

WIRELESS TELEGRAPHY IN FOREIGN COUNTRIES.

United States of America, N.I.D., 3/04.

Legislation is proposed to place all stations under Government control by a Naval board.

Navy.

After trials of Lodge-Muirhead, Braun, Rochefort, Ducretet, Slaby-D'Arco, and De Forest systems, the latter two have been selected for further trials, and eventually the whole Navy, including small craft, will be equipped.

A contract has been entered into with the De Forest Co. for the equipment of the following stations :—

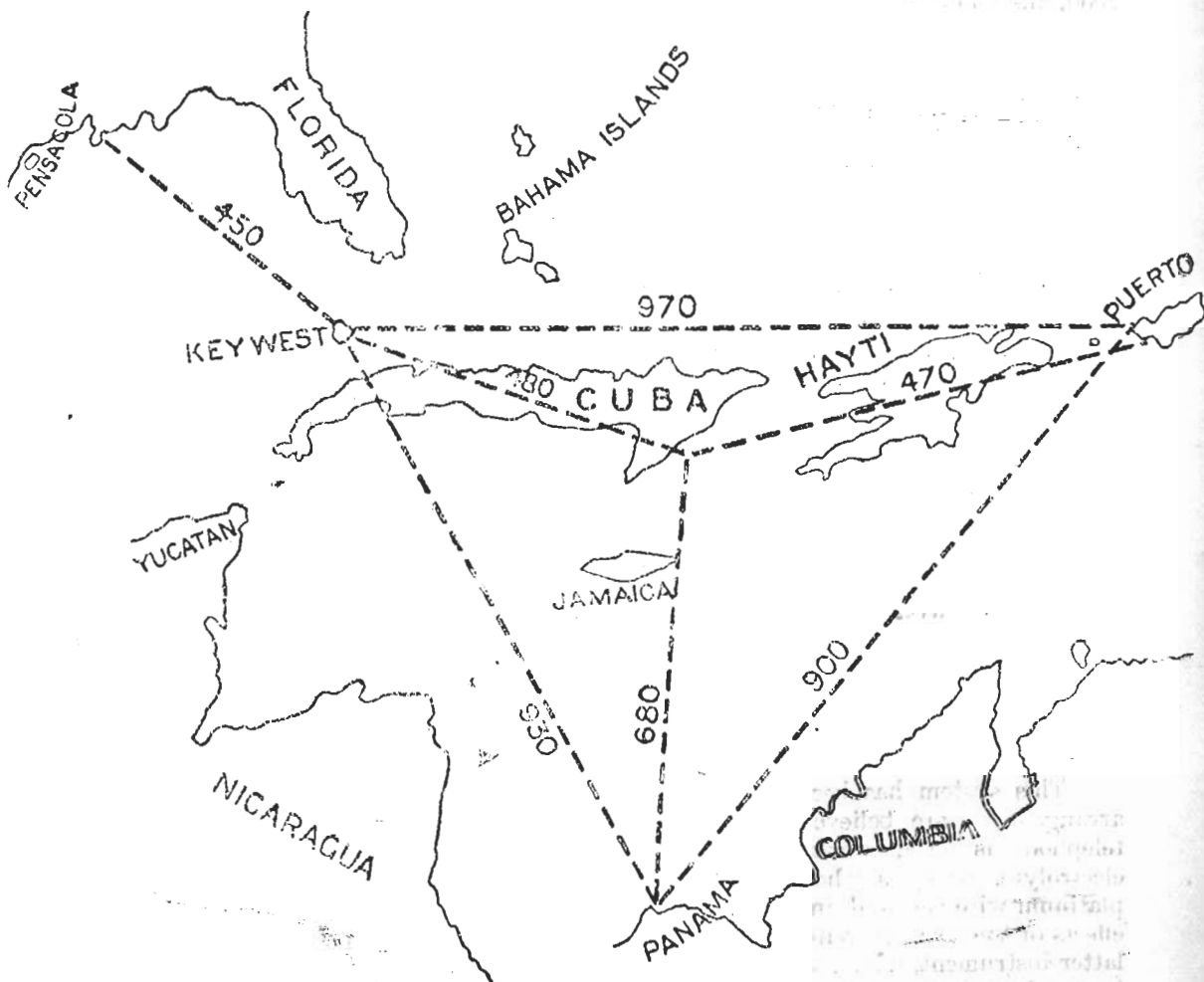
	Distance from			
	Key West.	Porto Rico.	Guantanamo Bay.	Panama.
Key West - - - - -	—	970	480	930
Porto Rico - - - - -	970	—	470	900
Guantanamo Bay - - - - -	480	470	—	680
Panama - - - - -	930	900	680	—

These stations are all to be able to intercommunicate between themselves, and with all U.S. ships within their communicating radii.

The Government provides the buildings, power, and masts (of which there will be three at each station).

The De Forest Co. agree to supply the transformers (35 K.W.), aeriels, earths, and all instruments, ready installed and working by Jan./05, for a sum of 12,000*l.*; and under a penalty forfeit of 3,000*l.* in case of failure.

FIG. 17.



Army.

Use Braun system. Have six stations.

Weather Bureau.

Use Fessenden system. Have two stations.

Private Stations.

Marconi Co. at Cape Cod and on Long Island and Nantucket Island.

De Forest Co. Stations at New York and on the lakes.

Three Morse codes appear to be used: The international Morse we use ourselves, the American Morse with its double and space letters, and the Navy Morse code.

The two latter are given below. It has been reported that the "Times" correspondent in ss. "Haimun" used American Morse to the other De Forest station at Wei Hei Wei:—

American Morse Code.

A	B	C	D	E	F	G	H
· —	— · · ·	· · ·	— · ·	·	· — ·	— · · ·	· · · ·
I	J	K	L	M	N	O	P
· ·	— · — ·	— · — ·	— — —	— — —	— · · ·	· · · ·	· · · ·
Q	R	S	T	U	V	W	X
· · — ·	· · ·	· · ·	— · ·	· · —	· · · —	· — —	— · · —
Y	Z	&	1.	2.	3.		
— — —	— · · ·	· · · ·	· · · ·	· · · ·	· · · ·	· · · ·	· · · ·
4.	5.	6.	7.	8.	9	0.	
· · · ·	— — —	· · · ·	· · · ·	· · · ·	· · · ·	· · · ·	· · · ·
Period		Interrogation		Comma		Exclamation	
· · — ·		— · · ·		· — · —		— — — ·	
Colon	Semicolon						
— · · ·	· · · ·						

U.S. Navy Code.

A	B	C	D	E	F	G
— — —	— · ·	· · ·	— — —	·	— — —	— — — ·
H	I	J	K	L	M	N
· — —	·	· · · —	— · · ·	— · · ·	· — — ·	· · ·
O	P	Q	R	S	T	U
— · ·	· · — ·	· · ·	— · ·	— · ·	— · ·	· · —
V	W	X	Y	Z		
· — —	· · —	— · ·	· · ·	— — —		
Error	Understand	1	2	3		
· · · ·	— — —	· · · ·	— — —	· · · ·		
4	5	6	7	8		
— — ·	· · —	— · ·	· · —	— · ·		
9	0					
— — ·	— · ·					

W.T. in German Navy.

Abstract from N.I.D., R.S. of 4/04.

Slaby-D'Aco system (see page 24). Three tunes are used.

- (1) Harbour wave for distances up to about 12 miles.
- (2) Intermediate wave for distances up to about 56 miles.
- (3) Outside wave for distances up to 110 miles.

All cruisers are being fitted so as to have a range up to about 56 miles. Some form of magnetic detector is usually employed.

Cost of a complete set is 3917.

W.T. in Russia.

Abstract from Report received from the D.N.O. on the 2nd August 1904.

System invented by Popov, a Russian professor; first tried in ships, but not very satisfactory. Popov-Ducrotet system was then installed, and is still largely used in the fleet, but is not satisfactory in regard to distance, clearness, or rapidity.

Slaby-D'Arco-Braun system, with Siemens' improvements, is now being fitted to ships of Baltic Fleet destined for Far East, also for Wireless communication across Lake Baikal. (See description of Slaby D'Arco apparatus, p. 24.) As far as can be ascertained, Wireless Telegraphy in Russia has not advanced so far as in other countries. The greatest distance recorded appears to be 85 miles over land when using 2,800 to 4,000 Watts.

Wireless Telegraph Signalling between Ships of Russian Navy intercepted by H.M. Ships at Suez, in January 1904.

Abstract from "Diana's" report of 28th January 1904.

(1.) The wireless work was in a crude state, and more likely to produce confusion than to be of any assistance to them.

(2.) The mechanical manipulation of the instruments is poor, the spacing is in many cases very bad, and the rate of working slow. Signals had often to be repeated many times before they could be taken in, even when the ships were lying quite close together.

(3.) The grammar, and especially the spelling, were bad, which points to a low standard of education among the operators.

(4.) Method of exchanging signals was as follows:—

Call signs—Name of ship or first two letters of name.

A B calls up C D:—

C D A B

C D answers A B:—

C D **V V V** A B

A B sends message to C D

Λ Λ Λ Λ Λ Λ — message — Λ B Λ Λ Λ Λ Λ Λ

Acknowledgment by C D:—

V V V C D.

PROGRESS IN "VERNON."

Summary.

It is felt that the warlike requirements of W.T. systems are not necessarily identical with the commercial requirements, and every effort is therefore being made to create a proper experimental staff with adequate laboratory appliances.

As it was impossible to carry out the instructions and experiments in the same harbour with the usual apparatus, the first experiments were therefore directed to ascertaining whether it would be necessary to remove one of the departments to some distant spot.

This was found unnecessary. We were successful in discovering the "Instructional circuit" (see p. 30), which enables training and experiments to go on simultaneously.

The staff, however, is found inadequate for the increased facilities for work in hand, accordingly it was submitted an increase of staff be allowed, and at the same time the testing work and instructions were re-arranged, so that the Dockyard are now responsible for the packing up for export and general survey of all W.T. stores, the "Vernon" only testing such articles as must be tested over a distance, also the instruction of the signalmen was relegated to the signal school, in order, partly, to decrease the work of "Vernon's" staff, but principally because it was felt that the actual practical signalling must be controlled and regulated by the school which regulates all other signalling.

Mr. H. A. Madge, Naval Instructor, who had previously served with the Marconi Company, was appointed to "Vernon" for experimental W.T. purposes, and his services have been of great value.

Some time was spent in getting together adequate experimental appliances; some were special to Wireless and could not be bought, they had to be designed and made on board, and then calibrated by methods which had to be invented first. Most of this work is now done, the appliances and methods are becoming standardised, and the practical results are being obtained, and, up to date, they may be summarised as follows:—

- (1) General methods of designing "jiggers" arrived at. A jigger designed by this method for B tune was found superior to the Marconi jigger in distance, and far superior in immunity from interference. (See page 38.)

Fifty jigger boxes are being purchased and will be wound in "Vernon" for supply to Service, and it is hoped eventually to replace all the B jiggers in the Service by this one.

- (2) Several systems of tuning out interferences have been elaborated. These are called "tuned shunts."

The results with them exceed anything that has been seen before or been accomplished without them (see page 44), and it is believed that we are in advance of outside inventors both in the theory and the practice of this vital war requirement.

It is hoped they will be introduced in a practical form during the next financial year.

- (3) Various methods for measuring wave lengths have been invented and tested as to suitability, and it is expected that the "tuned shunts" will be found all that is necessary afloat as a "wave meter." (See page 46.)

- (4) A new C tune is being experimented with, using an alternator and a new shape of aerial. It is particularly desired to get 200 miles with this tune, because of the strategic importance of this distance, and it is hoped to accomplish this inside the space of an ordinary W.T. office.

- (5) Some new instruments have been designed, many have been abolished, and the majority altered in some way or another so as to suit improved conditions. (See page 3.)

The abolishment of accumulators and appurtenances has saved about 1,000*l.* a year on reserves and replacements alone.

- (6) It is interesting to observe that the theoretical prediction that two waves at least must exist in an oscillator circuit like A or B tunes, mentioned in last year's A.R. have now been confirmed by many actual experiments, though such an eminent authority as Mr. Marconi has expressed his entire disbelief in there being more than one wave. We have also observed many smaller, subsidiary waves, which have also been accounted for by further and far more complex equations arrived at.

Officers and Men Instructed in W.T. during 1904.

Torpedo Lieutenants -	-	-	-	-	49
Lieutenants from Signal School	-	-	-	-	7
Lieutenants R.M.A.	-	-	-	-	1
Lieutenants R.M.L.I.	-	-	-	-	23
Torpedo gunners	-	-	-	-	3

Total - - - 83

Electricians -	-	-	-	-	30
Torpedo Instructors	-	-	-	-	121
Armourers	-	-	-	-	42
Signal ratings	-	-	-	-	58
Coastguard	-	-	-	-	5

Total - - - 256

Besides the above, a large number of officers have had two or three days instruction in latest developments, without, however, undergoing examination.