regiment of Infantry			1	1	1		10	1	1			10	9						34
Third Regiment of Infantry			1	1	1		10	1	1			10	10						35
Fourth Regiment of Infantry			1	1	1		10	1	1			10	10						35
Fifth Regiment of Infantry			1	1	1		10	1	1			10	10						35
Sixth Regiment of Infantry			1	1	1		10	1	1			10	10						35
Seventh Regiment of Infantry			1	1	1		10	1	1			10	10						35
Eighth Regiment of Infantry			1	1	1		10	1	1			10	10						35
Ninth Regiment of Infantry			1	1	1		10	1	1			10	10						35
Tenth Regiment of Infantry			1	1	1		10	1	1			10	9						34
Eleventh Regiment of Infantry			1	1	1		10	1	1			10	10						35
Twelfth Regiment of Infantry			1	1	1		10	1	1			10	9						34
Thirteenth Regiment of Infantry			1	1	1		10	1	1			10	10						35
Fourteenth Regiment of Infantry			1	1	1		10	1	1			10	10						35
Fifteenth Regiment of Infantry			1	1	1		10	1	1			10	10						35
Sixteenth Regiment of Infantry			1	1	1		10	1	1			10	10						35
Seventeenth Regiment of Infantry			1	1	1		10	1	1			10	10						35
Eighteenth Regiment of Infantry			1	1	1		10	1	1			10	10						35
Nineteenth Regiment of Infantry			1	1	1		10	1	1			10	10						35
Twentieth Regiment of Infantry			1	1	1		10	1	1			10	10						35
Twenty-first Regiment of Infantry			1	1	1		10	1	1			10	10						35
Twenty-second Regiment of Infantry			1	1	1		10	1	1			10	9						34
Twenty-third Regiment of Infantry			1	1	1		10	1	1			10	10						35
Twenty-fourth Regiment of Infantry			1	1	1		10	1	1			10	9		1				35
Twenty-fifth Regiment of Infantry			1	1	1		10		1			11	9		1				35
Aggregate of infantry			25	25	25		250	24	25			251	244		2				871
Noncommissioned staff, unattached to regiments																			
West Point detachments																			
Guard at military prison																			
Recruits at depots and en route																			
Indian scouts																			
General service clerks and messengers																			
Grand aggregate	3	14	71	91	218	(a)	609	39	33	(b)	(b)	564	439	14	32	2	4	1	2,140
Military Academy																			
Retired	4	34	91	34	61		241					91	17		22				595

ENLISTED MEN.

	Sergeant-majors.	Quartermaster-sergeants.	Chief musicians.	Principal musicians.	Saddler sergeants.	Chief trumpeters.	Ordnance sergeants.	Commissary sergeants.	Post quartermaster sergeants.	Hospital stewards.	Acting hospital stewards.	Battalion sergeant-major.	Battalion quartermaster-sergeant.	First sergeants.	Sergeants.	Corporals.	Trumpeters.	Musicians.	Farriers and Blacksmiths.	Artificers.	Saddlers.	Wagoners.	Privates, first class.	Privates, second class.	Privates, hospital corps.	Privates.	General service clerks.	General service messengers.	Total.
General officers																													
Aide-de-camp to general officers																													
Adjutant-General's Department																													
Inspector-General's Department																													
Judge-Advocate-General's Department																													
Quartermaster's Department																													
Subsistence Department																													
Medical Department										124	73														572				769
Pay Department																													
Corps of Engineers												1	1		35	35		8					203	151					437
Ordnance Department															55	70							196	102					429
Signal Corps															50														53
Post chaplains																													
Chief of Record and Pension Office																													
First Regiment of Cavalry	1	1	1		1	1								11	53	40	20		21		11	11				405			577
Second Regiment of Cavalry	1	1	1		1	1								11	51	40	19		17		11	10				399			566
Third Regiment of Cavalry	1	1	1		1	1								11	51	42	20		21		7	10				397			567
Fourth Regiment of Cavalry	1	1	1		1									10	49	38	18		19		10	10				397			555
Fifth Regiment of Cavalry	1	1	1		1	1								10	50	39	19		20		9	10				403			565
Sixth Regiment of Cavalry	1	1	1		1	1								11	50	43	21		21		10	11				429			667
Seventh Regiment of Cavalry	1	1	1		1	1								10	57	43	21		18		10	11				447			622
Eighth Regiment of Cavalry	1	1			1	1								10	60	39	17		21		10	8				346			567
Ninth Regiment of Cavalry	1	1	1		1	1								10	50	40	17		19		10	7				362			519
Tenth Regiment of Cavalry	1	1	1		1	1								10	48	36	17		20		9	9				334			468
Aggregate of cavalry	10	10	8		10	9								104	521	400	189		197		97	97				3,941			5,593
First Regiment of Artillery	1	1	1	2										12	50	45		24		4		1				560			701
Second Regiment of Artillery	1	1	1	2										12	52	46		21		6		2				510			654
Third Regiment of Artillery	1	1	1	2										12	52	45		22		16		5				526			683
Fourth Regiment of Artillery	1	1	1	2										12	52	45		21		5		3				509			652
Fifth Regiment of Artillery	1	1	1	2										12	51	48		20		2						516			654
Aggregate of artillery	5	5	5	10										60	257	229		105		33		11				2,621			3,344
First Regiment of Infantry	1	1	1	1										8	30	32		15								354			443
Second Regiment of Infantry	1	1	1	2										9	32	34		17		10		1				390			507
Third Regiment of Infantry	1	1	1	2										8	34	33		13		12						367			472
Fourth Regiment of Infantry	1	1	1	2										8	32	32		14		12		3				309			415
Fifth Regiment of Infantry	1	1	1	2										8	31	31		13		9		3				325			425
Sixth Regiment of Infantry	1	1	1	2										8	33	30		15		4		2				362			459
Seventh Regiment of Infantry	1	1	1	1										10	32	31		12		6						344			490
Eighth Regiment of Infantry	1	1	1	2										8	35	35		16		9		1				340			449
Ninth Regiment of Infantry	1	1	1	2										8	32	30		14		8		4				362			463
Tenth Regiment of Infantry	1	1	1	2										9	36	34		16		16		2				355			503
Eleventh Regiment of Infantry	1	1	1	2										9	35	36		10		16		6				382			506
Twelfth Regiment of Infantry	1	1	1	2										9	34	26		14		9		4				361			472
Thirteenth Regiment of Infantry	1	1	1	2										8	32	32		15		7						328			427
Fourteenth Regiment of Infantry	1	1		2										8	31	31		15		13						344			446
Fifteenth Regiment of Infantry	1	1	1	2										8	33	30		11		12						364			463
Sixteenth Regiment of Infantry	1	1	1	2										9	30	35		16		18						334			453
Seventeenth Regiment of Infantry	1	1	1	2										7	32	32		18		8		1				289			391
Eighteenth Regiment of Infantry	1	1	1	2										8	32	31		15		13						311			415
Nineteenth Regiment of Infantry	1	1	1	2										8	32	32		16		15		7				330			495
Twentieth Regiment of Infantry	1	1	1	2										9	36	33		15		6		2				327			433
Twenty-first Regiment of Infantry	1	1	1	2										9	34	33		15		13		5				361			475
Twenty-second Regiment of Infantry	1	1	1	2										7	31	28		13		8						313			405
Twenty-third Regiment of Infantry	1	1	1	2										8	32	32		15		15		2				328			437
Twenty-fourth Regiment of Infantry	1	1	1	2										8	32	32		16		9						373			475
Twenty-fifth Regiment of Infantry	1	1	1	2										8	31	28		16								368			456
Aggregate of infantry	25	25	24	48										207	820	803		372		240		43				8,710			11,326
Noncommissioned staff, unattached to regiments							83	109	80																				272
West Point detachments															14	12		37	2		1	1				151			218
Guard at military prison															8	8										90			106
Recruits at depots and en route															116	54		108								1,661			1,939
Indian scouts															10	10										88			108
General service clerks and messengers																											124	45	169
Grand aggregate	40	40	37	58	10	9	83	109	80	124	73	1	1	371	1,886	1,627	189	633	199	282	98	152	399	256	572	17,262	124	45	24,760
Military Academy																													
Retired	2		1	5	5		104	30	4	29				43	180	68		12			10		27	2	6	151			683

a The aides-de-camp, being included in the strength of their regiments, are excluded as staff officers from the "total commissioned" and "aggregate."
b The adjutant and quartermaster, battalion of engineers, being included in the strength of their corps, are excluded as staff officers from the "total commissioned" and "aggregate."

A.—GENERAL RETURN OR EXHIBIT OF THE ACTUAL STRENGTH OF THE ARMY OF THE UNITED STATES, JUNE, 1872.

	COMMISSIONED OFFICERS.																		ENLISTED MEN.																														MILITARY ACADEMY.		
	Major-generals.	Brigadier-generals.	Colonels.	Lieutenant-colonels.	Majors.	Aides-de-camp.	Captains.	Adjutants (extra lieutenants).	Regimental quartermasters (extra lieutenants).	Battalion adjutant.	Battalion quartermaster.	First lieutenants.	Second lieutenants.	Additional second lieutenants.	Chaplains.	Military storekeepers.	Ordnance storekeepers.	Medical storekeepers.	Total.	Sergeant-majors.	Quartermaster-sergeants.	Chief musicians.	Principal musicians.	Saddler sergeants.	Chief trumpeters.	Ordnance sergeants.	Commissary sergeants.	Post quartermaster sergeants.	Hospital stewards.	Acting hospital stewards.	Battalion sergeant-major.	Battalion quartermaster-sergeant.	First sergeants.	Sergeants.	Corporals.	Trumpeters.	Musicians.	Farriers and Blacksmiths.	Artificers.	Saddlers.	Wagoners.	Privates, first class.	Privates, second class.	Privates, hospital corps.	Privates.	General-service clerks.	General-service messengers.	Total.	Professors.	Cadets.	Aggregate.
	3	5																	8																																8
						a 16																																													
			4	6	6														16																																16
		1	2	2	5														7																																7
		1	1	3	3														8																																8
		1	4	8	14		30									2			59																																59
		1	2	3	8		12												26																																26
…rtment		1	6	10	50		79					35						1	182										124	73														572				769			951
		1	2	3	30														36																																36
		1	6	12	24		30	b 1	b 1			26	10	10					119												1	1		35	35		6					203	151					437			556
		1	3	4	10		24					12					4		58															55	76							198	102					429			487
		1			1		4												6															50														50			56
															25				28																																23
			1																1																																1
			1	1	3		12	1	1			12	12						43	1	1	1		1	1								11	53	40	20		21		11	11				405			577			620
			1	1	3		12	1	1			12	12						43	1	1	1		1	1								11	54	40	19		17		11	10				399			566			609
			1	1	3		12	1	1			12	12	1					44	1	1	1		1	1								11	51	42	20		21		7	10				397			567			611
			1	1	3		12	1				12	12						42	1	1	1		1									10	49	36	18		19		10	10				397			555			597
			1	1	3		12	1	1			12	12						43	1	1	1		1	1								10	50	39	19		20		9	10				403			565			608
			1	1	3		12	1	1			12	12						43	1	1	1		1	1								11	50	43	21		21		10	11				429			607			650
			1	1	3		12	1	1			12	12						43	1	1	1		1	1								10	57	43	21		18		10	11				447			622			665
			1	1	3		12	1	1			12	12						43	1	1			1	1								10	50	39	17		21		10	8				348			507			550
			1	1	3		12	1	1			12	12		1				44	1	1	1		1	1								10	50	40	17		19		10	7				382			509			553
			1	1	3		12	1	1			12	12		1				44	1	1			1	1								10	48	38	17		20		9	9				334			488			532
			10	10	30		120	10	9			120	120	1	2				432	10	10	8		10	9								104	521	400	189		197		97	97				3,941			5,563			6,025
			1	1	3		12	1	1			24	13	1					57	1	1	1	2										12	50	45		24		4		1				560			701			756
			1	1	3		12	1	1			24	13	1					57	1	1	1	2										12	52	46		21		6		2				510			654			711
			1	1	3		12	1	1			24	13	1					57	1	1	1	2										12	52	45		22		16		5				526			683			740
			1	1	3		12	1	1			24	13						56	1	1	1	2										12	52	45		21		5		3				509			652			708
			1	1	3		12	1	1			24	13						56	1	1	1	2										12	51	48		20		2						516			654			710
			5	5	15		60	5	5			120	65	3					283	5	5	5	10										60	257	229		108		33		11				2,621			3,344			3,627
			1	1	1		10	1	1			10	10						35	1	1	1	1										8	30	32		15								354			443			478
			1	1	1		10	1	1			10	9						34	1	1	1	2										9	32	34		17		10		1				390			507			541
			1	1	1		10	1	1			10	10						35	1	1	1	2										8	31	33		13		12						367			472			507
			1	1	1		10	1	1			10	10						35	1	1	1	2										8	32	32		14		12		3				309			415			450
			1	1	1		10	1	1			10	10						35	1	1	1	2										8	31	31		13		9		3				325			425			460
			1	1	1		10	1	1			10	10						35	1	1	1	2										8	33	30		15		4		2				362			459			494
			1	1	1		10	1	1			10	10						35	1	1	1	1										10	32	31		12		6						344			439			474
			1	1	1		10	1	1			10	10						35	1	1	1	2										8	35	35		16		9		1				340			449			484
			1	1	1		10	1	1			10	10						35	1	1	1	2										8	32	30		14		8		4				302			463			498
			1	1	1		10	1	1			10	10						31	1	1	1	2										9	36	34		16		16		2				385			503			537
			1	1	1		10	1	1			10	9						35	1	1	1	2										9	35	36		19		16		6				362			508			543
			1	1	1		10	1	1			10	10						34	1	1	1	2										9	34	36		14		9		4				361			472			506
			1	1	1		10	1	1			10	9						35	1	1	1	2										8	32	32		15		7						328			427			462
			1	1	1		10	1	1			10	10						35	1	1		2										8	31	31		15		13						344			440			475
			1	1	1		10	1	1			10	10						35	1	1	1	2										8	33	30		11		12						364			463			498
			1	1	1		10	1	1			10	10						35	1	1	1	2										9	36	35		16		16						334			453			488
			1	1	1		10	1	1			10	10						35	1	1	1	2										7	32	32		16		9		1				289			391			426
			1	1	1		10	1	1			10	10						35	1	1	1	2										8	32	31		15		13						311			415			450
			1	1	1		10	1	1			10	10						35	1	1	1	2										8	32	32		16		15		7				350			495			530
			1	1	1		10	1	1			10	10						35	1	1	1	2										9	36	33		15		6		2				327			433			468
			1	1	1		10	1	1			10	10						35	1	1	1	2										9	34	33		15		13		5				361			475			510
			1	1	1		10	1	1			10	9						34	1	1	1	2										7	31	25		13		8						313			405			439
			1	1	1		10	1	1			10	10						35	1	1	1	2										8	32	32		15		15		2				328			437			472
			1	1	1		10	1	1			10	9		1				35	1	1	1	2										8	32	32		16		9						373			475			510
			1	1	1		10		1			11	9		1				35	1	1	1	2										8	31	28		16								366			456			491
			25	25	25		250	24	25			251	244		2				871	25	25	24	48										207	820	803		372		249		43				8,710			11,326			12,197
																										83	109	80																				272			272
																																		14	12		37	2		1	1				151			218			218
																																		8	8										90			106			106
…ched to regiments																																		116	54		105								1,661			1,939			1,939
…te																																		10	10										88			108			108
…ssengers																																														124	45	169			169
	3	14	71	91	218	(a)	609	39	39	(b)	(b)	564	439	14	32	2	4	1	2,140	40	40	37	58	10	9	83	109	80	124	73	1	1	371	1,886	1,627	189	633	199	282	98	152	399	256	572	17,262	124	45	24,760	7	288	26,900; 295
	4	34	91	34	61		241					91	17		22				595	2		1	5	5		104	30	4	29				43	186	66		12			10		27	2	6	151			683	1		1,279

a The aides-de-camp, being included in the strength of their regiments, are excluded as staff officers from the "total commissioned" and "aggregate."
b The adjutant and quartermaster, battalion of engineers, being included in the strength of their corps, are excluded as staff officers from the "total commissioned" and "aggregate."

B.—*Position and distribution of troops, by Departments, taken from the latest returns on file in the Adjutant-General's Office, 1892*—Continued.

POSTS.	SITUATIONS.	COMMANDING OFFICER.	GARRISONS. Number of companies.	GARRISONS. Regiments.	PRESENT. General officers.	Aides-de-camp.	Adjutant-General's Department.	Inspectors-general.	Bureau of Military Justice.
DEPARTMENT OF ARIZONA.									
Headquarters	Los Angeles, Cal	Brig. Gen. A. McD. McCook.	..	Department staff.	1	2	1	..	..
Fort Apache, Ariz	90 miles from Holbrook.	Lieut. Col. C. B. McLellan, 1st Cav.	3	1st Cav. and 11th Inf.	..	..	..	..	..
Fort Bowie, Ariz	Bowie station	Maj. Thos. McGregor, 2d Cav.	2	2d Cav.	..	..	..	..	..
Fort Grant, Ariz	27 miles from Wilcox	Maj. Henry Carroll, 1st Cav.	5	1st Cav	..	..	..	..	..
Fort Huachuca, Ariz.	Huachuca station	Maj. J. T. Haskell, 24th Inf.	7	2d Cav., 11th and 24th Inf.	..	..	..	..	..
San Carlos, Ariz		Capt. E. C. Gilbreath, 11th Inf.	3	1st Cav. and 11th Inf.	..	..	..	..	..
Whipple Barracks, Ariz.	Prescott	Col. I. D. DeRussy, 11th Inf.	4	11th Inf.	..	..	..	..	..
San Diego Barracks, Cal.	San Diego	Maj. E. W. Whittemore, 10th Inf.	1	10th Inf.	..	..	..	..	..
Fort Bayard, N. Mex.	Near Silver City	Lieut. Col. D. D. Van Valzah, 24th Inf.	6	1st Cav. and 24th Inf.	..	..	..	..	..
Fort Marcy, N. Mex.	Santa Fe	Col. E. P. Pearson, 10th Inf.	2	10th Inf.	..	..	..	..	..
Fort Stanton, N. Mex	9 miles from Lincoln.	Capt. J. N. Wheelan, 2d Cav.	2	2d Cav. and 10th Inf.	..	..	..	..	..
Fort Wingate, N. Mex	Wingate station	Col. G. G. Huntt, 2d Cav.	7	2d Cav. and 10th Inf.	..	..	..	..	..
Total, Department of Arizona			42		1	2	1	..	..
DEPARTMENT OF THE COLUMBIA.									
Headquarters	Vancouver Barracks, Wash.	Brig. Gen. T. H. Ruger	..	Department staff.	..	1	..	..	..
Fort Sherman, Idaho	Cœur d'Alene	Col. W. P. Carlin, 4th Inf.	5	4th Cav. and 4th Inf.	..	..	..	..	..
Boisé Barracks, Idaho	Boisé City	Maj. W. B. Kennedy, 4th Cav.	2	4th Cav. and 4th Inf.	..	..	..	..	..
Fort Canby, Wash	Mouth of Columbia River.	Capt. Chas. Morris, 5th Art.	2	5th Art	..	..	..	..	..
Fort Spokane, Wash.	Near Spokane Falls.	Lieut. Col. H. C. Cook, 4th Inf.	4	4th Inf.	..	..	..	..	..
Fort Townsend, Wash	Port Townsend	Capt. A. H. Bainbridge, 14th Inf.	1	14th Inf.	..	..	..	..	..
Vancouver Barracks, Wash.	Vancouver	Col. T. M. Anderson, 14th Inf.	7	4th Cav. and 14th Inf.	..	..	..	..	..
Fort Walla Walla, Wash.	Walla Walla	Col. Anson Mills, 3d Cav.	4	4th Cav.	..	..	..	..	..
Total, Department of the Columbia			25		..	1	..	..	..

PRESENT. Quartermaster's Department.	Subsistence Department.	Medical Department.	Pay Department.	Corps of Engineers.	Ordnance Department.	Post chaplains.	Military storekeepers.	Colonels.	Lieutenant-colonels.	Majors.	Captains.	Regimental chaplains.	Regimental adjutants.	Regimental quartermasters.	Subalterns.	Enlisted men.	Total commissioned.	Aggregate.	ABSENT. General and staff officers.	Field and regimental staff officers	Captains.	Subalterns.	Total commissioned.	AGGREGATE. Aggregate.	Commissioned officers.	Enlisted men.	Aggregate.
2	1	1	4	..	..	..	..	..	..	1	1	..	..	..	3	12	17	29	..	..	..	..	..	..	17	12	29
..	..	1	..	..	..	1	..	..	1	..	2	..	..	..	4	192	9	201	..	..	1	2	3	3	12	192	204
..	..	1	..	..	..	1	..	..	..	..	1	..	..	..	2	113	5	118	..	..	1	2	3	3	8	113	121
..	..	2	..	..	..	..	..	..	..	2	3	..	1	1	8	261	17	278	..	1	3	4	8	8	25	261	286
..	..	2	..	..	..	1	..	..	..	1	4	..	..	..	7	437	15	452	..	1	3	6	10	10	25	437	462
..	..	1	..	..	..	..	..	..	..	..	3	..	..	..	3	195	7	202	1	..	..	3	4	4	11	195	206
..	..	1	..	..	..	..	..	1	..	1	3	..	1	1	6	244	14	258	..	..	2	4	6	6	20	244	264
..	..	1	..	..	..	..	..	..	..	1	1	..	..	..	2	61	5	66	..	..	..	..	..	..	5	61	66
..	..	2	..	..	..	..	..	..	1	..	5	1	1	1	8	352	19	371	..	1	3	4	8	8	27	352	379
..	..	..	..	..	..	..	..	1	..	..	2	..	1	1	5	130	10	140	..	..	1	..	1	1	11	130	141
..	..	1	..	..	..	..	..	..	..	..	1	..	..	..	3	111	5	116	..	..	1	1	2	2	7	111	118
..	..	2	..	..	1	..	1	..	1	5	..	1	1	1	11	416	23	439	..	1	3	3	7	7	30	416	446
2	1	15	4	..	4	..	3	2	7	31	1	5	5	62	2,524	146	2,670	1	4	18	29	52	52	198	2,524	2,722
3	2	1	2	..	1	..	..	..	1	1	..	..	..	..	..	15	12	27	..	..	..	..	..	..	12	15	27
..	..	2	..	1	..	1	..	1	1	5	..	1	1	9	268	21	289	..	..	1	3	4	4	25	268	293
..	..	1	..	..	..	..	..	..	..	1	2	..	..	..	2	108	6	114	..	..	..	2	2	2	8	108	116
..	..	1	..	..	..	..	..	..	..	..	2	..	..	..	3	108	6	114	..	..	..	3	3	3	9	108	117
..	..	2	..	..	1	..	1	..	..	2	..	..	..	..	8	187	14	201	..	..	2	..	2	2	16	187	203
..	..	1	..	..	..	..	..	..	..	1	..	..	..	..	2	63	4	67	..	..	1	2	3	3	7	63	70
..	..	2	..	..	..	..	1	1	1	4	..	1	1	10	412	21	433	..	..	4	6	10	10	31	412	443
..	..	1	..	..	1	..	1	..	1	3	..	1	1	4	212	13	225	..	1	2	6	9	9	22	212	234
3	2	11	2	..	2	2	..	3	2	5	20	..	3	3	38	1,373	97	1,470	..	1	10	22	33	33	130	1,373	1,503

REPORT OF BRIG. GEN. M'COOK.

HEADQUARTERS DEPARTMENT OF ARIZONA,
Los Angeles, Cal., September 1, 1892.

SIR: I have the honor to submit the annual report of the Department of Arizona.

This department includes the Territories of Arizona, New Mexico, and that portion of the State of California lying south of the thirty-fifth parallel of latitude. The total area in square miles is 275,010; area of Indian reservations in square miles, 26,303; number of Indians upon reservations, 39,577; population of Arizona, New Mexico, and California south of the thirty-fifth parallel, 417,017.

There are eleven military posts in the department. In Arizona: Fort Apache, Fort Bowie, Fort Grant, Fort Huachuca, San Carlos, and Whipple Barracks. In New Mexico: Fort Bayard, Fort Marcy (Santa Fe), Fort Stanton, and Fort Wingate. In California: San Diego Barracks.

Fort Apache is located in the northern portion of the White Mountain Reservation—is also a subagency for the Coyotero and White Mountain Apache Indians. This post is 97 miles south of Holbrook, a station on the Atlantic and Pacific Railroad, on White Mountain Creek. The country in and about this station is mountainous and beautifully picturesque. During the winter months it is almost inaccessible on account of bad roads and is comparatively an expensive post to maintain. The present garrison consists of one troop of First Cavalry and two companies of the Eleventh Infantry. Formerly the garrison of this post consisted of five troops of cavalry. This change will materially reduce the expense of supporting this post. There was an understanding that the Indians living in the vicinity of the post should furnish the hay required. There is no substance like hay growing in the vicinity of this post, and to assist in supporting the White Mountain Apaches these latter were permitted to cut a pine grass, of very coarse fiber, and deliver it to the post quartermaster, calling it hay. It was unfit for food and injured the animals. These Indians should be encouraged in self-support, but it should not be done to the injury of the public animals. The support of these Indians should fall upon the Interior Department, where sufficient appropriation should be placed.

FORT BOWIE.

This post is located in the northwest spur of the Chiricahua Mountains, 14 miles south of Bowie Station on the Southern Pacific Railroad. During the late Apache wars it was an important post to hold on account of its geographical location and the springs of water from which the station is now supplied. During the times of peace now enjoyed by the Territory of Arizona, Bowie as a military post ceases to be of such military importance, and could be abandoned when proper shelter can be made for its garrison at the other posts in the department. The present garrison is composed of two troops of cavalry.

FORT GRANT.

So long as the Apaches, Yumas, Mojaves, and Tontos are concentrated in and about San Carlos, Fort Grant, on account of its location,

will continue to be an important military post. It is now garrisoned by the headquarters and five troops of the First Cavalry. Requisitions have been made for some iron pipe to increase the water supply at this post. These requisitions have been disapproved, for what reason is not known. If something is not done to improve this water supply, this important post must be abandoned or the officers and enlisted men be put to great inconvenience for want of water, the water for the animals being drawn from wells. Attention is especially called to report of commanding officers of the post upon the subject.

FORT HUACHUCA.

This post is located 14 miles north of the boundary between Mexico and the United States, also 9 miles from a station on the Sonora and Guaymas Railroad. The present garrison of this post consists of two troops of the Second Cavalry, four companies of Twenty-fourth Infantry, and Company I, Eleventh Infantry (Apache Indians). It is an important post and should be maintained.

SAN CARLOS.

This post is the only one in the department where the temperature is extreme; situated on the Gila River 117 miles from Wilcox on the Southern Pacific Railroad. The heat in the summer at this place is intense, averaging 110° during June, July, and August. Fortunately troops at this post are considered in the field and usually their tour of duty is limited to six months.

The officers are now sheltered in comparatively comfortable quarters, but the enlisted men remain in their canvass sheds and are necessarily most uncomfortable. There should at once be erected two barracks of adobe (thick walls) with doors and plenty of windows, the roughest finish, in order to protect from the intense heat the enlisted men who serve tours of detail at this post. Common humanity demands that this should be done, for as long as the agency is held at San Carlos, so long will the presence of troops be required there.

WHIPPLE BARRACKS.

The military reservation of this post adjoins the city limits of Prescott, Ariz. Orders were at one time received to abandon this post as a military station. This order was reconsidered by the Major-General Commanding the Army, with instructions that plans and estimates be made and forwarded for approval of four barracks for enlisted men. The railroad from Ash Fork on the Atlantic and Pacific Railroad is rapidly nearing Whipple Barracks, reaching there by November 1 of this year, whence it will be at once continued to Phœnix, the Territorial capital, in the productive valley of Salt River. These improvements will be an important feature in that country, making Whipple Barracks one of the most desirable locations for a military station in the Department. From this point troops can be sent north or south to the Santa Fe or Southern Pacific roads, upon which they can be moved east or west through the northern or southern portions of the Territory. Therefore it is earnestly recommended that Whipple Barracks be retained as a military post and that the new barracks be built so that the headquarters and the four companies of the Eleventh Infantry now composing that garrison be made reasonably comfortable.

C.—*Statement showing in detail the amounts expended from the various appropriations made for the Quartermaster's Department, etc.*—Continued.

Division, department and post.	BARRACKS AND QUARTERS.			HOSPITALS.			HOSPITALS.		CLOTHING AND CAMP EQUIPAGE.						Hospital steward's quarters—construction and repairs, etc., of.
	Construction and repairs.	All expenses not otherwise enumerated.	Total amounts.	Construction and repairs.	Advertising.	Extra-duty pay of enlisted men.	All expenses not otherwise enumerated.	Total amounts.	Purchase of material.	Manufacture.	Advertising.	Employés.	All expenses not otherwise enumerated.	Total amounts.	
Department of Texas.															
Headquarters, San Antonio, Tex.	$20,269.95	$38.69	$25,705.29	$5,089.86	$24.48		$57.00	$5,171.34					$38.60	$38.60	$407.49
Eagle Pass, camp at, Tex						$5.62		5.62							
Fort Hancock, Tex													17.25	17.25	
Fort Bliss, Tex	629.87		629.87												8.50
Fort Sam Houston, Tex															
Camp Pena Colorado, Tex	48.00		213.00	128.00				128.00							
Fort Ringgold, Tex	4,883.25	21.23	4,904.48												
Fort McIntosh, Tex				168.50		54.00		212.50							
Fort Clark, Tex	375.90		375.90	255.00				255.00							
Fort Brown, Tex															
In the field															
Total	26,206.97	59.92	31,918.54	5,631.36	24.48	59.62	57.00	5,772.46					55.85	55.85	415.99
Department of California.															
Headquarters, San Francisco, Cal			12,880.00										30.00	30.00	252.25
Presidio of San Francisco, Cal	8,566.37		8,566.37	469.00				469.00					5.00	5.00	87.50
Fort Mason, Cal	1,911.81		1,911.81	1,374.80				1,374.80					32.00	32.00	1,005.49
Alcatraz Island, Cal	1,492.79		1,492.79										2.00	2.00	
Angel Island, Cal	6,163.33		6,163.33	6.50				6.50					1.00	1.00	7.68
Fort Gaston, Cal	296.89		296.89										1.00	1.00	39.00
Benicia, Barracks, Cal	3,265.47		3,265.47												
Fort Bidwell, Cal	1,538.70		1,538.70	22.45				22.45							
In the field															
Total	23,235.36		36,115.36	1,872.75				1,872.75					80.00	80.00	1,391.92
Department of Arizona.															
Headquarters, Los Angeles, Cal.	20,213.92	209.22	30,043.59	1,469.71				1,469.71							92.48
Whipple Barracks, Ariz	334.49		334.49	262.79				262.79							
Fort Huachuca, Ariz	2,748.79		2,748.79	92.00				92.00							13.60
Fort Wingate, N. Mex	5,181.63		5,181.63	819.28				819.28							
Fort Bayard, N. Mex	1,169.00		1,169.00												14.00
Fort Stanton, N. Mex	3,161.37		3,161.37	120.85				120.85							
San Carlos, Ariz	887.50		887.50	1,848.50		23.00		1,871.50							112.00
Fort Apache, Ariz	5,283.00		5,283.00												6.93
Fort Grant, Ariz	3,194.83		3,194.83												
Fort Bowie, Ariz	7.75		7.75	19.50		54.83		74.33							
San Diego Barracks, Cal	235.25	900.00	3,330.05												68.00
Fort Marcy, N. Mex	3,690.99		4,038.66	599.18				599.18							
Total	46,109.02	1,109.22	59,381.16	5,231.81		77.83		5,309.64							307.01
Department of the Columbia.															
Headquarters, Vancouver Barracks, Wash	10,033.88	4.00	10,225.88	2,500.00				2,500.00							183.12
Portland, Oregon	6,288.00	32.92	8,316.92	130.98				130.98							35.02
Fort Walla Walla, Wash	132.80		492.80												28.00
Boise Barracks, Idaho	2,929.57		2,959.57	314.38				314.38							18.50
Fort Sherman, Idaho	1,142.72	16.35	1,159.07	290.20				290.20							72.33
Fort Townsend, Wash	581.03		581.03				11.00	11.00							211.72
Fort Canby, Wash	995.17		995.17	188.15				188.15					2.00	2.00	137.50
Fort Spokane, Wash	547.75	8.00	555.75	364.70				364.70							73.00
In the field															
Total	22,655.97	61.27	25,286.24	3,788.31			11.00	3,799.31					2.00	2.00	759.19

act of Congress. Present garrison, all of Sixteenth Infantry. Accommodations for 27 officers and 534 men; 11 barracks. Water supply piped by gravity to reservoir at post and distributed through iron pipes. Sewer system.

Duchesne, Fort, Utah.—Latitude, 40° 16′; longitude, 109° 52′. On the right bank of the Uintah River, about 8 miles above its confluence with the Duchesne River, and on the road between Ouray, about 20 miles distant, and White Rocks, about 15 miles distant. Post reached by wagon and stage from Price Station, distance 88 miles, on Denver and Rio Grande Western Railroad. Freight goes by this route. Post-office and telegraph station at the post. Reservation provisional, 6 square miles, within the limits of the Uintah Indian Reservation. Present garrison, 2 troops cavalry and 1 company infantry. Accommodations for 19 officers and 315 men; 6 barracks. Water supplied by water wagon. No sewer system.

Dutch Island, R. I.—Latitude, 41° 30′; longitude, 71° 24′. Five miles from Newport. Post-office, Jamestown, R. I. Telegraph station, Newport. Steam ferry from Newport to Jamestown, 4 miles, and private boat thence to post, 1 mile. Reservation, 75 acres. Cession of jurisdiction by State act of January 18, 1865. Not garrisoned. In charge of ordnance sergeant.

Eagle Pass, Tex.—Latitude, 28° 42′; longitude, 100° 30′. In Maverick County, part of old Fort Duncan. Reservation, 62.94 acres, leased. Present garrison, 1 troop cavalry. Accommodations for 8 officers and 61 men; 2 barracks.

Finns Point, N. J.—Latitude, 39° 32′; longitude, 75° 45′. On the Delaware River, 6 miles from Salem, N. J., which is the post-office, telegraph, and railroad station. Reservation, 104.35 acres. Cession of jurisdiction by State acts of April 6, 1871, and February 1, 1872. Not garrisoned. In charge of Engineer Department.

Foote, Fort, Md.—Latitude, 38° 48′; longitude, 77° 41′. On the Potomac River, 9 miles from Washington. Post-office, at the post. Telegraph station, Alexandria, Va. Steamer from Washington, D. C. Reservation, about 66¼ acres. Cession of jurisdiction by State act of April 1, 1872. Not garrisoned. In charge of ordnance sergeant.

Gaines, Fort, Ala.—Latitude, 30° 15′; longitude, 88° 4′. On Dauphin Island, Ala., 30 miles from Mobile by boat, which is the post-office, telegraph, and railroad station. Reservation, about 983.9 acres. Cession of jurisdiction by State act of January 28, 1853, and governor's deed of November 25, 1853. Not garrisoned. In charge of ordnance sergeant.

Goose Island, Wash.—Latitude, 48° 31′; longitude, 122° 58′. In the Strait of San Juan de Fuca.

Georges, Fort, Me.—Latitude, 43° 39′; longitude, 70° 13′. On Hog Island, Portland Harbor, Me., 2 miles from Portland, which is the post-office, telegraph, and railroad station. Reservation, about 1½ acres. Cession of jurisdiction by State act of April 17, 1857. Not garrisoned. In charge of ordnance sergeant.

Grant, Fort, Ariz.—Latitude. 32° 37′; longitude, 109° 54′. In Pima County, 27 miles from Wilcox, on the Southern Pacific Railroad. Post-office and telegraph station, at the post. Daily stage, except Sunday, from Wilcox. Reservation, 42,341 acres. Present garrison, headquarters, 3 troops cavalry, and 2 companies infantry. Accommodations for 24 officers and 380 men; 7 barracks. Water supply piped from reservoir fed by streams. Sewer system.

Griswold, Fort, Conn.—Latitude, 41° 22′; longitude, 81° 8′. Groton Heights, 1 mile from New London. Post-office, Groton, Conn. Telegraph and railroad station, New London. Ferry from New London to post. Reservation, 14 acres. Cession of jurisdiction by State act of June 9, 1842.

Hamilton, Fort, N. Y.—Latitude, 40° 37′; longitude, 74° 1′. On shore of Long Island, 5½ miles south of New York City, commanding the Narrows. Post-office and telegraph station, at the post. City railroad from Brooklyn, distance 6 miles. Reservation, 98 acres. In addition thereto 55 acres have recently been acquired by condemnation proceedings. Cession of jurisdiction by State acts of March 20, 1807, March 18, 1808, November 27, 1824, April 17, 1826, February 14, 1851, April 18, 1861, February 20, 1862, and (as to water-covered land), May 7, 1880, and commissioner's deed of November 16, 1812. Present garrison, headquarters and 4 companies artillery. Accommodations for 19 officers (2 in casemates) and 250 men; 4 barracks. One double set officers' quarters in course of construction. Water supply from Brooklyn City waterworks. Sewer system.

Hancock, Fort, Tex.—Latitude, 31° 20′; longitude, 105° 55′. Situated on the Rio Grande, 54 miles southeast of El Paso and 1¼ miles from Hancock Station, on the Southern and Texas Pacific Railroad. Post-office, at the post. Telegraph and railroad station, Fort Hancock Station, distance 1¼ miles. Reservation, 1469.2 acres. Cession of jurisdiction by State act of December 19, 1849, , and governor's deed of October 8, 1883. Present garrison, 1 company cavalry. Accommodations for 4 officers and 63 men; 1 barrack. Water supply pumped from a well into settling tanks and distributed by iron pipes. Tile drains leading to cesspools; no other sewerage.

Huachuca Fort, Ariz.—Latitude, 31° 33′; longitude, 110° 16′. In Cochise County, 7 miles from Huachuca siding, on the New Mexico and Arizona Railroad. Post-office

and telegraph station at the post. Daily buckboard from Huachuca siding. Reservation, 70 square miles. Present garrison, 2 troops cavalry and 5 companies infantry. Accommodations for 22 officers and 420 men; 6 barracks, and 1 band barrack. Two sets of officers' quarters in course of construction. Water supply piped from springs 3 miles distant to distributing reservoirs. Sewer system.

Independence, Fort, Mass.—Latitude, 42° 21′; longitude, 71°. On Castle Island, Boston Harbor, 3 miles from Boston, which is the post-office, telegraph, and railroad station. Government tug from Boston. Reservation, 12 acres. Cession of jurisdiction by State act of June 25, 1798. Not garrisoned. In charge of ordnance sergeant. Accommodations for 1 field and 6 company officers in cottages outside the fort, and for 80 men, 2 batteries, in casemates.

Jackson Barracks, La.—Latitude, 29° 57′; longitude, 90°. On the east bank of the Mississippi River, 6 miles below the city of New Orleans, which is the post-office and railroad station. Telegraph station, Slaughter house, St. Bernard Parish, La. Street cars from New Orleans pass the post. Reservation, 87.87 acres. Cession of jurisdiction believed to be covered by general State act of July 6, 1882. Present garrison, 2 companies infantry. Accommodations for 11 officers and 96 men; 4 barrack buildings accommodate 24 men each. Water supply pumped from the Mississippi River. Surface drainage by brick-lined drains.

Jackson, Fort, La.—Latitude, 29° 21′; longitude, 89°26′. Seventy-three miles from New Orleans. Post-office, Neptune, La. Telegraph station, Quarantine, La. Steamer triweekly from New Orleans. Reservation, 740.97 acres. Cession of jurisdiction by State act of June 1, 1846. Not garrisoned. In charge of ordnance sergeant.

Jefferson Barracks, Mo.—Latitude, 38° 28′; longitude, 90° 17′. In south St. Louis, on the Mississippi River. Post-office, telegraph, and railroad station at the post. Reservation, 1,379.06 acres, with 118.15 acres in adverse possession by different parties. No cession of jurisdiction. Recruiting depot. Accommodations for 14 officers and 437 men; 5 barracks. One double barrack and two double sets officers' quarters in course of construction. Water supply from St. Louis water works. Sewer system.

Jefferson, Fort, Fla.—Latitude, 24° 38′; longitude, 82° 52′. Garden Key, 71 miles from Key West. Post-office and telegraph station, Key West, Fla. Boat from Key West to post. Reservation, 5 acres. Cession of jurisdiction believed to be covered by general State act of July 24, 1845, though there is no record of any formal deed of cession by the governor (see XIII Op. Att. Gen., 411). Not garrisoned. In charge of ordnance sergeant. There are two substantial three-story brick buildings; one for officers' quarters, 63 rooms; the other for soldiers, 50 rooms.

Johnston, Fort, N. C.—Latitude, 34°; longitude, 78° 5′. Twenty-six miles from Wilmington. Post-office and telegraph station, Southport, N. C. Steamer daily from Wilmington. Reservation, 43,560 square feet. Cession of jurisdiction by State acts of July 17, 1794, December 8, 1804, December 17, 1807, and December 19, 1809. Not garrisoned. In charge of ordnance sergeant. One set of officers' quarters used as signal office. No barracks.

Keogh, Fort, Mont.—Latitude, 46° 23′; longitude, 105° 57′. On the Northern Pacific Railroad, 747 miles from St. Paul. Post-office, telegraph, and railroad station at the post. Reservation about 90 square miles. Cession of jurisdiction by constitution of Montana. Present garrison, 2 troops cavalry and headquarters and 7 companies infantry. Accommodations for 27 officers and 535 men; 9 barracks. Water supply pumped from a well near the Yellowstone River and distributed through iron pipes by direct pressure. Partial sewer system.

Key West Barracks, Fla.—Latitude, 24° 33′; longitude, 81° 48′. Post-office, telegraph station, and boat landing, Key West. Reservation, 22.79 acres. Cession of jurisdiction by State acts of July 8, 1845, and July 24, 1845. Not garrisoned. In charge of ordnance sergeant. Five sets of officers' quarters and 2 barracks. Four sets quarters and 1 barrack, in good condition. Others need repairs.

Knox, Fort, Me.—Latitude, 44° 34′; longitude, 68° 48′. In Hancock County, three-fourths of a mile from Bucksport by ferry. Post-office, Prospect Ferry, Me. Telegraph and railroad station, Bucksport. Reservation, 150 acres. Cession of jurisdiction by State act of March 12, 1844. Not garrisoned. In charge of ordnance sergeant. No quarters for men or officers.

Lafayette, Fort, N. Y. Harbor.—Latitude, 40° 37′; longitude, 74° 2′. Six miles from Brooklyn. Post-office and telegraph station, at the post. City railroad from Brooklyn. Reservation about 2 acres. Cession of jurisdiction by State acts of March 20, 1807, March 18, 1808, and (as to water-covered land) May 7, 1880, and commissioner's deed of November 6, 1812. Not garrisoned. In charge of commanding officer at Fort Hamilton, N. Y.

Leavenworth, Fort, Kans.—Latitude, 39° 21′; longitude, 94° 55′. On the Missouri River, above and adjoining Leavenworth City. Post-office, telegraph, and railroad station, at the post. Post reservation, about 5,960 acres; timber reservation across

Fort Custer, Mont., had the highest rates in this department; 1,985.56 and 59.43. Fort Meade, S. Dak., followed with 1,861.11 and 47.04. Fort Sully, S. Dak., and Fort Keogh, Mont., also were above the average. Fort Assiniboine, Mont., was below the average, but Fort Buford, N. Dak., Camp Poplar River, Mont., and Fort Missoula, Mont., brought down the departmental average by their respective admission rates of 792.68, 891.10, and 983.87, and their noneffective rates of 26.48, 18.85, and 20.90. A number of men in the field also gave low rates.

DEPARTMENT OF THE PLATTE.

The mean strength, 3,690 men, of this department furnished an admission rate of 1,363.14, practically the average rate of the Army; a death rate of 13.55, the excess over the average being chiefly caused by influenza and pneumonia; a discharge rate of only 10.03, and a noneffective rate of 38.11.

Fort Robinson, Nebr., gave the highest admission rate, 2,123.76, but without a corresponding noneffective rate. The same remark applies to Fort Niobrara, Nebr., with its admission rate of 1,747.47. Fort Logan, Colo., had the highest noneffective rate, 76.98, although its admissions were only 1,588.85 per thousand strength. Fort Du Chesne, Utah, had many admissions, but the noneffective rate was low.

The best rates were furnished by Fort Washakie and Fort Russell, Wyo., respectively, 861.84 and 870.02, with 23.41 and 25.57 noneffective per thousand.

DEPARTMENT OF TEXAS.

The mean strength of this department was 1,644 men, with all the rates somewhat higher than in the Army at large; admission, 1,463.50; death, 10.95; discharge, 19.46; noneffectiveness, 45.68.

The admissions show a somewhat exaggerated prevalence of malarial and diarrheal diseases, venereal and alcoholism, which is not offset by a lessened prevalence of vaccina, influenza, catarrh, and bronchitis. Alcoholism, venereal diseases, and pulmonary consumption contributed to the increased death rate; gunshot wounds and heart disease to the increased discharge rate. Malarial fever, venereal diseases, bronchitis, consumption, heart disease, and diseases of the digestive system contributed to the increased noneffiiciency, while vaccina and rheumatism had noneffective rates below the average.

The large rates of this department were mainly due to sickness at Fort Sam Houston, Tex., its admission rate being 1,985.97, and its noneffective rate 56.59. Fort Clark, the next largest post, had good rates—1,256.72 and 39.61. Most of the smaller posts had high rates, but Fort Brown, Tex., was exceptional in this respect—790.32 and 38.18.

DEPARTMENT OF ARIZONA.

This department had a mean strength of 2,282 men, with an admission rate of 1,376.42, a death rate of 6.57, a discharge rate of 19.28, and a noneffective rate of 43.03, the whole differing but little from the average of the Army. The malarial admission rate was only 36.81 as compared with 62.23 in the Army as a whole. There was also less venereal disease and alcoholism, but more rheumatism, neuralgia, and diseases of the digestive system.

Fort Apache, Ariz., had the highest admission rate, 2,362.38, as also the highest noneffective rate, 62.27, if San Diego Barracks, Cal.,

be excluded, as a number of consumptives from other posts sent there for the sake of the equable climate raised its rate of noneffectiveness to 90.15. Fort Wingate, N. Mex., had an admission rate of 1,776.47, but its noneffective rate was not correspondingly high. Fort Bayard, N. Mex., Whipple Barracks, and Forts Bowie and Grant, Ariz., had fair rates, while Fort Huachuca, Ariz., continued its excellent record of 1890 throughout the past year—admission rate, 601.94—noneffective, 19.39.

DEPARTMENT OF CALIFORNIA.

The mean strength of this department was 1,108 men; admission rate, 1,211.19; death rate, 7.22; discharge rate, 18.95, and noneffective rate, 44.32. Fewer cases of diarrhea, vaccina, alcoholism, and rheumatism were recorded than in the Army as a whole, but the cases of venereal disease were relatively large—97.47 per thousand as compared with 72.46.

The two large posts, the Presidio and Angel Island, had rates higher than the average of the department, respectively, 1,424.11 and 1,310.34 for the admissions, and 54.88 and 50.04 for the ratio constantly sick. At the others the rates were considerably lower, except at Alcatraz Island, where the noneffective rate was high.

DEPARTMENT OF THE COLUMBIA.

The mean strength of this department was 1,412 men; admission rate, 961.05; death rate, 8.50; discharge rate, 21.95, and noneffectiveness, 34.36. These low rates were due to a lessened prevalence of nearly all classes of disease, the most notable exception being alcoholism, the rate of which was 46.74 as compared with 40.01 in the Army.

At Fort Canby, Wash., both the admission rate, 1,730, and the noneffective rate, 47.15, exceeded the Army rates. At Fort Wallawalla, Wash., the noneffective rate was high, 52.32. With these exceptions the records of the posts in this department were excellent. The large post at Vancouver Barracks, Wash., had only 841.49 admissions and 33.51 noneffectives per thousand of strength, and Fort Spokane, Wash., 696.77 and 24.99.

HEALTH OF INDIVIDUAL POSTS.

Reports were received during the year from 124 military stations: (1) Thirteen garrisoned by 400 to 700 men each, average 487; (2) seventeen garrisoned by 300 to 400 men each, average 337; (3) seventeen with 200 to 300 men each, average 241; (4) thirty with 100 to 200 men each, average 131; (5) forty-seven having less than 100 each, average 47. Reports were received also from a mean strength of 899 men on field service during the year.

(1) The thirteen large posts had a mean strength of 6,333 men. Their sick rates were considerably in excess of those given by the Army as a whole. Thus their rate of admission was 1,457.29 as compared with 1,364.78, and their rate of noneficiency 46.04 as compared with 42.01; but their average rates of death and discharge did not differ much from the average of the Army.

Nine of these posts had excellent records during the past year. The average admission rate of these nine was 1,110 per thousand of strength, with 34 constantly sick; but the high rates of the four other posts raise the rates of the thirteen to the numbers above stated. There can be no doubt that the lessened rate of noneffectiveness from sick-

who were sitting on the porch. A week later a square yard of plaster ceiling fell on the sewing machine that had just been in use. These annoyances, to say nothing of the occasional visits of centipedes and scorpions, induce me to recommend that these old stone buildings be torn down and the stones used for foundations of buildings of modern structure and conveniences.

Maj. Calvin DeWitt, June 23, 1892: The barrack occupied by one troop of cavalry forming the garrison is kept in as good police as a building with a worn-out patched floor, a leaky roof, no ceiling, and damaged wall can be. It has none of the conveniences, as bath room, lavatory, or recreation room, of a modern barrack, except such temporary makeshifts as could be constructed out of material on hand. The officers' quarters are long, low, one-story structures, like all the buildings of brick or adobe; in little better repair than the other occupied buildings. Each consists of a different number of rooms added at various times to the two large rooms erected at first. They have no bath facilities, and no plumbing, but in the yards are earth closets. No modern conveniences except cook stoves. The married enlisted men occupy such habitable, or partially habitable, buildings as can be given to them. All are in a bad condition. The guardhouse is old, with low ceilings, small, barred windows, and irregular flat-stone floor. It presented to the smell evidence of its occupancy. It was clean, but unsanitary.

DEPARTMENT OF ARIZONA.—*Col. J. R. Smith, medical director:* At some of the posts there are not enough of quarters. At Huachuca two families are quartered in single buildings, which were only intended for one, having a single hall, kitchen, and privy. This is exceedingly objectionable. Some of the crowding is consequent upon the abandonment of posts; larger garrisons are sent to the remaining posts than they can accommodate. It seems but right to put up sufficient quarters.

ST. FRANCIS BARRACKS, FLA.—*Maj D. L. Huntington:* The quarters are entirely inadequate for the proper housing of the number of troops comprising the command. The air space per man throughout the barracks is much below the standard required for health; in some squad rooms going below 300 cubic feet per man, and under the most favorable circumstances not exceeding 500 feet. The beds nearly or quite touch one another. The fact that the climate is mild, allowing free ventilation by open windows and doors, has heretofore prevented sickness; but at this season (November), with its great variations of temperature, necessitating the closure of the doors, the air becomes fouled and poisoned. The buildings are mostly old and devoid of many of the conveniences essential to the welfare of the troops. Great care has been taken to keep the room in the best sanitary condition, and only the strictest care in this respect will prevent the evils of overcrowding. The plan of placing a part of the command in tents has been tried; but owing to the condition of the soil, its dampness and chilliness producing bronchial troubles, it has been abandoned.

ANGEL ISLAND, CAL.—*Maj. W. H. Gardner:* Abundant testimony of skilled professional observers has shown that human beings can not be overcrowded without soon showing the effects of it in some form of disease. To be free from sickness and capable of performing their alloted tasks in life human beings require a plentiful supply of fresh air, and those whose duties require them to be a large part of their time out of doors, such as soldiers, require a more plentiful supply of fresh air than those whose habits and occupations keep them in overheated, ill-ventilated rooms, where their systems after a time become tolerant of impure air and poisonous exhalations of their own and other human bodies. In all these quarters, even with the small number of men here, there is not, in one single instance, even one-half of the cubic space required for health; and should these companies be recruited up to the standard of 58 men to the company they could not get over one-third of what is required. Since coming from Pine Ridge Agency the sick list of the command has ranged from 10 to 17 each day, and it shows no tendency to decrease; and, while I do not assert that all or even half of the cases taken on the sick list are due to overcrowding, still I am confident that a considerable number of them are. I would therefore respectfully recommend that additional quarters for troops be erected at this post, or that at least two companies be moved to another station, so that the vacated quarters could be used for the companies left here. * * * There are a good many of these cases taken on the sick list that are undoubtedly due to the effects of overcrowding. But the sick report does not actually show on its face the total effects of this deprivation of a sufficient amount of pure air, for many of the enlisted men come to me each day complaining of headache, obscure pains, and lassitude, that are undoubtedly due to the overcrowded condition of the barracks and are not taken on the sick list; and I believe that nearly all the cases of sore throat, bronchitis, etc., are due to the fact that the men prefer to open the windows above their heads to get the pure cold air rather than breathe the hot impure air.

The commanding officer: I do not believe the health or comfort of this command would be in any degree improved by reducing the number of companies at this post. * * * In the five years the First Infantry has occupied this post each company has occupied its own barracks even when there have been vacant rooms, and without apparent

it, and the post surgeon urges that efforts be made to have it replaced by the automatic flush tank with one long, iron, common trough beneath the seats.

FORT LOGAN, COLO.—*Maj. R. M. O'Reilly:* The drainage of the post empties into a sewer which debouches on an adjoining ranch, the proprietor of which is very glad at present to have the sewage for irrigation and fertilization. The ranch has, however, been surveyed and is now or soon will be divided into building lots and placed on the market. It is hardly probable that it will be extensively built upon for several years yet. But the ranch slopes towards the South Platte River, whence a portion of the water supply of Denver is drawn. The premises are, I believe, within the county of Arapahoe, which also comprises the city of Denver. In case the municipal authorities consider the drainage of the post a source of pollution of the river, legal complications may arise. There is an abundance of time to provide against trouble of this nature, and I therefore suggest that a plan for the disposal of the post sewage be carefully matured and be held in readiness to be put in operation if necessary.

WATER SUPPLIES.

Much of the improvement in the health of our troops, particularly as regards the lessened prevalence of diarrheal affections and malarial fevers of the remittent type that has been shown annually in the reports from this office, has been the direct result of the attention given by our medical officers to the water supplies of their posts. Twenty years ago a supply of wholesome water on tap in the kitchens and lavatories of the garrison of a military station was a luxury found only at certain permanent posts in the vicinity of cities. The greater part of our Army "out West" had to be satisfied with water barrels outside the kitchen door or in a shady angle of the building. These were filled morning and evening with water, generally turbid, wagoned with much labor from the river. To procure a special supply for delicate palates a wagon would be dispatched to some spring, rudely dammed to develop its usefulness; and the height of luxury in the Southwest was to have the drinking water stored in two or three large *ollas* suspended in some part of the barrack building where there was shade with a possible air movement to cool the water by its more rapid evaporation. Other insanitary conditions were concomitant with this primitive method of water supply. The troops were in fact exposed to all the deprivations of field service with the added danger of a permanent encampment with its consequent contamination of the soil. Gradually, however, improvements were made at posts which were not regarded as merely temporary stations. Wells were dug, and if an adequate supply of wholesome water was obtained measures were taken for its distribution and for the disposal of waste water. This opened up the question of sewerage; and the sick list of the post became lessened in proportion to its sanitary development. Springs were opened up and creeks dammed up into reservoirs of supply. When no better source was to be obtained, sedimenting and storage reservoirs were built and the water pumped from the river, at first perhaps by mule power but speedily by steam. Now there are few posts that are dependent on the water barrel. The condition of the water supplies of our Army may be appreciated in a general way by a few brief comments on the reports concerning this subject that have been filed during the past year.

The supply at several posts has been inadequate; a few, indeed, have been threatened with a water famine. At Fort Niobrara, Nebr., the supply is said to be good, but deficient on account of the insufficiency of the water main. In May last the administration building of the post was burned, although with a proper water supply it could have been saved. The deficiency at Fort Grant, Ariz., where, in July, the use of water had to be limited, was due to the inadequate capacity of the reser-

voir and the defective character of its inflow pipe. At Fort Huachuca, Ariz., where the scarcity of water by the drying up of streams in summer suggested the necessity of abandoning the post, relief was obtained in June last by underdraining the *cienega* at the source of the supply with agricultural drain tiles. At Fort Robinson, Nebr., the difficulty lay not at the source but in the means of collection. The water from excellent springs was led into a reservoir sunk near to, and 14 feet below the level of, a small brook. When the necessities of the post lowered the water in the reservoir below the level of the brook the undesirable water of the latter entered and was pumped up for distribution. This was remedied in May last by an additional inflow from the springs.

Some posts, such as Fort Barrancas, Fla., Jackson Barracks, La., Fort Monroe, Va., and Fort Warren, Mass., collect the rainfall for household use; and others supplement their well and other water supplies by cisterns connected with certain of their buildings. Rain water, as stated in my report last year, is always a good water if proper precautions are taken for its collection and storage. Rain water shed from a house roof carries with it into the cistern the soot and condensed ammoniacal vapors of coal combustion, the infinity of débris, organic and inorganic, which constitutes the dust of a city or other community, together with more massive fragments, as of dead insects, decaying leaves, etc. After a few days these various matters settle, forming a soft, black, pultaceous sediment, and leaving the supernatant water comparatively clear and pure; but every succeeding rainfall not only increases the quantity of this sediment, but by its inflow stirs up that which had already accumulated, rendering the water impure until sedimentation is again accomplished. As time passes the sediment increases, and the water becomes unfit for use after each rainfall. These conditions are aggravated in the dry season, when the water is low in the cistern and the quantity of sediment relatively much increased. At such times the water may become foul to the sight, taste, and smell. Remittent fevers have been developed by the use of such water, although diarrheal troubles are its most common offspring. At Fort Bidwell, Cal., some cases of fever were attributed to the presence of slimy mud in its reservoir of surface water. After long seasons of dry and dusty weather, which leave the shedding surfaces coated and the conductors clogged with decaying vegetable matters, the first of the succeeding rainfall should be run to waste in order to clean out the system. This is best effected by personal attention, such as is given by the householders of New Orleans to their domestic water supplies; but some form of cut-off should be used at all military posts where the water is not freed from its suspended matters by overflow from a collecting into a distributing cistern. The simplest form of mechanism to effect the rejection of the roof washings consists of a joint in the conductor which, when in place, leads the water into the cistern, but when turned runs it to waste. Another consists of an overflow pipe running down along the outside of the cistern and guarded at its lower end by a valve which can be opened or shut at pleasure. The conductor from the roof opens into this pipe a few inches below its upper end or point of emergence from the cistern. When the valve below is open, water from the roof runs to waste through the pipe; when it is closed the water is carried over into the cistern, while accidental solids are trapped in the pipe.

The cisterns at Fort Barrancas, Fla., are insufficient, the whole of the watershed not being utilized. Artesian wells have been a success at Pensacola, Fla., and would probably prove so at this post. With

proper care in collection and storage, as above stated, Jackson Barracks, La., may be supplied in part from its cisterns, aided by distillation for kitchen and potable uses. The river water at this post is unfit for any purpose except for flushing drains or subduing fire. The cisterns at Fort Monroe, Va., contain water usually wholesome but occasionally tainted with decaying vegetable matter. Its imported well water is said to be hard and even brackish. At Camp Oklahoma, Okla., water from a spring is recommended by the medical director, as the present source, a cistern belonging to the railway company, is considered open to contamination from a privy erected for the use of the railway employés.

The cistern water at Fort Warren, Mass., is an important factor in the supply of the post, although insufficient even with the post wells for the present small garrison. The provision for war service has not yet been obtained. As usual with such waters, this supply often becomes bad through want of care, particularly in seasons when the water level in the cisterns is low. The cistern water service here is aggravated by the use of lead service pipes, and colic, constipation, with other symptoms of chronic lead poisoning, are not wanting. The well, from which the largest supply is obtained, is within a few feet of the drain which carries off the soil water from that part of the garrison, and as it is merely faced with brick every rainfall soaks into it laden with the filth from the soil. Moreover, the wells are not productive. In the last annual report from this office it was stated that the water supply of the post gave out in July, and it became needful to purchase water in Boston, transport it in boats to the island, and transfer it to the various cisterns by means of the post fire engine. Last year, in August, the wells again went dry, and this with only the skeleton garrison of times of peace. For years past the defective water supply of this important post has been brought to notice by every medical officer stationed there, but with no other result than the expenditure of several thousand dollars in the endeavor to strike a deep supply. It is very well from the military point of view to make this post self-reliant as to its supply of water, and to this is to be attributed the efforts made to reach a deep-seated water-bearing stratum; but in the meantime the health of the present generation has to be considered, and the plan recommended of bringing water from Long Island for temporary purposes and peaceful occupation meets with the cordial support of this office.

From posts supplied with river water the reports at certain seasons complain of the muddy condition of the water, and as diarrhea generally prevails at such times without any other apparent cause, the condition of the water is generally, and no doubt correctly, held responsible. During the past year this was the case at Fort Missoula, Mont., and Fort Du Chesne, Utah. At Fort Randall, S. Dak., the post surgeon invited attention to the muddiness of the water supply and submitted plans for its purification, but on account of the probable abandonment of the post these were not approved. The alkalinity and other impurities of the Little Big Horn at Fort Custer, Mont., have occasioned intestinal disorders among the men at the post, although none are this year reported specially. The river supply at Fort Apache, Ariz., from the South Fork of the White River, is considered to be of doubtful quality on account of an inflow of irrigation water above the intake. The question of a water supply at Fort Reno, Okla., has been agitated for several years. The quarters of the men are supplied from the North Fork of the Canadian River, which is generally turbid and, according to one medical officer, "simply detestable." The supply for officers is

wagoned from Caddo Springs, distant a little over 5 miles from the post. The number of cases of sickness among the men at one period led Capt. J. Van R. Hoff, then post surgeon, to urge the introduction of the spring water for general use. Nevertheless, an allotment was made to sink an artesian well to the watershed which has its outlet at the springs. The well was bored to a depth of 400 feet when an accident put a stop to further work at that point. The medical officer now on duty urges the piping of the water from the springs as being feasible and not expensive, and the construction of cisterns to utilize the rainfall, in both of which recommendations he is sustained by the medical director; but the contractors meanwhile have commenced drilling at another point.

At Fort Stanton, N. Mex., and San Carlos, Ariz., the supplies are from shallow wells, and are impure. At the former the well is so near the Bonito River that it becomes filled by direct inflow of the turbid water in the seasons of overflow; moreover, it is insufficient. A new well has been sunk to a depth of 59 feet without obtaining water. At the latter the wells near the junction of the San Carlos and Gila rivers furnish a water that is alkaline, brackish from excess of chlorides, and organically impure. At Fort Canby, Wash., the supply consists of cistern water and surface water collected in tanks. As the latter is not good, it is proposed to introduce a spring supply. The prevalence of fever at Fort Myer, Va., the extent of soil contamination at the post, and the proximity of the national cemetery at Arlington led the post surgeon to doubt the purity of the well water. Samples analyzed at this office proved to be of good quality chemically; but as the wells are shallow and thus liable to vary in quality at different times, and, moreover, as the supply is inadequate, it is recommended that the post be connected with the city water supply of Washington, D. C. Chemical analysis of the spring water at Mount Vernon Barracks, Ala., failed to show any unwholesome quality, but on account of local considerations a board was convened at the post to consider the question of an improved supply. The recommendation of the board to sink a large well was approved by the department commander.

An analysis of the water supply at Fort Sheridan, Ill., showed that the water is not as pure as it should be, and that the cause is probably the proximity of the intake to the shore, but as there was no evidence of contamination by sewage, it was recommended that the water be examined from time to time until it is definitely settled that the fault lies in the shortness of the inflow pipe, when it can be easily remedied.

At Fort Schuyler, N. Y., the garrison was supplied by pipes from the mains of the New York and Westchester Water Company; but although the connection of a post with the water mains of a neighboring city usually solves the question of a water supply as regards both quantity and quality, it does not always do so. As regards quantity, the only complaint came from Jefferson Barracks, Mo., where the demands of the city of St. Louis at certain periods leave no pressure for the supply of the garrison. This has been remedied in part by establishing a temporary pumping station at the junction of the depot and city mains. As regards quality, complaint is more frequent. From Boise Barracks, Idaho, where a water service from the city was obtained early in the year, there came in October the statement that the water at times was so bad in odor as to be unfit for use. This, however, was due merely to the newness of the service pipes in parts of the garrison, not to an inherent bad quality of the water. At Davids Island, N. Y., the water itself appears to have been in fault; it is fur-

nished by the water company of New Rochelle, N. Y. At Columbus Barracks, Ohio, the water is so hard as to be unsuitable for cooking or cleansing. Fort Brady, Mich., is supplied by water wagons from a hydrant of the Sault de Ste. Marie Water Company. Assuming the water to be good as delivered by the company, it does not follow that it is so at the time of its use on account of the exposures incidental to the water-barrel system of distribution; but this assumption can not be made, for the water is occasionally bad, and doubt has been thrown on its quality at all times. At one period it became turbid and tasted badly as it came from the hydrant, when on investigation it was found that a break in the inflow pipe near a shallow bay through which it runs was the cause of the impurity. It was discovered also that the intake was from the canal in which ships are liable to be tied up, and that over three hundred cases of typhoid fever had occurred in the town during the previous year shortly after an accident to the lock had occasioned the canal to be crowded with waiting vessels. A danger of this kind should not be incurred when it can be avoided by taking the water from the river instead of from the canal. At Eagle Pass, Tex., the town supply is so hard that it has at times been regarded as the cause of epidemics of dysenteric diarrhea. It is derived from wells sunk in the river bank and pumped into tanks. The post supply is obtained from this by means of the water-wagon main and the water-barrel service. The barrels having been found at times alive with embryonic mosquitoes, a pipe service is earnestly desired, notwithstanding the hardness of the water and its dysenteric possibilities.

Fort Leavenworth, Kans., is supplied by the Leavenworth waterworks with water from the Missouri River, the intake being below the inflow of the sewage of the post. This position of the inflow is, however, of small account, as the water is so foul that chemical analysis shows no difference in quality above or below this point. This water should certainly not be used if a better supply can be procured. The charges of the water company are so high that it might be a matter of economy per gallon of water, irrespective of quality, to make an effort to reach a deep-seated supply. A recommendation was made by the post surgeon in August to have the service pipes of Fort Logan, Colo., connected with the mains of some of the water companies of the city of Denver, on the ground that the post supply from artesian wells is liable to be cut off temporarily by accidents to the machinery. In October the propriety of the recommendation was thoroughly substantiated by the occurrence of just such an accident, the choking of the wells. For two weeks water for cooking and drinking had to be wagoned from a city hydrant; and the water-closets, house drains, and sewers became exceedingly offensive for want of flushing. Steps were thereupon taken to connect with the mains of the Citizens' Water Company.

In the report from this office for the fiscal year ending June 30, 1890, which summarizes the statistics of sickness at our military posts during the calendar year 1889, the remark was made (page 37) that if Fort Brown, Tex., were expunged from the list of our military stations the prevalence of malarial disease in our Army would be greatly reduced. Fort Brown has not been abandoned, but its malarial record has been expunged, with a consequent material lessening of the malarial rate of the Army. During the calendar year 1889 the post had an admission rate for malarial diseases of 1,676 and a noneffective rate of 38.58 per thousand of strength. During the year 1891 the corresponding rates were 16.13 and .35. This change which practically alters the status of Fort Brown from that of the most unhealthy to one of the most healthy

garrisons in the Army has been accomplished solely by the use of a pure water for drinking and cooking, an accidental consequence of the introduction and use of an ice machine. Formerly the water supply was pumped from the river into settling tanks and distributed for use. It is so pumped and distributed now for general purposes; but the water for cooking and drinking is obtained from a steam condensing coil connected with the ice machine. Distilled water was introduced in 1890 and the extraordinary change in the health of the garrison can be attributed to nothing else than to its use; for all the other sanitary conditions and surroundings of the post remain as they were during the years of insalubrity and high rates.

Fort Ringgold, Tex., gives corroborative testimony to the above. Here distilled water was introduced in 1886. The post surgeon considers that its use has reduced the sick rate one-half since that time, and that most of his admissions for malarial disease are among troops whose duties have taken them away temporarily from the post. As a matter of published record the admissions at this station have fallen from 2,304 per thousand of strength during the calendar year 1885 to such rates as 562 in 1889, 865 in 1890, and 1,366 during the past year.

FORT NIOBRARA, NEBR.—*Lieut. J. D. Poindexter:* The main pipe supplying the water is too small. At some quarters water even for culinary purposes can not be obtained at times. The quality is very good.

FORT GRANT, ARIZ.—*Capt. W. H. Arthur:* Water getting low on account of very small rainfall during July. Its use is carefully limited to prevent waste. Quality is good, but not as excellent as when supply is abundant, as it has to collect slowly and stand in reservoir. * * * Supply of water gradually increasing and quality improving. While the water was scanty and of poor quality many light cases of acute diarrhœa were developed. These are becoming less frequent as the supply of water increases and the quality improves.

Lieut. E. L. Swift, May, 1892: The reservoir is of ridiculously small capacity in proportion to the size of this post and the length of the dry season. An iron pipe 3 inches in diameter runs from the dam toward the reservoir, connecting it at its lower end with a 5-inch pipe. Even this small 3-inch pipe is loose in many of the couplings, broken, eroded, or burst in places, and is at present disconnected from the reservoir. * * * This pipe begins at least 5,000 feet from where a permanent water supply could be assured. This post therefore presents the spectacle of having a permanent water supply near at hand from the benefits of which it is debarred by reason of a patched-up makeshift of a receiving pipe and its lack of a few thousand feet of additional length. The distribution of water at this post is insufficient for its needs in many places. I recommend the enlargement of the reservoir by blasting and excavation at its upper end, but most strongly urge the propriety of a larger receiving pipe (at least 5 inches) and the extension to such a point that permanent water the year round could be assured.

FORT HUACHUCA, ARIZ.—*Maj. T. E. Wilcox, September:* The water supply, while of good quality, has been of barely sufficient quantity to supply the daily needs of the post and we find ourselves at the close of the rainy season with fewer promises of its holding out than ever before in the history of the post. Streams which always heretofore have had running water at this season are absolutely dry, and as an increase can not now be expected until next July the outlook is anything but encouraging. An emergency appropriation should be made at once to determine if this supply can be increased by the method proposed in previous reports or some other practicable way, lest the abandonment of the post on account of deficient water supply may become a necessity.

December: The water supply has not been greatly increased by the advent of cold weather, as was hoped would be the case, and considerable annoyance has been suffered by the freezing of supply pipes, which are insufficiently protected against the degree of cold which has prevailed during the month. A minimum of eight and even seven degrees above zero has been recorded. It is considered desirable that the chief quartermaster of the department be made acquainted with the above statement for the reason that on his recent visit to the post he was given to understand that no danger was likely to occur to the water pipes through frost. As will be seen, the pipes require protection against the cold of winter as well as the heat of summer.

June, 1892: Has been scanty but of good quality; the deficiency promises to be corrected to some extent by efforts made during the month, which were in accordance

with recommendations made in the report for June, 1891. Agricultural drain tiles have been introduced in the *cienega* at the source of the water supply, and over 7,000 gallons per day obtained in excess of that heretofore secured; the expense has been nominal, and it is believed that a further increase will be found as the water finds its new thoroughfare. The *cienega* referred to in the last report has been drained and now offers a liberal supply of clear cold water with a temperature of 61° F., which is 18 degrees colder than that of the water from the hydrant at the hospital, and 14 colder than that at the ice machine. It is believed this supply will afford all needed for the saw mill, ice machine, stables, and water closets for the enlisted men. Pipe and a reservoir will be required to make this available, but this will not be attended with great expense.

FORT ROBINSON, NEBR.—*Maj. George W. Adair:* The usually good water supply has illustrated the transitory nature of earthly things by becoming turbid from pollution by surface water, and is chargeable with the undue number of cases of diarrhœa during the month. The causes of this change have been investigated, and merit extended consideration. The spring from which the water is pumped into the tanks for distribution is the lower one of four in the bottom of a gulch leading into White River below the post. The water is collected in a tank which is sunk to a depth of 14 feet below the level of a brook that flows by it. When left to itself the water rises in the tank to a level well above that of the brook, and the pressure is outward from the tank. When the requirements of the post demand rapid pumping the level of the water in the tank is speedily brought far below that of the brook and the pressure is inward—brook water passes into the tank. The extension of the sewerage system has increased the use of water in the post, and the capacity of the spring is no longer sufficient to meet the requirements. The engineer stated the matter clearly, saying to me "I can not keep the level in the tank without pumping creek water." * * * To secure an ample supply for the post the overflow from all the springs should be secured by connecting the inclosing tanks by iron pipes receiving the water at a level well above that of the brook, and the pumps should never be allowed to take water from below that level. It will be well to surround the tanks with cement or other impervious material to prevent the loss of spring water, for the time approaches when it will all be needed for the post; but to trust to the perfection of such devices for the exclusion of brook water is to trifle with public health. To secure a constant outward pressure by maintaining a superior level within the tank is the only method of safety. If rapid pumping at intervals be desired, a reservoir of suitable capacity and above the brook level should be provided to accumulate the overflow while the pump is idle.

May, 1892: The improvement in the water supply is well begun. An additional 250 barrels an hour from another spring already obviates the necessity of pumping below the brook level.

FORT BIDWELL, CAL.—*Capt. W. J. Wakeman:* A few cases of mild fever due to malarial poisoning have occurred during the month. They were caused, in my opinion, by the water. The reservoir contains a considerable amount of slimy mud, which collects in it during the spring freshets when the snow on the foot hills is melting. great need of a water supply and urge that the water discovered in boring for a well during the last year be utilized. All the water from the barracks and the married men's quarters should be run into the cisterns; at present only half is collected. The cisterns of these two buildings frequently give out.

JACKSON BARRACKS, LA.—*Capt. W. C. Borden:* On looking up the causes of admission to sick report we find that for the two years ending June 30, 1891, the leading causes were malarial fevers, diarrhea, influenza, accidents, venereal disease, and alcoholism, and that, of a total of 363, nearly one-third of the entire number, 110, were for malarial and intestinal disease, while 57, or over one-sixth, were for alcoholic or venereal diseases. * * * For the malarial troubles we must look to local causes. * * * The water supply of this post is obtained from two sources, rain and the Mississippi River. The former is mainly used for drinking and cooking purposes, the latter for bathing and cleaning. The Mississippi River is never a clean stream, and at those seasons of the year when diarrheal diseases most prevail it is as nearly liquid mud as running water can be. * * * Some idea of the state of the water can be formed when I state that having let the water stand for four hours in a bath tub in my quarters 1¼ inches of mud were found at the bottom. If the deposited mud is allowed to remain for any length of time the odor from it becomes exceedingly offensive. * * * The construction of two large tanks to be used on alternate days, so giving the water in each twenty-four hours in which to settle, would almost entirely obviate this trouble. * * * But the water used for bathing and cleaning purposes, however objectionable it may be, can not be by any means as harmful as impure drinking water.

The water used for drinking and culinary purposes is rainwater drawn as required from large wooden storage tanks, which are attached to each set of barracks and