ANNUAL REPORT OF THE CHIEF SIGNAL OFFICER, U. S. ARMY, FOR THE FISCAL YEAR ENDING JUNE 30, 1905

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REPORT

OF THE

CHIEF SIGNAL OFFICER OF THE ARMY.

WAR DEPARTMENT,
OFFICE OF THE CHIEF SIGNAL OFFICER,
Washington, September 30, 1905.

SIR: I have the honor to submit my annual report of the Signal Corps of the Army for the fiscal year ending June 30, 1905.

SCOPE AND CONDITIONS.

The Signal Corps maintains military lines of information by telegraphy (wireless, aerial, and submarine), by telephony, by visual signaling, by ballooning, and by other collateral methods. It also devises and furnishes the electrical apparatus for the fire-control and fire-direction system of both the coast defenses and of field artillery. Incidentally it operates for commercial purposes military telegraph lines when such lines are not occupied with official business.

Except as to military aerostation, which is in an evolutionary stage, the Signal Corps is in the most efficient condition within its history. Its military telegraph lines are doing excellent service. Visual signaling has received unusual attention. Post telephone systems and rifle ranges are as fully installed as appropriations permit. Its wireless telegraph service challenges comparison. The many submarine cables are in excellent working order, except one, where expensive repair material is lacking. Its electrical fire-control system for coast defenses is deemed superior to that of any other nation.

As to readiness for campaigning, it is to be said that at an hour's notice the Signal Corps can furnish field trains capable of installing and operating buzzer, telegraph, and telephone lines to the extent of 1,000 miles, under conditions which will insure constant and reliable intercommunication between any moving troops—artillery, infantry, or cavalry.

Suitable supplementary service by visual signals is also available, and the portable wireless system is being perfected.

Special attention has been paid to the rapid development of lines of information as installed and operated in the military maneuvers of Europe during the South African contest and in the Russo-Japanese war. Careful studies of foreign methods have shown deficiencies in the American Army only in connection with the fire control and fire direction of field artillery, which deficiency, on the recommendation of the Chief Signal Officer of the Army, and with the approval of the Chief of Staff, is in process of remedy.

ALASKAN TELEGRAPH SYSTEM.

For convenient reference, field operations are treated geographically under the headings of Alaska, the Philippines, and the United States.

This work was initiated by acts of Congress approved May 26, 1900, March 2, 1901, and June 30, 1902. In accordance with the recommendations of the Secretary of War in his annual report of 1902, Congress, by an act approved March 3, 1903, authorized the connection of Seattle by cable with southeastern Alaska, where the military posts of Skagway and Fort William H. Seward (Haines Mission) were telegraphically reached only over Canadian lines. Current results amply confirm the wisdom of the Secretary of War in this recommendation. Great benefits have resulted, both civil and military. The President and the War and Navy Departments now have direct telegraphic communication with the five military posts and the naval station in Alaska, and also with the nearest ice-free harbor in the settled portion of North America to the Asiatic coast. The military importance of the lines from a strategic standpoint is beyond question.

Commercially the system has been of very great value in conserving and fostering the business interests of Alaska, from which Territory nearly $30,000,000 worth of products have been exported to the United States during the past year. The enormously productive mining districts of southeastern Alaska, of the Tanana Valley, and of the Nome region are adequately served; most of the great fish canneries are contiguous to telegraph stations; the administration of justice is efficiently promoted; the transaction of public business greatly facilitated; the life of the Alaskan pioneer is made brighter and more civilized. As regards relief of extensive destitution the telegraph system affords information for intelligent and economical action, as is shown by its refuting false rumors, which this year duplicated the Dawson fabrication of 1898 on which $195,000 was uselessly expended.

The telegraph system, considered primarily desirable for military purposes, is to-day industrially and commercially indispensable, and through its facilities Alaskan business methods and commercial enterprises have been administered with greater advantage than ever before. The telegraph, so necessary to supplement daily mails in the United States, is immensely more important in a region where mails are entirely lacking for months at a time and are infrequent during the rest of the year. This necessity is emphatically demonstrated by an immense volume of telegraphic business, whose tariffs, exceeding $100,000 the past year, will annually approximate $200,000 in coming years.

ADMINISTRATION.

During the greater part of the year the Alaskan system has been under the direction of Maj. W. A. Glassford, Signal Corps, at the Seattle end of the Alaskan cable, in addition to doing duty as chief signal officer Department of the Columbia. By previsionary measures and systematic methods he has materially improved the administration of the system, and is entitled to credit for its generally increased efficiency.

Brig. Gen. Constant Williams, commanding Department of the Columbia, has contributed largely to the success of the system by his hearty support and cooperation, which have been seconded by his staff.

Major Glassford's assistants were Capts. Otto A. Nesmith and Leonard D. Wildman, First Lieuts. John E. Hemphill and William C. Fitzpatrick, Signal Corps. Captain Nesmith successfully administered line work from Fort Egbert. Lieutenant Hemphill at Nome, and Lieutenant Fitzpatrick at Fort Gibbon, not only ably supervised the work of maintenance, supply, and repair, but also displayed great activity in the field, inspecting and cheering their men by long and arduous winter journeys. With rare exceptions the officers of the line in Alaska have heartily cooperated, and the Signal Corps has endeavored to ameliorate Alaskan conditions through military press bulletins and facilities for social communication.

STATIONS AND DISTANCES.

Its totality comprises elements not elsewhere combined in a single system; submarine, land, and wireless sections are worked as a component and harmonious whole. The construction aggregates to date 4,038 miles, including not only 2,434 miles of cable and 1,497 miles of land lines, but also a wireless section of 107 miles. Two hundred and eight miles have been abandoned, 3,830 being operated. The inclosed map makes clear situations that can not be easily described:

	Intermediate.	Total.
NOME-VALDEZ SECTION.		
Wireless lines.	*Miles.*	*Miles.*
Safety to Fort St. Michael	107	131
Land lines.		
Nome	0	0
Fort Davis	4	4
Safety	20	24
Fort St. Michael	107	131
Golovin	85	160
Unalaklik	30	196
Old Woman	50	246
Kaltag	45	291
Nulato	40	331
Koyukuk	30	361
Grimkop	20	381
Louden	30	411
Melozi	35	446
Kokrines	38	484
Birches	40	524
Fort Gibbon	55	579
Cosna	45	624
Bakers	25	649
Tolovana	37	686
Nenana	55	741
Chena	48	789
Fairbanks	10	799
Salcha	37	836
Goodpaster[b]	60	896
Central	32	928
Summit	58	986
Ketchumstock	54	1,040
Dennison Creek	30	1,070
Tanana Crossing	25	1,095
Big Tokio	31	1,126
Mentasta Pass	20	1,146
Chesdotta	20	1,166
Chistochina	26	1,192
Talsona	20	1,212
Kulkana	20	1,232
Copper Center	26	1,258
Tonsina	25	1,283
Teikhell	24	1,307
Saina	24	1,331
Keystone	19	1,350
Valdez	12	1,362
Fort Liscum	8	1,370

	Intermediate.	Total.
FORT EGBERT BRANCH.		
Land lines.	*Miles.*	*Miles.*
Ketchumstock	0	1,370
Gold Creek	11	1,381
North Fork	19	1,400
Champion Creek	39	1,439
Fort Egbert	29	1,468
Boundary	11	1,479
RAMPART BRANCH.		
Land lines.		
Rampart	0	1,479
Glen	35	1,514
Baker	15	1,529
SEATTLE-VALDEZ CABLE.		
[Fort Lawton to Fort Liscum.]		
Fort Lawton	0	1,529
Seattle	3	1,532
Sitka	1,037	2,569
Valdez	601	3,170
Fort Liscum	4	3,174
VALDEZ-SEWARD CABLE.		
Seward	0	3,174
Valdez	200	3,374.
SITKA-SKAGWAY CABLE.		
Sitka	0	3,374
Juneau	291	3,665
Fort W. H. Seward (Haines Mission)	102	3,767
Skagway	21	3,788
LAWTON-WORDEN BRANCH CABLE.		
[Spare cable.]		
Fort Lawton	0	3,788
Fort Worden	42	3,830

[a] Under orders to remove to Hot Springs.
[b] Burned. To be reconstructed at McCarthy, Big Delta, and Delta station added at Little Delta River.

OPERATION OF ALASKAN CABLES.

The submarine cables of southeastern Alaska, 2,300 miles in length, have been maintained and operated with entire success.

Ignoring the work of the commissioned officers, it is to be said that the enlisted men of the Signal Corps on cable duty have illustrated anew the ability, intelligence, and resourcefulness of the American soldier. Without exception every cable message has been transmitted and received by selected enlisted men, who qualified themselves for this difficult technical work with a rapidity and skill that were most gratifying. There is now in the Signal Corps a force of about 30 men so skilled in splicing, testing, and operating submarine cables that to-day the Signal Corps of the Army is competent to operate any submarine cable under war emergencies.

The military importance of these conditions is evident from the fact that no other army in the world has a similarly trained cable force. Experiences of late wars indicate the great tactical value of cable service. Of it Colonel May, in Imperial Defense, says:

> Early intelligence in naval warfare is as valuable as a reenforcement of many ships. Rapid cable laying in time of war is a problem of imperial defense of the first importance.

As previously stated, the initiation of the Alaskan cable was planned and executed with great haste, the immediate establishment of an all-American route to Alaska being deemed of wise prevision. This involved the necessity of laying a deep-sea cable over an unsurveyed ocean bed near to and parallel with a rocky and precipitous coast, an unprecedented action in cable operations which under less urgent conditions would not have been favored by the Chief Signal Officer of the Army.

It develops that these gradients of ocean depths are most abrupt, instead of being gradual, as was indicated by existent soundings. In latitude 54° 03′ north, longitude 134° 10′ west, where by interpolation from adjacent soundings a depth of 1,519 fathoms was expected, there was later found a depth of only 807 fathoms, the cable having been laid over a submarine mountain of 4,200 feet. Similarly in latitude 59° 23′ north, longitude 142° 27′ west, in removing a cable fault there was found a depth of 1,027 fathoms as against 700 by the latest charts. The maximum depth is 1,600 fathoms.

Despite these untoward physical conditions there has been but one interruption in the Seattle-Sitka section of 1,037 miles, and one upon the Sitka-Valdez cable of 601 miles. Neither interruption was due to any fault in construction or installation, but to mechanical injuries. The first cable was damaged probably by an anchor in the bay near Fort Lawton, and the latter by the enmeshment of a large humpback whale (*Megaptera-nodosa*), which was found dead and entangled in the Valdez cable when repairs were made at the mouth of Sitka Harbor.

As stated in my last report, the Norton Sound cable from Nome to St. Michael was so seriously damaged by heavy ice during successive winters as to demonstrate the impracticability of successful cable operations, except at great expense and by a modified route. Its replacement by a most satisfactory wireless system caused the Chief Signal Officer of the Army to recover such portions of the cable as are not destroyed, with a view to their utilization elsewhere. Ten miles only were recovered, found in the original position; the remainder had dis-

appeared. Such disappearance can not be satisfactorily attributed to ice conditions, as indications point to extraneous methods of removal.

VALDEZ-SEWARD CABLE.

On April 23, 1904, Congress appropriated the sum of $321,580 for the completion of an all-American telegraph route to Alaska, supplementing the Seattle-Skagway cable by one from Sitka to Fort Liscum (Valdez). By the act approved March 2, 1905, Congress further appropriated the sum of $95,000 for the extension of the submarine cable from Valdez to Seward at the head of Resurrection Bay, the southern terminus of the Alaskan Central Railway.

In connecting Valdez with Seward, the Chief Signal Officer of the Army adhered to his previous policy of installing a seamless rubber cable of American manufacture, to be operated by American soldiers, and to be laid by an American ship. By this policy not only have the economical interests of the United States been subserved, but there are now available in the American Army instruments, equipment, and personnel competent to install, operate, repair, or disable submarine cables of any length, in depths not exceeding 2,000 fathoms.

The act of March 2, 1905, made the appropriation for the Valdez-Seward cable immediately available. The short Alaskan season necessitated speedy action to insure the installation of this cable during 1905. The character of the ocean bed between Seward and Valdez was unknown, and must necessarily be roughly determined by a running survey.

Public proposals were at once invited, and the results illustrate American ability and resourcefulness in a new field, four American corporations bidding for the work. The award was made March 17, 1905, to the Safety Insulated Wire and Cable Company, of New York City, who completed by May 23, 1905, the entire cable—223 miles of deep-sea, intermediate, and shore-end types. It was transported by rail from Bayonne, N. J., to Seattle in twenty-four days. Its transfer to the cable tanks of the U. S. transport *Burnside*, assigned to duty as a cable ship, was made with great care under the supervision of Capt. Charles S. Wallace and Cable Engineer Henry Winter, the work being done by a trained Filipino cable crew. The *Burnside*, delayed at Seattle from causes not within control of this Bureau, reached Valdez and commenced operations on July 31. By August 3 the cable was laid to Seward without accident or interruption. The elapsed time from the approval of the appropriation bill to the cable reaching Seward was five months, which in case of necessity could have been materially reduced.

CABLE EXTENSIONS.

From a military standpoint it is not clear that there should be further extensions, unless Ketchikan be deemed strategically important from the conjoined facts of its proximity to Port Simpson, the projected terminus of the new transcontinental Canadian railway, and its position as the official port of entry to southeastern Alaska. Naturally, if a naval station is located on the Aleutian Islands it should be connected with the Alaskan system either by cable from Seward or by wireless from Nome, via a relay station on Nunivak Island.

It is suggested, also, as a relief to the National Treasury, that the line receipts from the Alaskan system be spent in a manner similar to