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PRELIMINARY CONFERENCE
AT
BERLIN
ON
WIRELESS TELEGRAPHY
(AUGUST, 1903).

Translation
OF THE
PROCÈS-VERBAUX AND PROTOCOLE FINAL.

BY
GEO. R. NEILSON,
Of The Eastern Telegraph Company.

OFFICIALLY ACCEPTED BY H.M. POSTMASTER-GENERAL.

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Suggestions

SUBMITTED BY THE GERMAN ADMINISTRATION FOR
DISCUSSION BY THE CONFERENCE.

Propositions.

ARTICLE I.

Wireless Telegraph (Radio-telegraph) Stations, intended for communication with ships at sea, shall be subject to the following provisions :—

Para. 1. Radio-telegrams originating from and destined for ships shall be received and forwarded without regard to the system employed.

Para. 2. The wave-lengths used by coast stations for general maritime traffic shall be publicly notified.

An understanding may be arrived at, however, as to the use of special wave-lengths, which are not subject to publication.

Para. 3. Charges for the exchange of radio-telegrams between coast stations and ships must be reasonable. One-half of the charges will accrue to the coast stations, the other half to the posts on board ship.

Subsidiary Questions.

Is it desirable also to regulate the exchange of messages :—

A. Between ships ?

B. Between coast stations ?

A. Is it necessary to require the owner of the station—

a. To communicate, on being called, with every person without exception ?

b. To forward the telegram received by the shortest route ?

B. Can systems which involve a delicate syntonisation be admitted ?

C. Or is it desirable to require the installation to be established in such a way as to be capable of adapting itself, as far as possible, to all systems ?

A. Is it necessary to prescribe specific wave-lengths ?

B. Is it desirable to insist on the publication of technical details concerning the installation of all stations ?

C. Or is it sufficient simply to notify the system employed ?

D. Is it necessary to publish the maximum range of the stations ?

A. Or would some other method of division be preferable ?

B. Is it necessary to establish an international system of accounts to insure payment of the charges ?

ARTICLE II.

Concessions for the establishment and working of radio-telegraph stations, intended for communication with ships at sea, shall not be granted except to persons who submit to the conditions set forth in Article I.

The charges must be approved by the Government on whose territory the coast station is placed.

Enterprises which, in non-adhering countries, refuse to enter into communication with ships equipped with a different system, or which seek, in any manner whatever, to make communication difficult, shall be excluded.

Is it necessary to establish officially a check as to the observance of the conditions imposed upon stations?

ARTICLE III.

Uniform rules for the service between coast stations and posts on board ship shall be fixed by Service Regulations. Such stations shall be bound to observe these regulations.

Is it necessary to create special privileges in favour of ships in distress?

ARTICLE IV.

The provisions of the present Convention shall not be applicable to radio-telegraph stations exclusively intended for communication with ships of war.

Nevertheless, would it not be desirable to require them to lend assistance, as far as possible, to ships in danger?

ARTICLE V.

Countries which have not adhered to the present Convention shall be admitted to it on their request.

MINUTES
OF THE
PRELIMINARY CONFERENCE ON WIRELESS TELEGRAPHY,
HELD AT BERLIN, AUGUST, 1903.

FIRST SITTING.

August 4, 1903.

The Preliminary Conference on Wireless Telegraphy, convened by the German Government, met at noon on Tuesday, the 4th August, in the large Conference Hall of the Imperial Post Office at Berlin.

PRESENT.

<i>Representing</i>	DELEGATES.
Germany.	M. Sydow, Under Secretary of State for the Postal Department of the Empire. Prof. Dr. Strecker, Privy Councillor in the Postal Department of the Empire. M. Wachenfeld, Privy Councillor in the Postal Department of the Empire. M. Schrader, Councillor in the Postal Department of the Empire. Consul Fluegel, Councillor of Legation. Commander Rieve. Lieut.-Captain Most. Dr. Felisch, Privy Councillor in the Admiralty. Dr. Beggerow, Assistant Professor of Natural Philosophy. Capt. Oschmann. Major Klussmann, Chief of the Battalion of Military Aerostation. M. Führken, Superior Postal Inspector. M. Lindow, Superior Postal Inspector. M. Pfitzner, Superior Postal Inspector. M. Oberlaender, Superior Postal Secretary. } <i>Secretaries of the Conference.</i>
Austria.	M. Adalbert von Stibral, Section Councillor in the Ministry of Commerce. M. Arthur Linninger, Superior Commissioner of Technical Construction. Commander Leopold Sellner (<i>see Hungary.</i>)
Spain.	Don Isidro Calvo y Juana, Major of Engineers, Chief of the Squadron of Military Aerostation. Don Antonio Pelaez Campomanes, First Lieutenant in the Regiment of Telegraphs. Don Mateo Garcia de Los Reyes, Naval Lieutenant.

- United States of America.** General A. W. Greely, Chief of the Military Telegraph Service.
Commander F. M. Barber.
Mr. John I. Waterbury, Special Delegate.
- France.** M. Bordelongue, Director of Electric Working in the Ministry of Commerce and Industry, Posts and Telegraphs.
M. Sins, Telegraph Engineer, Chief of the Bureau of International Telegraph Correspondence.
Lieutenant-Colonel Boulanger.
Naval Captain Arago.
Commander Houdaille
M. Magne, Inspector of Telegraphs.
- Great Britain.** Mr. J. C. Lamb, C.B., C.M.G., Second Secretary of the Post Office.
Mr. J. Gavey, C.B., Engineer-in-Chief of the Post Office.
Mr. R. J. Mackay, Departmental Chief in the Post Office.
Colonel R. L. Hippisley, R.E., C.B.
Captain H. L. Heath, R.N., Assistant Director of the Naval Intelligence Service.
Lieutenant Christopher R. Payne, R.N.
- Hungary.** M. Charles Follert, Superior Director of Posts and Telegraphs.
M. Andre Kolossvary, Director of Posts and Telegraphs.
M. Josef Hollós, Engineer-in-Chief of Posts and Telegraphs.
Commander Leopold Sellner (*see* Austria).
- Italy.** Rear Admiral Charles Grillo.
Commander Quintino Bonomo del Casale.
Marquis Luigi Solari, Naval Lieutenant.
Commander Fedele Cardarelli, Chief of Division in the Ministry of Posts.
- Russia.** Naval Captain Salewsky.
Prof. Osadschy, Councillor of State, Chief of the Technical Section of the Direction General of Posts and Telegraphs.
M. Bilibine, Councillor of State, Chief of the Bureau of International Postal and Telegraphic Relations in the Direction General of Posts and Telegraphs.
M. Popoff, Councillor of State, Professor of the Alexander III. Electro-Technical Institution.

At a quarter past noon, Herr KRAETKE, Secretary of State for the Postal Department of the German Empire, took the Presidential chair and delivered the following opening speech :—

GENTLEMEN,

I am happy to be able cordially to welcome you in the name of the Government of His Majesty the German Emperor. I must also express to the Governments, who are represented here, my recognition of the courtesy with which they have given effect to our invitation to the preliminary Conference, the results of which will not fail to establish a basis for the international regulation of the radiograph service.

It was only a few years ago that wireless telegraphy became one of the means of communication, but the discovery of its principles dates back to the middle of last century. Scientific and technical men of all nations have collaborated in its development.

After the famous Faraday had discovered the formation of waves which radiate in space, Maxwell established the theory of their transmission and speed of propagation, and demonstrated their analogy to luminous vibrations. It was reserved to the genius of Dr. Hertz to confirm these theories by his investigations; the designation "Hertzian Waves," adopted by the scientific world, perpetuates the memory of his merit. It belongs to Lord Kelvin to have investigated the phenomena produced by the discharge of Leyden jars and to have proved, by a theory still accepted, the oscillatory character of these discharges and their relation to self-induction and capacity.

It was Hughes, the celebrated inventor of the first printing telegraph and of the microphone, who laid, in 1877, the first stone of radiographic practice by his detailed experiments which showed the possibility of telegraphing through space up to a distance of more than 500 metres. But the path discovered by Hughes was not that afterwards followed.

In 1890, Branly first showed the method of action of an oscillatory discharge through space upon a tube filled with filings. Following him, Lodge showed the use which might be made of this arrangement for indicating the presence of electric waves.

In 1895 Popoff, during his investigations into electric disturbances of the atmosphere, contrived to produce telegraph signals by means of Hertzian waves: it is to him that we owe the first radiograph apparatus. Marconi, who first employed an "antenna" as an adjunct to the transmitting apparatus, introduced new methods for the practical working of wireless telegraphy. Concurrently, many inventors of great merit have done their best to perfect the new method of communication. The names of Braun, Ducretet, De Forest, Fessenden, Righi, Slaby, Arco, Tesla, are appreciated by all the world. I must refrain from enumerating them in full.

We owe radiography to the intellectual collaboration of most of the great nations. Communication between the coasts and ships on the one hand and between ships themselves on the other has suddenly sprung into great importance. It is due to radiography that communication has been created between parts of the globe which had previously been deprived of it. On the high seas, far from stations connected with the cable and landline system, ships are enabled to announce their arrival by the transmission of electric waves, and to enable charterers to prepare for the reception and forwarding of passengers, correspondence and freights without delay, each hour of time saved by means of

radiograph messages being of considerable advantage. The passenger on the high seas is enabled to inform his family of his arrival and the state of his health.

Ships in distress which, until recently, were powerless to demand assistance, unless a vessel disposed to render help approached by chance, are able to call to their aid, at a distance of hundreds of kilometres, passing ships or coast stations, and so to secure the lives and goods of their passengers.

Nevertheless, the fact must not be concealed that many obstacles exist, even at the present time, to the working of the new means of communication. The secrecy of the messages transmitted, and the simultaneous working of several stations without interfering with one another, are not yet assured.

Yet, even in its present development, the new service has already attained such importance that there is need for some regulation, not only within the limits of a single country, but also in international relations. It is desirable to make regulations calculated to assure the working of the new service, by placing general above local interests. Just as wireless telegraphy is not the product of a single nation, just as it projects its waves beyond the frontiers separating nations, so the protection necessary for its free development can only be secured with the concurrence of all the maritime nations by means of an international understanding. The task before you is to seek a basis for such protection as would benefit all radiograph installations, without distinction as to the system adopted.

In the hope that the results of your labours may contribute to fresh progress in international communication and in harmony among the nations, I invite the Under-Secretary of State to open the discussion. (Loud applause).

Mr. LAMB, British Delegate, replied to Herr Kraetke's speech as follows : In my capacity of President of the Telegraph Conference recently concluded in London, I venture to rise in order to express, first of all, to his Excellency the Under-Secretary of State our most cordial thanks for his eloquent address. I also invite the Conference which meets to-day to present to His Majesty the Emperor its most respectful homage. In no country can anyone be ignorant of the profound interest which His Majesty has always shown in every development of science and every manifestation of progress, and we consider ourselves fortunate to be called together to examine the great question of the future raised by wireless telegraphy here in the centre of the German Empire, which has done so much to develop and improve the communications of the entire world. (Loud applause).

Herr SYDOW, Under-Secretary of State for the Postal Department, having assumed the functions of President, proposed that MM. Führken, Lindow, Pfitzner, and Oberlaender, being nominated to constitute the Secretariat, edit the Procès-Verbaux ; and that these documents, after having been checked by the German Administration, be distributed, as proofs, to the Delegates. In addition the President expressed the opinion that in view of the preliminary character of the Conference, it would be possible to dispense with formal rules for the discussions.

No objection having been raised, the PRESIDENT proposed to open a general discussion upon all the questions suggested by Art. I. of the German propositions, which had been handed to the delegates, and he continued in the following terms : While wireless telegraphy has not yet attained any great importance for land traffic, nor generally recognised success so far as transmission between distant coasts is concerned, its importance and utility are undeniable as regards communication between the shore and ships at sea, as well as between ships themselves. To encourage the free development of radiographic telegraphy in this field, and to remove, as far as possible, the obstacles in the way of its use, appears to be a duty in the general interest of all maritime States.

The object aimed at by the Propositions under Art. I. is, then, in the first place, to prevent the creation of a monopoly in favour of a single system, and, in the second place, to avoid disturbances of the different systems between themselves.

It is towards such a monopoly in favour of a single system that there appears to be an aspiration in one direction. By arrangements which the Wireless Telegraph Company has concluded with the British Lloyds, the latter undertakes to employ the Marconi system exclusively in its stations, and not to permit these stations to communicate with ships equipped with other systems. It has been found that Lloyds' stations, in pursuance of this principle, do not reply to calls from ships furnished with other systems. Such a provision limits in a material degree the utility of radiographic telegraphy. Nor does it better accord with the interests of technical development: wireless telegraphy is still too young to enable one to yield to a given system superiority or preponderance over all others. Only by the free competition of the scientific knowledge and technical skill of all nations can one hope to attain the improvements and progress of which this modern branch of technical science has still need to a large degree. The German Government is of opinion that the interests of navigation, as well as technical interests, imperatively demand that communication between shore stations and ships should be facilitated as much as possible, without regard to existing systems.

For the same reason the German Government believes it to be necessary to adopt measures to prevent, as far as possible, reciprocal disturbance between the different systems. None of the systems at present in practical use has solved in a satisfactory manner the problem of enabling two stations, of which one is within the sphere of action of the other, to communicate with a third or fourth station without dislocating the working of each other. If the various systems must, as a matter of principle, be admitted to free competition, it will be so much the more important to lay down certain international rules to limit reciprocal disturbances as much as possible. The German Government, is therefore, of opinion that systematic opposition to the monopolising of wireless telegraphy, the demand that the different systems should be admitted to co-operation, and at the same time the formulation of rules to prevent, as far as possible, reciprocal interference, are the only means to avoid a contest of each against all.

The question by what technical and administrative measures this object can be attained should, in my view, be reserved for the special discussion upon paras. 1, 2 and 3 of Art. I. of the Propositions. The question as to the extent to which the States are to exact compliance with the rules agreed upon, by refusing, if necessary, authorisation for the establishment of coast stations, will be discussed under Art. II.

The general discussion was continued by Mr. LAMB, who expressed himself as follows: The Government of Great Britain has thought it its duty to accept the courteous invitation of the German Government to take part in this preliminary Conference on Wireless Telegraphy, and it will give its most attentive consideration to the results of the deliberations of the Conference.

It does not, however, find itself in a position to submit definitive propositions, and considers that it would even be difficult for it to express definite opinions upon the questions which the German Government has been good enough to formulate. It desires to state at the outset that the invention has not attained complete development, and that its possibilities and limitations are not known.

Great Britain finds itself, on the other hand, in an exceptional position as regards the powers of the State. The exclusive privilege of the Postmaster-General is not applicable to communications exchanged by wireless telegraphy with foreign countries nor with ships beyond the limits of the territorial waters. It would consequently be necessary for the British Government, before imposing international control, to ask Parliament for legislative powers, and it would be

difficult to get such a law passed if the control contemplated were such as to prejudice those who had established a working service under the facilities which the present law grants them.

Under these conditions the British delegation considers that it must content itself generally with playing the modest part of giving the greatest attention to the views expressed by the representatives of other countries, which may be in a more favourable position to deal with the question.

M. BORDELONGUE, French Delegate, expressed himself as follows: The French Government associated itself from the first with the views expressed by the German Government as regards the necessity for regulating the practical applications of wireless telegraphy, at least so far as the present state of science permits. In the spirit in which His Excellency the Secretary of State and the Under-Secretary of State for the Postal Department of the German Empire have put the question, it would seem that there can be no room for *amour propre*. The creation and development of wireless telegraphy are, as I had the honour of saying at the London Conference, the fruits of the labours of eminent scientific men who, in various countries, have sought the solution of this problem. It is, therefore, in a work of common progress that we are called to collaborate once more to-day. Like telegraphy, like telephony, which are only different methods for the transmission of thought, and which have been organised and regulated so as to give the largest satisfaction to general interests, and to international interests, wireless telegraphy must be organised so as to meet this same desideratum. Our eminent colleague of Great Britain has informed us that his Government would give attentive consideration to the results of the deliberations of the Conference of Berlin; he has added, however, that he was obliged to preserve an attitude of reserve in consequence of the fact that British law only allows the intervention of the Post Office, as regards the transmission of electrical correspondence, within the territory of the United Kingdom.

I thank our colleague for his declaration, but I feel bound to say that the absence of legislation should not be an obstacle to well doing. Legislation is not, in fact, a thing which has no relation to facts, any more than it is immutable. It should, on the contrary, act upon new facts which arise so as to permit the maximum of useful results to be obtained in each new development. Further, is not the moment eminently propitious, at the very beginning of the still uncertain working of wireless telegraphy, to regulate all the points which can arise without injury to particular interests? The longer one waits the greater the risk of causing injury to those interests.

Moreover, to seek to guide them, from the beginning, in a direction favourable to the public interests, is not to wish to injure them. It is in this spirit that the French Government has joined the present Conference; it is in the same spirit that it supports the views expressed by the German Government, and is disposed to lend its assistance to the work which we are charged to carry out.

Herr von STIBRAL, Austrian Delegate, declared: My Government, while fully appreciating the difficulties of the subject, is quite disposed to enter into the discussion in accord with the sentiments of the French delegation and to take its part in the common task.

Lieutenant SOLARI, Italian Delegate, expressed himself in the following terms: I think that before entering on the discussion of paras. 1, 2 and 3 of Art. I., as has been proposed by the President, some consideration should be given to the tenour itself of this Article, which, in my opinion, is the principal article to be discussed, and, if the President permits, I will reserve my remarks on this subject until the next sitting.

Admiral GRILLO, Italian Delegate, made the following declaration: In my capacity of head of the delegation of the Government of Italy, I consider myself bound to declare that, while accepting the point of view of the German Government as to the necessity for regulating the new system of communication, I must make some reservation as to the acceptance of the first Article of the Propositions as it stands, for that might injure individual interests. It must be recognised, in fact, that the systems at present in operation are still in course of development; and that experience may prove that it is not desirable to allow complete latitude to any system whatsoever, but that perhaps it may be necessary to adopt a system which fulfils certain determined conditions. Now, to arrive at so important a resolution, it is necessary to study the question in detail and to allow time to each of the delegates to make clear his special point of view; I think, then, that it would be well not at present to proceed to vote upon the first Article, but to defer the discussion until to-morrow, in order that all may be able to bring their insight to bear upon it.

M. SALEWSKY, Russian Delegate, spoke as follows: On the part of the representatives of the Russian Government I have the honour to declare that, even if all the problems concerning wireless telegraphy cannot be solved by the present Conference, there are some which appear to be within our capacity; and we must endeavour to initiate this work, because the regulation of this new means of international intercourse will soon become essential. Such is the opinion of our Government, which, in principle, is in accord with the proposition of the German Government.

In view of the declaration of the Italian Delegate, the PRESIDENT proposed the adjournment of the discussion. Several representatives of the Press having requested information as to the course of the discussions, he considered it desirable to regard the deliberations as confidential pending later decision. This proposal was accepted.

[*The sitting closed at 1 p.m. Next sitting Wednesday, 5th August, at 10 a.m.*]

SYDOW, *President*.

FUIRKEN, LINDOW, PFITZNER, OBERLAENDER, *Secretaries*.

SECOND SITTING.

August 5, 1903.

The sitting was opened at 10.5 a.m. by the PRESIDENT.

All the members present at the first sitting attended.

General GREELY, United States Delegate, read the following declaration:

"Mr. President: The Delegates from the United States desire to express in general terms their opinion as to the scope and extent of international action now advisable in formulating regulations for wireless telegraphy.

"Recognising the inchoate state of the science of wireless telegraphy, it is our firm conviction that detailed regulations are impracticable, and that this Conference should confine its action to the formation of general resolutions. While embodying therein such principles as will ensure the greatest advantages to the commerce and trade of the world, care should be taken to avoid interference with the development of wireless telegraphy.

"A broad distinction exists between shore stations, which are entirely within national jurisdiction, and ship stations on the high sea, beyond the plenary exercise of such control.

"Inasmuch as the interchange of ships' signals under the international code is not obligatory, though recognised as commercially important, it seems to us inadvisable, for the present at least, to insist on the interchange of radiograms between ships on the high sea, especially in view of the impracticability of efficaciously enforcing any such regulations.

"Finally, we are of the decided opinion that shore stations transacting any paid business should be required to accept from and deliver to suitably equipped ships and stations all wireless telegrams (radiograms) offered for receipt or transmission.

"A. W. GREELY, Brigadier General, Chief Signal Officer.

"F. M. BARBER, Commandant U.S. Navy.

"JOHN I. WATERBURY."

Lieutenant SOLARI, Italian Delegate, read the following memorandum :

"Influenced by the desire impartially to protect the general interest, I feel it my duty to make some observations upon the arrangements embodied in para. 1 of Art I., proposed by the German Government. These observations relate to the consequences which would follow, in my opinion, the acceptance of this paragraph as it stands. It would give rise to several difficulties which I will try to set out briefly as follows :

"1st.—*Technical Difficulties.* The great inequality in the apparatus in vogue to-day renders perfect reception doubtful even if the same rules of syntony were observed in transmission. One knows that the sensitiveness and the arrangement of the receiving instruments differ, and that each system uses a special method of syntonisation. In some cases a coherer of metallic filings connected with the extremities of a transformer (jigger or multiplier), or even connected directly with the lower extremity of the aerial wire, does not respond to the transmitted impulses of a given system, even when the magnetic detector ensures very good working. Further, one receiver proves sensitive when it is placed between two oscillators (ventres d'oscillation) of the E.M.F., whilst another receiver does not respond under these conditions. It follows that there are cases in which one receiver is effective while another receiver is not, even when the conditions of transmission are the same and capable of producing strong effects. I do not wish to say that one cannot sometimes maintain a sufficiently good communication between apparatus of different systems, but I desire to affirm that such communications would always be variable and doubtful, and that they would not offer any guarantee for a regular service. I have no intention of saying that a given system is better than others, but desire only to lay down what has been suggested to me through the use of differently constituted instruments.

"It was not until the Italian Navy—after having taken advantage for several years of the initiative of its staff in the use of more or less modified systems—adopted a single system, Marconi's, 1901 pattern, that it found a radio-telegraph service as to the efficiency of which my superiors here can give competent testimony.

"But even admitting that in time several systems may equally afford guarantees for an assured service, we must bear in mind that, on account of the small number of independent "tunes," it may be necessary to impose the use of a single "tune," and to rely upon the ordinary interval of time between the successive movements of ships past a station to secure a certain order in radio-telegraph communication ; still, in view of the indisputable difference existing in the range of the different systems, there would always be difficulty in maintaining such an order, since the service would in most cases be engrossed by vessels provided with apparatus of the greatest range.

"2nd.—*Organic Difficulties.* The service of several systems would often cause friction in working between the ships and the coast stations, and consequently difficulties in the way of a proper control. In addition, the great nicety of this service would necessitate a uniform instruction of the staff, which would cause difficulty in view of the varying organisation of the service in different countries.

"3rd.—*Commercial Difficulties.* Having regard to the enormous expenses which have been incurred in the development of the different systems it would be impossible to guarantee to each an equal proportion of the commercial service. It would be necessary to respect contracts which have already been made between Governments and Wireless Telegraph Companies, and to take account of the legitimate rights of the companies which now possess the greatest number of expensive and practised stations, and which would be obliged to place them at the service of owners of inexpensive installations on board ships.

"4th.—*Military Difficulties.* The different nations will desire to employ a system which has been proved in their respective armies. But the use of several international systems would greatly interfere with communication between ships of war and commercial coast stations on account of technical and administrative difficulties, while the adoption of a single international system, which all vessels of war would use in the same way as the international system of signals, would facilitate the radio-telegraph service.

"5th.—*Scientific Difficulties.* A general service of several systems would necessitate the observance of fixed rules which would limit the researches of inventors to the detriment of the development of the new science, which is not yet matured, and would impede all progress of individual genius.

"In view of these difficulties, it follows that it is not in the public interest to adopt the first proposition.

"I propose, therefore, the temporary adoption of a single system, that is to say, of that which at present proves itself to be the best as regards range of communication, as regards the development of the international service, and as regards efficient organisation. I speak of temporary adoption, since one can wait for progress in the development of the systems, and because it is necessary to leave the way open to competition in the future.

"As regards the choice of this system, I desire to declare that I have not an incontrovertible preference for a given system.

"I have followed, it is true, the magnificent experiments of Mr. Marconi across Europe and across the Atlantic, experiments officially checked by my Administration. I have myself received more than 2,000 words with the Marconi apparatus from a distance of 4,000 kilometres, and I doubt the possibility of obtaining such satisfactory results by means of other systems. But if another system offered advantages superior to those afforded by the Marconi system, I should be very happy to request the new inventor to put his work at the disposal of my country."

After the reading of this memorandum,

M. BORDELONGUE, French Delegate, observed that the argument of Lieutenant Solari, to which each of the members of the meeting had listened with the attention it deserved, urged against such a regulation of wireless telegraphy as could at present be contemplated, that is to say, a regulation following very general lines, difficulties of various kinds—technical, organic, commercial, military and scientific. He (Lieutenant Solari) concluded in favour of the temporary adoption of a single system in order to prevent these difficulties. M. Bordelongue thought that the discussion of these various points would properly take place on the occasion of the consideration of the different articles of the programme submitted to the Conference. He, consequently, proposed the closing of the general discussion and the treatment of this programme article by article.

Commander CARDARELLI, Italian Delegate, was, generally, of M. Borde-longue's opinion so far as concerned the order of discussion. As to the tenour of Art. I., he proposed to insert between "Ships at sea" and "shall be subject" the words: "And those of the latter between themselves."

The general discussion of Art. I. was closed, and the special discussion of the questions subsidiary to Art. I. began.

Herr WACHENFELD, German Delegate, expressed as follows the views of the German Government: 'The first Article, as well as the whole project which has been communicated to you, only contemplates the exchange of correspondence between ships at sea and coast stations. But one might go further and ask if it is not necessary to regulate also the exchange of correspondence between ships, as well as that between coast stations. In inviting you to be good enough to pronounce upon these two points, I desire to explain in a few words our opinion.

The communication of ships between themselves is, in our view, of less general importance than the communication of ships with coast stations. Further, it would be very difficult to control the execution of regulations concerning the exchange of correspondence between ships. Thus it appears to us that we may refrain from regulating this exchange.

As regards the exchange of correspondence between the coast stations of different countries, we think that, in the present state of affairs, it would be premature to attempt regulation. Nevertheless, we are of opinion that, in the case of correspondence between ships as well as between coast stations, the stations which are in communication should be subjected to rules for the purpose of preventing the different radio-telegraph posts from interfering with each other. These stipulations concerning mutual disturbance will occupy us later; I leave them on one side at present.

I repeat, then, that in our opinion it is desirable to reply negatively to the two first subsidiary questions, subject to the reservation that I have made with regard to interference. In all other respects we deem it proper to limit regulation to the exchange of correspondence between ships at sea and coast stations.

Admiral GRILLO, Italian Delegate, considered that it was necessary to fix the radius within which traffic could be admitted and also to allow freedom to vessels on the high seas by limiting the regulations to the radius of the coast stations, and to cases in which ships find themselves within a certain distance of the coast; he deemed it necessary to lay down rules to prevent interference. He repeated the declaration that Italy did not refuse to take part in the discussion of the other Articles.

M. BORDELONGUE was of opinion that it was desirable neither to restrict nor extend the programme which was to serve as the basis for the work of the Conference, a programme which had received in its general aspects the approval of the Governments represented. This programme foreshadowed the regulation of the service of the coast stations with ships at sea. He did not go beyond that, and the French delegation could not later on consent to exceed the instructions which it had received. Moreover, one could not, without voluntarily deceiving himself, dream of laying down rules regarding correspondence between the coast stations of different countries at the present time. This would be pretending that interchange by the new system had become possible at great distances; it would be giving a kind of moral approval to the appeal which might be made to capitalists to assist in the creation of enterprises of this kind; it would be giving the public the idea, at present false, that wireless telegraphy could be practically and commercially substituted for transmission by submarine cables. He therefore, expressed the opinion that there was no need to regulate the service of public communication between coast stations of different countries. Such regulation would, moreover, raise exceedingly complex questions, which they were not in a position to discuss at present, notably that of the division of

the territorial atmosphere properly so-called and of the fixing of the zone of the territorial atmosphere, analogous, not as a limit, but only as a matter of ownership to the zone of the territorial waters. For these same reasons it was not possible, for the moment, to fix rules for correspondence of ships between themselves beyond the territorial waters.

He was of opinion that, once regulations were made for the transmission of telegrams between coast stations and ships at sea, the staff of vessels provided with wireless telegraph apparatus would be interested and might be led to observe them in regard to their own communications, especially when they found themselves within the field of propagation of the waves of a coast station, and when they knew that failure to observe these rules might be injurious to the general service.

The PRESIDENT shared this view, because it would be very difficult to enforce the regulation of the service of ships between themselves.

Herr VON STIBRAL, Austrian Delegate, was of opinion that the question was solely one of regulating communication between coast stations and ships, and of communication of ships between themselves, or of stations between themselves, only so far as interference was concerned.

Spain, Hungary, Russia and Great Britain associated themselves with the opinion of the French delegation, but Mr. LAMB, British Delegate, observed that the preventing of interference was a technical question as to which it was not known if science were sufficiently advanced. The British Government had not the power of regulating the exchange of signals to or from points beyond the frontiers of the Kingdom.

The PRESIDENT gave expression to the opinion of the Conference that it was necessary to regulate the service between coast stations and ships at sea, and that it seemed desirable and useful similarly to regulate the service of ships between themselves, and of coast stations with one another, so far only as the avoidance of mutual disturbances was concerned. This point being settled, the President submitted para. 1 of Art. I. for discussion.

Commander CARDARELLI, with the object of facilitating agreement as to the wording of Art. I., proposed to add the following phrase at the end of the said Article :—

“Provided that all these systems give a satisfactory guarantee for good mutual working as to range, perfection of organisation and certainty of communication.”

M. BORDELONGUE asked: What constitutes good working? Who is to decide as to the efficiency of the systems?

Commander CARDARELLI: Such apparatus as ensures correspondence, for example, up to a distance of 300 to 400 kilometres. The efficiency of the systems would have to be decided by an international commission.

M. BORDELONGUE thought that the establishment of an international commission would be an unnecessary complication. In a question of this kind, at the very commencement of the applications of wireless telegraphy, and when improvements were being made in every country, the power of Governments could not be limited. It might, moreover, be assumed that each of them would be sufficiently alive to its duties, as the authority entrusted with the organisation of public correspondence, to adapt its technical means to international requirements. It was only necessary in this matter to proceed as had been done in regard to telegraphy by means of wires. It was the best equipments which, by their technical value, commended themselves to the free choice of the Administrations.

Lieutenant SOLARI considered it impossible to accept the proposition of France from the technical point of view, because, for the good working of a general radio-telegraph service, it was necessary to assure above all efficient reciprocal working of the systems.

M. BORDELONGUE observed that the apparatus of the different systems worked well together.

Herr VON STIBRAL was convinced that it would be to the interest of every country to select a system which would suffice for it and would permit it to enter into communication with the stations of any other system whatever.

A discussion upon para. 2 of Art. II. led to an exchange of opinions between MM. CALVO Y JUANA, BOULANGER, STRECKER and SELLNER as to the existence of an instrument for measuring the length of electric waves. Dr. Strecker was ready to give detailed descriptions to those of the Delegates who were interested in the matter.

General GREELY was of opinion that it was necessary to leave the way open for free competition in the development of the systems.

Mr. LAMB spoke as follows: We have said that it would be difficult for the British Government to obtain by legislation the right to exercise a control which might be prejudicial to those who had already established installations. It has been stated that legislation would, perhaps, be necessary in all countries, and that this question ought not to exercise any influence upon the ulterior decisions of the Governments. But we think it our duty to explain, in regard to Great Britain, that it is not only a question of obtaining additional powers. Other countries are, for the most part, in a position to refuse any concession for the working of wireless telegraphy, or not to grant such concessions except on condition that the concessionaires submit to such regulations as the State may afterwards adopt. But in our country the companies can establish installations without the necessity of submitting to any condition. Consequently, it would be necessary for us to consider very seriously every obligation which might restrain the working of a company already in possession of a number of installations.*

As we have already explained, we can only speak under all reserve. But we consider it right to raise again the question whether it would not be reasonable, in case of the acceptance of the obligation to receive or forward radio-telegrams without regard to the system employed, to consider the commercial position of the companies which might have contributed to the development of the invention. Up till now the field remains open in Great Britain and in certain other parts of the world for the working out of the system which best meets the needs of the new service offered to the public by wireless telegraphy. The honourable Delegate of France has observed that it would be desirable in this matter to leave the way open for free competition, but that is precisely what has occurred hitherto with us. There has been perfect liberty to organise a service, free from all restriction on the part of the Government, according to the methods of commercial competition, and it is now proposed to restrain this liberty by imposing on the enterprises the obligation of exchanging communications with competing installations which may not perhaps have attained the same level of development.

If it were only a question of the organisation of a service by the various States, it would perhaps be natural that each State should admit, as far as possible, the systems adopted by the others. But the commercial companies who may already have organised a service with several installations at great expense, might well hesitate to place their installations at the service of every

* An Act passed in the Session of Parliament 1904, entitled "The Wireless Telegraph Act," confers on H.B.M. Postmaster-General powers of control within the United Kingdom in regard to Wireless Telegraphy.—G.R.N.

competitor without compensation. It seems to us that one might reasonably insist that every station, so far as possible from the technical point of view, should exchange communications with ships in distress or with the war vessels of all nations, without regard to the system employed ; but, so far as concerns the ordinary service with commercial vessels, it appears to us equitable that if an obligation be imposed it should only be done on condition of protecting the legitimate interests of the company in question by means of a special compensation, for example by a higher tax for every communication exchanged with a ship provided with an installation of a different system.

General GREELY asked if wireless telegraphy was not subject in England to the law of "common carrier," as were cable companies.

Mr. LAMB replied that in England the monopoly of the English Government ceased beyond the territorial limits. It was only possible to impose conditions on the cable companies which obliged them to accept the messages from everybody because the companies were compelled to ask permission to land their cables.

Lieutenant SOLARI had seen with his own eyes what liberty was accorded in England to every radiograph system. But while the English Government had considered the case of restricting this liberty in return for compensation, Lieutenant Solari thought it difficult at present to establish this compensation, and considered it more advantageous to adopt temporarily (for the international service) the system which had offered, up to the present, the best guarantee for good working, and to leave the way open for free competition between other systems for the interior service of each State.

M. BORDELONGUE thought it right to ask that the extent of the very important declaration made in the name of the British delegation should be precisely stated. Mr. Lamb, replying to a question put at the first sitting, had just explained that, even if his Government should seek to revise the law concerning public correspondence beyond the United Kingdom, it would be bound to consider the situation already created, and particularly every obligation which might restrain the working of a company already in possession of a certain number of installations. The point of view indicated had already been raised in England at the instance of the cable companies, which, in respect of freedom of working, find themselves in the same position as wireless telegraph companies. These companies have, however, been induced to observe the regulations of the Telegraph Union. It is even well known that, as regards those which have not explicitly adhered to the Telegraph Union, the Post Office only awaits the expiration of the existing concessions in order to impose upon them the obligation of this adhesion. There could be nothing but congratulation on this regard for international interests. Mr. Lamb had added that conditions were imposed upon the cable companies which compelled them to accept messages from everybody.

How, then, could this state of things be reconciled with the terms of the declaration of the British delegation ? What, in fact, would justify the application to wireless telegraph companies of a more favourable treatment than that granted to cable companies, seeing that we may say that the working of the former is at present so embryonic that in reality it does not exist as a public service. We ask but one thing : that the Marconi Company, if it is to this one Company that Mr. Lamb has made reference, should be obliged, like the cable companies, to receive messages from everybody. Moreover, if this question be raised it is solely because that Company has indicated its intention to refuse telegrams not transmitted by means of its own apparatus. It strikes us, at once, that it is a bad commercial doctrine to limit, of set purpose, its own profits of working. But it appears to us also that for the Post Office to admit such a doctrine would be to injure the interests of its own public and the general, *i.e.*, international interests. It might be thought, in this case, that the Marconi

Company was afraid of a competition of apparatus, and that it sought, not to protect a system of working hardly yet constituted, but to impose the use of a single kind of apparatus.

As regards ourselves, we are persuaded that it is not the function of States to foster, by international measures, technical monopolies. The sale of instruments, which is one of the natural sources of profit and the most normal field for the operations of wireless telegraph companies, must remain closed to us. The perfecting of the systems is, moreover, dependent upon free competition. We have only to concern ourselves with regulating the conditions of working of a public service to the best advantage of that general interest which the Governments have to safeguard.

Mr. LAMB once more urged the necessity of regulating the remuneration of the companies.

The PRESIDENT could not recognise an obligation upon the Governments to indemnify companies which had not been authorised by the State. "None of the Governments represented here wish to act prejudicially to the existing companies, but it is necessary to insist, so far as concerns international traffic, that all radiograph stations should accept every message entrusted to them. An international regulation will not cause any injury, but, on the contrary, will confer very material advantages on the existing companies, including the Marconi Company. If we do not arrive at any common understanding, no State will be bound to prevent the creation of powerful stations calculated to embarrass the service of all stations of less power within the enormous sphere of their action. It goes without saying that we have also considered commercial interests, and that we desire to grant to existing systems a fair share of the charge to be collected for radio-telegrams. However, it will be better to discuss this question, as well as that of indemnification, under Art. II. We have now to decide if it is desirable to lay down rules for the exchange of telegrams between stations belonging to different systems.

Mr. LAMB explained that it would be difficult for the British delegation to adhere to Art. I., without at the same time protecting the interests of the companies.

The PRESIDENT asked if the British Government wished to admit only some systems or all the systems, and M. BORDELONGUE again asked whether it were a question of protecting the makers of apparatus or only the companies which worked systems.

Mr. LAMB replied that it was only a question of working.

After a remark from M. BORDELONGUE that it was only necessary to have regard, in the discussion of para. 1 of Art. I., to apparatus and to technical matters, Mr. LAMB replied that the existing conditions in England gave full liberty of action to the companies to instal stations and to impose their own conditions.

M. BORDELONGUE, in accord with the PRESIDENT, proposed to replace the words "without regard to the system employed" in para. 1, by the words: "whatever be the systems employed."

Admiral GRILLO: The Italian delegation is not in a position to adhere to this proposition, which would give to companies whose apparatus is not perfected advantages to the detriment of the companies which have made greater progress. This is why the Italian Government would accept only systems selected and admitted by international commission, and why it still presses for the insertion of the addition proposed by the Italian delegation.

Dr. FELISHE, German Delegate, suggested the substitution for the words "satisfactory guarantee" in the Italian proposition of the following words: "a guarantee recognised as satisfactory by the contracting parties."

M. BORDELONGUE returned to the observations of Admiral Grillo. He insisted again upon the fact that the States would have the greatest interest in choosing the best apparatus. But, at the present moment, it would be very imprudent to affirm the superiority of one system. Certain results obtained as mere experiments might depend much more upon the skill of the operators than upon the absolute value of the apparatus. To establish a comparison, a standard apparatus was necessary, and no one certainly would take the responsibility of saying that it existed, and still less of selecting it.

Mr. Marconi was an eminent scientific man, to whom wireless telegraphy already owed much and would, he hoped, owe more. But others as well as he had made large contributions and obtained remarkable practical results. M. Borde-longue could mention many names. He only cited one because the bearer of it was present, and this acknowledgement was due to him, that of Prof. Popoff.

Admiral GRILLO insisted that the Marconi apparatus best fulfilled the requirements of international communication and was the only one which had succeeded in working across the Atlantic.

Herr HOLLOS, Hungarian Delegate, declared that the Hungarian Govern-ment was in favour of free competition between the different systems.

Captain SALEWSKY, Russian Delegate, adhered to the French amendment; he added that all the systems had been proved in ordinary practical working, and that, while appreciating the results of Marconi's experiments, he only recognised their scientific merit so far as transmission to enormous distances was concerned.

Commander CARDARELLI had no objection to free competition; nevertheless, he deemed it desirable to employ apparatus of the same system at each end, and, of course, that of a system recognised to be the best.

The PRESIDENT stated that most of the Governments there represented were convinced of the utility of free competition, with the exception of Italy, which had made the reservations already mentioned on several occasions, and of Great Britain, which saw great difficulties in the existing state of its laws. He then submitted for discussion the subsidiary question set out in para. 1A of Art. I.

M. BORDELONGUE proposed to accept out of hand all the subsidiary questions, subject to ulterior discussion of details, and to replace the present terms of question B by the following wording:—" (B) To forward immediately the telegram received to the local telegraph system."

The PRESIDENT asked that the subsidiary questions B and C should be taken in the discussion of para. 2.

Dr. STRECKER, German Delegate, made the following statement: The two subsidiary questions B and C must be treated together. Under B the question is one of syntony in general, whether electrical or mechanical. The methods of electrical syntonisation are well known. By "mechanical syntony" we understand a system which employs, for example, synchronising apparatus similar to the Hughes instrument or Kamm's zerograph, or even a system like that proposed by Mr. Anders Bull. In these mechanical syntononic systems it was not sufficient that the two stations wishing to communicate should have the same wave-length; it was necessary, in addition, to fix a certain periodicity; for example, the time occupied by a revolution of the Hughes instrument. Would it be desirable to prohibit the use of such a system?—of an electrical or mechanical syntononic system?

I think not. Because that would be to retard most important progress in radio-telegraphy. We hope that one day we shall have a perfect system of syntony, permitting several stations to communicate at the same time without confusion. Then this would be the ideal system. But if one admitted syntononic systems, there was a risk that, on the other hand, an inventor might discover the means of obtaining a monopoly. It was necessary, therefore, that the precise methods of securing syntonisation should be published. In that case every vessel could communicate with a coast station provided with such a system. We shall have occasion to speak of this publication under the next paragraph, para. 2.

The opposite of the delicate syntonisation referred to in question B was the adaptation of the installation to any system, question C. They would see by the words "as far as possible," that regard had been had to the difficulty of such an adaptation. But, nevertheless, it was necessary that each coast station should be able to be called by a vessel which was provided with any radio-telegraph system.

In conclusion, systems with delicate syntonisation would be admitted on condition that all the factors of the syntonisation were published, and coast stations would be required to be installed in such a way that each ship, knowing the factors of the syntonisation, could communicate with any coast station to which it approached sufficiently near.

The PRESIDENT, recapitulating, said that Germany replied to question B in the affirmative, subject, however, to the publication of the technical conditions under which it would be possible to establish communication with the stations concerned.

After an exchange of views as to the meaning of the expression "delicate" with reference to syntonisation, Lieutenant SOLARI remarked that the method of syntonisation was often patented, and that the publication demanded might prejudice the interests of inventors.

Commander CARDARELLI was able to state, on the subject of syntonisation, that he had seen very successful experiments in multiple wireless telegraphy between the Marconi stations at Poldhu and the Lizard. At the Lizard station two messages had been received simultaneously upon the same aerial wire from the Poldhu station.

By way of introduction to the discussion on para. 2, Dr STRECKER made the following statement: In connection with the last paragraph I have already shown that it is necessary to know on board each vessel the factors of syntonisation of the coast stations. In the first place the duty of publishing the wave-length employed would be imposed on the stations. But would each station be at liberty to select any wave-length it pleased? For example, one station would choose 200 m., the next 280 m., the next 240 m., &c. Perhaps it would be more desirable to fix lengths which form a series such as 100, 200, 300, 400, or 150, 250, 350, 450, &c., in order that each station should choose one. This method would make syntonisation easier and would simplify the outfit of ships. In place of imposing this series they might limit themselves to recommending it as a standard.

In connection with the preceding paragraph we have seen that stations with mechanical syntony would be obliged to publish, in addition to the wave-length, the other factors of their syntonisation. Would these indications suffice?

One might, in addition, demand publication of technical details concerning the installation of all the stations, subsidiary question B. But that would be too much. This question is only put to be answered negatively, in order to lead to the next subsidiary question C, which must be answered affirmatively, because the peculiarities of a system, such as the wave-length and other factors of syntonisation, cannot be expressed in figures alone.

(D) When a vessel approaches a coast station it will be desirable for it to know at what distance it will succeed in calling the station. With this object the predetermined range of the station must be known, for example, in the case of a vessel with masts 30 m. high. This figure, indicating the range, would be somewhat arbitrary, it is true; but experience will soon regulate usage. The range of a coast station would then be marked on charts as is the radius of a lighthouse. In place of this arbitrary figure, publication of the dimensions of the antenna and its adjuncts might be insisted on. From this the range might be estimated or calculated, but that would be too complicated.

In conclusion, the information to be published with regard to each coast station would be: The wave-length, the other factors of syntonisation (if any), the system on which the station is installed, and its maximum range. The wave-length would be selected from amongst the lengths recommended as standards.

Major CALVO Y JUANA, Spanish Delegate, believed that the maximum range of transmission was related to the wave-length. He was, therefore, of opinion that it was necessary to publish not only the wave-lengths but also their range.

Colonel BOULANGER, French Delegate, emphasised the fact that syntonisation depended not only upon the wave-lengths, but also on other factors: for instance, the sensitiveness of the receiver. It was, therefore, necessary to ascertain the data of each station and to make careful investigations with a view to finding a standard receiver. The question might be reserved for later discussion.

On behalf of the Austro-Hungarian Navy, Captain SELLNER made the following proposal:

"Each of the contracting countries shall publish every year a list of the radiographic stations established upon its territory, furnishing all the necessary details as to such stations, and especially the wave-lengths used by these stations for correspondence with ships at sea.

"Subject to the approval of the Governments concerned, special agreements may be made as to the use of special wave-lengths, which need not, in that case, be published."

M. BORDELONGUE proposed another wording for para. 2, as follows:

"The contracting States must publish all technical information of a nature to facilitate and accelerate communication between these coast stations and ships at sea.

"Provided, however, each of the contracting Governments may, on such conditions as it shall deem suitable, authorise the stations situated upon its territory to use several installations or different arrangements."

Commander CARDARELLI regretted his inability to adhere to either of the wordings proposed. The wave-length was an essential factor in radio-telegraphy and had a very great bearing on the practical result of the system. It was well known that a greater wave-length acts advantageously upon the transmission in regard to overcoming certain obstacles. Multiple radio-telegraphy was essentially based upon the possibility of utilising different wave-lengths. The wave-length had also a marked influence upon the loss of energy, as Hertz had shown. It was not possible, therefore, to fix in advance a wave-length of which the choice might be an element in the improvement of a system.

An exchange of opinion took place upon the question of adopting standard wave-lengths and of publishing them. In view of the importance of this subject, the PRESIDENT proposed to adjourn the discussion until the next sitting, which would take place on August 7th.

[*The sitting was closed at 1.10 p.m.*]

SYDOW, *President.*

FUHRKEN, LINDOW, PFITZNER, OBERLAENDER, *Secretaries.*

THIRD SITTING.

August 7, 1903.

The sitting was opened at 10.10 a.m. by the PRESIDENT.

All the members present at the first sitting attended.

The PRESIDENT informed the Conference that he had received various printed communications with reference to wireless telegraphy. He read a letter from the municipal council of Ninove (Belgium) relative to priority of invention of wireless telegraphy claimed by M. Bobone.

The minutes of the first sitting were approved by the meeting, subject to corrections desired by various delegates.

The following amendments had been distributed by the Bureau :—

1st. Proposition of the French delegation for another rendering of para. 1, Art. I., of the German project :—

“ Wireless telegraph coast stations open for private telegraph service with ships at sea are bound to receive or transmit telegrams emanating from or destined for such ships without distinction as to the systems of wireless telegraphy employed by the latter.”

2nd. Proposal of the Austro-Hungarian Navy for a different wording of para. 2, Art. I., of the German project :—

“ Each of the contracting countries shall publish every year a list of the radiographic stations established upon its territory, furnishing all the necessary details as to such stations, and especially the wave-lengths used by these stations for correspondence with ships at sea.

“ Subject to the approval of the Governments concerned, special agreements may be made as to the use of special wave-lengths, which need not in that case be published.”

3rd. Proposition of the French delegation for a different wording of para. 2, Art. I., of the German project :—

“ The contracting States must publish all technical information of a nature to facilitate and accelerate communication between these coast stations and ships at sea.

“ Provided, however, that each of the contracting Governments may, under such conditions as it shall deem suitable, authorise the stations situated upon its territory to use several installations or different arrangements.”

The propositions of the French delegates (see “ 1st,” above), had already been accepted at the second sitting.

Captain SELLNER, Delegate of the Austro-Hungarian Navy, withdrew the proposition of the Austro-Hungarian Navy in favour of that of the French delegates given under “ 3rd.”

Admiral GRILLO, Italian Delegate, stated that the Italian delegation was not able to accept the French proposition, because the Italian Government, by its agreement with Mr. Marconi, was bound to preserve the secrecy of the details of the installations of this inventor.

In reply to the question of the PRESIDENT as to whether there was not a clause in that contract which reserved to the Italian Government the right of modifying this arrangement in case of an international understanding, Lieutenant SOLARI, Italian Delegate, replied that this reservation only related to the exchange of messages with other systems, and that it did not affect the clause concerning secrecy as to the installations. In reply to another question from the PRESIDENT, as to when this arrangement had been concluded, Lieutenant SOLARI replied that the date of signature of the agreement was February 16th, 1903, but that the date of the first arrangement which ensured secrecy as to details was that of a letter of February 8th, 1901.

Mr. GAVEY, British Delegate, made the following declaration: Up to the present we have been considering systems called syntonie, but it seems to us that it is also necessary to take account of non-syntonised systems which, I think, are at present used in most of the coast stations. Radio-telegraph systems are divided into three categories, viz.:—

- (a) Non-syntonised systems, in which, for each spark of the induction coil, a single wave, effective for a distance determined by the height of the antenna, is emitted. The signals produced by these waves can be received at distances which vary according as to whether the receivers are syntonised or not, and by means of antennæ of variable length.
- (b) Partially syntonised systems, in which each spark produces a set of waves whose length is determined by the details of the installation. To receive the signals at the maximum distance it is necessary to employ a receiver as perfectly syntonised as possible with the transmitter. But, in addition, it is possible to receive signals at variable distances by non-syntonised receivers, or even by partially syntonised receivers, without this syntonisation corresponding to that of the transmitting station.
- (c) Systems with an absolute or delicate syntonisation, which, up to the present moment, have not been thoroughly tested. It would, therefore, be desirable, as regards non-syntonised coast stations, to publish (1st) the fact that they are not syntonised, (2nd) the ordinary range.

I suggest replacing the expression "maximum range" by "ordinary range," because, in order to attain this maximum, it is necessary that the transmitting and receiving apparatus should be in perfect condition, and one could not count on such perfect apparatus on board ships which may have made a long voyage.

In regard to partially syntonised systems it would be necessary to publish (a) the wave-lengths, (b) the ordinary range, (c) the technical data necessary for syntonising the receivers. In the interests of inventors it would not be desirable to insist upon a more detailed publication.

The PRESIDENT, in associating himself with Mr. Gavey's views, proposed to replace the words "maximum range" by "ordinary range," in the subsidiary question D, para. 2, Art. I. It would be necessary to demand, in addition, the publication of such data only as may be necessary for entering into communication with the coast station (subsidiary question B).

The French delegation supported this point of view.

The PRESIDENT recapitulated the results of the discussion as follows:—

- 1st. According to the general view, it is not intended to prohibit the systems from employing a delicate or exclusive syntonisation.
- 2nd. It is not desirable to publish the technical details of coast stations: but
- 3rd. (to facilitate exchange between different systems) only the wave-lengths, the ordinary range, and the name of the system.

- 4th. As regards the question of wave-lengths, it would be desirable to recommend certain lengths from which each station should choose, while granting to the stations the right of agreement as to special lengths, and also the right to change these lengths.

The PRESIDENT stated that these propositions were already covered by the French proposition, but that Italy was not in a position to adhere to it, at least without a previous understanding with Mr. Marconi.

Admiral GRILLO, Italian Delegate, desired to express the willingness of his Government to co-operate in an international understanding, but for the moment he was not able to give a definitive adhesion for the reasons mentioned. However, he hoped that it would be possible to remove the obstacles.

The PRESIDENT stated that, apart from the reservation made by Italy, all the delegates considered that the French proposition offered a useful basis for the exchange of messages between different systems.

The Conference proceeded to the discussion of para. 3, regarding the charges to be collected.

Herr SCHRADER, German Delegate, commenced the discussion by the following statement: Free competition between the different systems, which is the principal subject of our deliberations, will only be possible if the charges for the exchange of radio-telegrams be reasonable, and if each station obtain a share proportionate to its working expenses.

If, therefore, the total charge is collected either from the sender of the telegram or from the receiver, it must be divided between the coast station and the post on board ship; and, consequently, the different stations must reciprocally account for the charges collected by each, cases in which the stations belong to the same administration or to the same company naturally being excepted. It will be for a later Conference to decide the details of these accounts, which will be adjusted without difficulty in other respects, if, as regards telegrams originating from ships, the owners are responsible for payment to the owners of the coast stations.

The division of the charges equally between the stations (as para. 3 of Art. I. provides), is only a preliminary proposition which can be amended, if another method of division is preferred.

As regards the amount of the charges to be collected, it is not the function of this Conference to fix this. However, it is important to lay down the principle that the charges be approved by the State upon whose territory the coast station is situated. This official control, which will naturally avoid all unnecessary rigour, is indispensable to prevent an enterprise, by making excessive charges, from rendering it difficult to communicate with stations which employ another system, thus obtaining a kind of monopoly for its system.

Now, the German delegation is of opinion that the charge to be made for correspondence with a coast station should always be the same, no matter whether the traffic is from the coast to the ship or *vice versa*, and without regard to the system of wireless telegraphy adopted by the ship. In accordance with the present practice, it would be desirable to provide for the collection of the charge from the sender in every case; this procedure, it is true, is not in accord with the International Telegraph Service Regulations, which prescribe, in the case of telegrams exchanged with ships at sea by means of semaphores, that the charges for telegrams addressed to ships should be collected from the sender, and for telegrams originating from ships from the addressee. But I consider, seeing that radiographic exchange flows in most cases from the ship to the shore, that the interests of the senders on board ship would preponderate, and that consequently, refusal of receipt and of payment of the charges would be avoided, as far as possible, if it were always the sender who had to pay the charge.

As regards charges I may therefore recapitulate the view of the German delegation in the following terms :—

- 1st. The charges shall be reasonable, and shall be divided between the coast stations and the posts on board ship in such a way as to assure to each station a share proportionate to its working expenses.
- 2nd. The charge applicable to all correspondence exchanged between a coast station and ships at sea shall always be the same, whatever be the system of wireless telegraphy adopted by the ship, and whether the message originate from the shore or from the ship.
- 3rd. The tariff of the coast station shall be the standard for the charges to be applied to the exchange of messages between these stations and ships.
- 4th. The charge shall always be collected from the sender.

M. BORDELONGUE, French Delegate, said that, in the view of his Government, the leading ideas which ought to inspire the Conference in the examination of the different questions are the following :—1st. As regards the apparatus, it is desirable to admit free competition by carefully avoiding every step which might lead to the constitution of any monopoly whatever, because only free competition in the applications of a science which is still quite in its infancy can foster progress and the initiative of inventors. 2nd. As regards the tariffs, it is necessary to establish the essential bases of a system in such a way as to guarantee the public of every country against excessive demands from the various enterprises.

A precedent can be found for the establishment of the basis of the tariffs in the rules which govern the arrangements for the transmission of semaphoric telegrams—a service which offers a close analogy to the applications of the new system, since both contemplate the exchange of correspondence between the coast and ships at sea. The only difference to be considered is the much greater range of transmission by wireless telegraphy, and consequently, the much greater value also of the service rendered.

At the present time the semaphoric charge includes two elements: The charge for the maritime section, which is constant and uniformly fixed by the international system at one franc; and the charge for the sections of the general telegraphic system, which is fixed according to the regulations established by the Telegraph Union.

The charge for the maritime section, which had been made uniform with the object of simplification, while possible owing to the relatively small number of semaphoric telegrams, would not answer to the special conditions of the exchange of messages by means of wireless telegraphy.

The French delegation was of opinion that the word rate ought to be the basis of the organisation of tariffs applicable to correspondence transmitted by the new system. It considered also that the total charge should be divided into two parts: 1st, the charge accruing to the coast station, 2nd, the charge accruing to the ship, which should be fixed by the Government whose flag such ship flies.

The French delegation is, in short, of opinion that a maximum should be fixed in order that, upon passenger ships especially, an arbitrary rate should not be enforced by those who carry out the working. The French delegation did not, of course, contemplate the determination now of the partition of this maximum. Too many elements come into play, which ought to be made a subject of thorough study. That would be the work of a later Conference. But the principal of the maximum should be considered forthwith.

The PRESIDENT considered that the proposition of a maximum was an improvement on the German propositions. As to the composition of the charges, Germany would not fail to take account of the views of the majority.

M. BILIBINE, Russian Delegate, adhered to the French proposition.

Major CALVO Y JUANO, Spanish Delegate, also gave general support to this proposition; but he was of opinion that it was advisable to proportion the charge for each station according to its average range.

M. BORDELONGUE remarked that the proposition of the French delegation agreed perfectly with the very just remark of the Spanish Delegate. The fixing of the rate per word and of a maximum would not prevent enquiry, at the right time, as to whether it was not necessary to graduate the charge and make it proportionate to distance.

Herr von STIBRAL, Austrian Delegate, also supported the French proposition; but pointed out the difficulties which would attach to accounts between countries which, at the present time, are not in immediate relation.

Admiral GRILLO expressed the opinion that, in most cases, the value of radiograph communication was greatest to the ship, and that it was advisable consequently to debit the ship with the greater part of the rate. He submitted to the appreciation of the meeting the idea as to whether it would not be expedient to provide that the charge for telegrams sent from ships should be collected on board by the representative of the company owning the apparatus, and that for telegrams transmitted from coast stations by the Government or company to whom the station belonged, the amount of the charge being fixed, however, in such a way that the land station should be in some measure compensated for the smallness of the receipts which would accrue to it for the small number of telegrams which it had to send, whereas its work in receiving was much heavier. However that might be, it was a matter which might usefully be left for agreement later.

M. SINS, French Delegate, considered that the proportion of charge accruing to coast stations might be lower than that for ships, coast stations being generally worked by the State, which, in view of general interests, might make sacrifices to which the companies working installations on board ship might have some difficulty in agreeing.

As to the collection of the charge and its division between working enterprises and the Administrations interested, he thought that the charge should be, in every case, collected from the sender, it being understood that the enterprises on board ships would enter into account with the Administrations of the States under whose flag the ship sailed, the latter undertaking the division of the charge with the other Offices which had taken part in the transmission, according to the method at present in use for telegrams passing over the international land telegraph system.

Mr. LAMB, British Delegate, expressed the following view on this point: We agree that the question of the division of the total charge should remain open, but at present we incline to the opinion that the proper proportion accruing to the coast station should be even higher than that accruing to the ship. As to the observations of the French Delegate, he proposes, if I am not mistaken, to leave to the Government of the country in which the coast station is situated the right to fix the total charge. In this case it would not be fair to leave to the Government of the country to which the ship in question belongs the right to fix, of its own motion, the charge, or the proportion of such charge applicable to communication with the coast, without the assent of the other Government.

M. BORDELONGUE urged the necessity for fixing a maximum in order to protect the interests of the public who, on board ship, might require to make use of the new method of correspondence. The regular application of this principle could only be assured by the Government under whose flag the ship sailed.

Replying to an observation of the Italian Delegate, M. BORDELONGUE again observed that there was no question, at the present moment, of deciding the partition of this maximum. Some considered that the proportion for the ship should be higher than that for the coast station; others might think the contrary.

An installation on board ship would certainly cost less than that of a coast station. It would form part of the general cost of the construction of the vessel as an improvement of its outfit. The ship would, by the employment of wireless telegraphy for its own benefit, very soon recoup the cost of installation.

The coast station, on the other hand, would have a larger telegraphic exchange than the isolated vessel, which might justify a lower charge. However that might be, the question of division of the charges was not ripe for settlement and might be adjourned.

Commander CARDARELLI, Italian Delegate, supported the view expressed by his British colleague, according to which it was advisable to allow the larger portion of the charge to the stations. In addition he was, with Germany, of opinion that it was expedient to collect the charges from the sender.

The PRESIDENT recapitulated the position of the discussion: I find that there is a general assent as to the following points:—

- 1st. The charge should be reasonable;
- 2nd. It is necessary to fix a maximum;
- 3rd. The charge should be composed of two parts: one portion accruing to the coast station and the other to the ship;
- 4th. The charge should be payable by the sender;
- 5th. The question of accounts to be reserved for a later Conference.

M. BORDELONGUE asked that the wording of the text of para. 3 be deferred until the next sitting. The French delegation proposed, in fact, to submit a proposition.

The PRESIDENT concurred, and postponed the discussion until the next sitting. Passing to the question of indemnification, he invited the Delegates of Great Britain and Italy to state their views on this subject.

Admiral GRILLO considered it indispensable to grant indemnification to the companies which at present have stations in operation; but, in view of the importance of the matter, he requested the postponement of the discussion to a later sitting. However, in reply to the invitation of the President, he indicated the principal reasons in favour of indemnification. These reasons were first of a technical nature, seeing that it was advisable to protect apparatus of greater efficiency against those of less efficiency. On the other hand, the agreements entered into with Mr. Marconi imposed upon the Italian Government the duty of avoiding all prejudice to the interests of the inventor.

Mr. LAMB disclaimed on behalf of his own country any obligation as regards an indemnification, properly so called. He raised the question, however, whether it would not be preferable to grant to the companies which have established stations the right of claiming a surtax upon every telegram exchanged with a ship provided with apparatus on a different system.

Herr WACHENFELD, German Delegate, criticised the points of view relative to indemnification: In order that one may be in a better position to decide the question of indemnification, it is necessary that those who speak in favour of indemnification should be explicit upon three points: (1st) What are the damages in respect of which it is necessary to pay an indemnity? (2nd) Who should pay the indemnity? (3rd) How should this indemnity be effected?

If a State thinks proper to grant an indemnity to the existing stations upon its territory because they are bound to communicate henceforth with ships provided with apparatus of another system, that is a matter which only concerns itself. As regards Germany, from the point of view of legal right the existing stations have no claim to damages, nor from the equitable standpoint do we see any stronger reason to grant any indemnity whatever, seeing that, in our opinion, they are not to be prejudiced. On this point it appears that it was only Italy which, as a matter of legal right, found itself in a different position, being obliged, by contract with the Marconi Company, to allow its coast stations to communicate with those vessels only which are provided with the apparatus of that company. As regards States which have no engagements toward the latter, I do not see any motive binding them to grant it an indemnity; no injury is done to its rights by claiming free competition between all the systems; what it will lose is the hope of creating a monopoly. On the other hand, if it opens its stations for communication with ships which have apparatus of another system on board, it will, without doubt, benefit, because the exchange of correspondence with its stations will be increased. If the Marconi Company wished to persist in refusing to enter into communication with the apparatus of another system, the States which have no intention of submitting to these demands, tending to the monopoly of a single system, would probably be compelled to take repressive measures. Further it is to be remarked that there already are in the different countries a considerable number of coast stations which are fitted with apparatus other than that of Marconi, and which might, with equal right, lay claim to an indemnity.

Admiral GRILLO supported the view taken by Mr. Lamb, considering that his propositions would furnish the most satisfactory solution of the matter in question by establishing a surtax. The speaker thought it his duty to take the opportunity to say that the contract with the Italian Government was not entered into with the Marconi Company, but with the inventor himself. Negotiations had been taking place for several years and had advanced to such a point that when the German invitation in regard to the present Conference was received the Italian Government found itself definitely committed. It was out of respect for the invitation of the German Government that the clause reserving to the Italian Government the right of requesting modifications in certain events had been inserted in the contract.

The PRESIDENT thanked Admiral Grillo for this declaration.

Mr. LAMB did not consider it feasible for the contracting States to compensate the existing companies according to the proposition of Admiral Grillo. He recommended once more the collection of a surtax on behalf of the companies to be indemnified, and made it clear, in reply to a question, that it was necessary to compensate, not only the existing stations, but also the systems now working.

At the request of Admiral GRILLO the question was deferred until the next sitting, and the meeting was invited to proceed to the discussion of the amendment of Germany in the following terms:—

German Amendments

Relative to the "Suggestions for discussion" by the Preliminary Conference on Wireless Telegraphy:—

1st. To insert after Art. I., para. 3, the following new paragraph:—

"Para. 4. The service of radio-telegraph stations must be organised, as far as possible, in such a way as not to interfere with the service of other radio-telegraph stations."

2nd. To insert in Art. IV. after the words "the provisions of the present Convention," the words: "Except the provision of Art. 1., para. 4."

3rd. To insert after Art. IV. the following new Article :—

“ V. Land stations of which the electrical sphere of action extends to the coast shall be subject to the provisions of Art. I., para. 4 ”

4th. Art. V. consequently becomes Art. VI.

Herr SCHRADER, German Delegate, gave the following explanations with regard to the new para. 4: The new para. 4 (the amendment proposed by the German delegation) only lays down a general rule for the organisation of the service. Looking to the nature of wireless telegraphy, and to the fact that the Hertzian waves spread in all directions, and that consequently the simultaneous undisturbed working of several neighbouring stations is still a problem not fully solved, it is necessary to lay down the principle that the Administrations should undertake to adopt every precaution to limit reciprocal interference as much as possible. The details of these precautions form part of the executive regulations with which we shall have to deal under Art. III.

Mr. GAVEY asked if the present systems without syntonisation would be prohibited, and if only stations possessing syntony would be admitted.

The PRESIDENT was of opinion that there would be no need to suppress the first systems, and that it did not enter into the meaning of the new para. 4 to pronounce such an interdiction.

On this interpretation Mr. GAVEY declared, under all reserve, the adhesion of Great Britain to the new para. 4.

Lieutenant SOLARI, Italian Delegate, was of opinion that it would be hazardous to give at present the details of the stipulations which should form part of working regulations for a service which has not yet been tested by any Government on commercial lines. But it would be necessary to submit the matter to a practical examination in the various countries by special commissions which would study the questions to be formulated by this Conference.

M. BORDELONGUE agreed in principle, but asked that the discussion of the details should be deferred to the next sitting.

The PRESIDENT, supporting this request, deferred until the next sitting the discussion of the above-mentioned German amendments, and passed to the discussion of Art. II. He invited the delegates to state the position of legislation in their respective countries relative to the working of wireless telegraphy.

M. BORDELONGUE said that in France, wireless telegraphy being a monopoly of the State, the Government was in a position to impose such conditions as it thought fit.

Herr WACHENFELD said that in Germany the law constituting the telegraph monopoly applied equally to radiograph installations; however, this law made certain exceptions of small importance—for example, in favour of the transport services—and it might perhaps be necessary to abolish these exceptions in the case of radiograph installations. For this purpose a special law was in preparation.

Herr VON STIBRAL intimated that in Austria the law secured to the State the monopoly of wireless telegraphy.

Mr. WATERBURY, United States Delegate, made the following declaration: I desire to state, on behalf of the delegation from the United States, that, when the invitation extended by the German Government was received, the subject matter was carefully considered by our Government. The power

of the United States to impose conditions upon the operation of any wireless telegraph system which conveys messages to or from the United States is absolute. Such transmission has been repeatedly held by the Supreme Court of the United States to be commerce, and, therefore, within the plenary and paramount authority of the Federal Government to regulate, whether such commerce be foreign or inter-State.

Captain SALEWSKY, Russian Delegate, explained that in Russia wireless telegraphy came under the State monopoly. The Government would not permit any private company to work such a service.

Major CALVO Y JUANA said : Spanish legislation secures to the Administration of Telegraphs alone the working of telegraph lines. The Spanish Government is entirely free to impose upon all wireless telegraph companies the regulations which it considers best, and it has not made any agreement upon this subject with anyone.

Herr HOLLÓS, Hungarian Delegate, stated that in Hungary wireless telegraphy came under the State monopoly. An exception, however, existed in favour of installations not exceeding the limits of an estate. But this exception was of less importance as regards wireless telegraphy, because another stipulation prescribed generally that no installation of the kind might interfere with other telegraph services.

Mr. LAMB repeated his former declaration that radio-telegraphy is a Government monopoly, but restricted to communications which do not extend beyond the frontiers of the United Kingdom.

The PRESIDENT, after these explanations, proceeded to open the discussion upon Art. II.

M. BORDELONGUE proposed to give this article the following tenour :—

“In case the contracting States should not work any, or should only work part, of the stations on their territory, they undertake not to concede or authorise the construction or working of wireless telegraph stations by individuals or companies unless they enter into an engagement to conform in all their stations to the provisions of the present Convention and to the Regulations for which it provides.”

The German and Austrian delegations supported the modified form proposed by the French delegation.

Mr. LAMB made the objection that, according to the French proposition, Great Britain would be obliged not to admit in the United Kingdom such companies as had made contracts in the colonies which were not in harmony with the principles of an International Convention. A long discussion followed on this point. In the first place it was made clear that Great Britain could not be compelled to adhere to such a Convention both for the United Kingdom and for the self-governing colonies, but that the adhesion might be limited to part of these countries. Afterwards, the question was discussed whether in a part of the Empire adhering to the Convention systems would be permitted which were admitted in other non-adhering parts of the Empire by virtue of special arrangements not in harmony with the international stipulations.

This discussion not having concluded, the question was reserved for the next sitting, which was fixed for August 10th.

[The sitting was closed at 1 p.m.]

SYDOW, *President.*

FUHRKEN, LINDOW, PFITZNER, OBERLAENDER, *Secretaries.*

*FOURTH SITTING.**August 10, 1903.*

The sitting was opened at 10.10 a.m. by the PRESIDENT.

All the members present at the first meeting of the Conference attended.

At the request of the PRESIDENT the minutes of the second and third meetings were approved, subject to corrections to be pointed out, if necessary, by the delegates interested.

According to the PRESIDENT's recapitulation, the present sitting would be occupied with the following matters, postponed from the previous sitting :—

- 1st. Indemnification.
- 2nd. Charges to be made.
- 3rd. Interference.
- 4th. Exclusion of companies using different systems in countries which have self-governing colonies.

Lieutenant SOLARI, Italian Delegate, read the following declaration on the subject of indemnification : Before entering upon the discussion of charges and indemnities, I wish to make some remarks which appear to me to be necessary. In view of the statement made by the German Delegate at the last sitting, that no prejudice, in his opinion, would be caused to anyone by a general service without distinction as to the systems employed, I must make the following declaration, which will furnish, I hope, some elements towards the best solution of the question. In admitting the existence of a system much more developed than others, it is only right to make special arrangements for it in order to compensate it for the losses to which it would be exposed if it were put in communication with other systems.

An impartial study of the history of radio-telegraphy shows, as a matter of fact, that in 1896 Guglielmo Marconi succeeded, before all others, in transmitting telegrams by means of Hertzian oscillations. In 1898 he succeeded in solving the problem of electric sympathy for transmissions to considerable distances, for which he obtained the first patent. In 1900 he carried out the wonderful experiments in multiple radio-telegraphy between Poole and St. Catherine's. During the winter of 1901 he overcame the difficulty (declared to be insurmountable by many scientific men) presented by the curvature of the earth by means of his important experiments at a distance of 300 km. between the Lizard and St. Catherine's. In the winter of 1902 he carried out, with complete success, his first attempts at long distance transmission (3,000 km.) between Poldhu and St. John's, and between Poldhu and the steamer "Philadelphia." In the autumn of 1902 he succeeded in proving the possibility of sending radio-telegrams over the highest mountains in Europe, the Alps, by transmitting messages from Poldhu to the warship "Carlo Alberto," then in the Mediterranean. As regards these last experiments I am able to declare that, on the morning of the 9th September, I myself received, close to Cagliari, without any error, a message of forty words addressed to H.M. the King of Italy.

On the 20th December, 1902, Marconi, in presence of all the staff of the "Carlo Alberto," bridged for the first time the great distance between Canada and England by sending radio-telegrams of different lengths to the higher official personages in Europe with whom he was acquainted.

On the 28th March, 1903, he carried out his splendid syntononic experiments at Poldhu station, in presence of Prof. Fleming, proving the possibility of rendering, *by means of his instruments*, the installation on a ship in the neighbourhood entirely independent up to a distance of 10 km., while the Poldhu station was sending telegrams with the power employed for trans-Atlantic transmission.

For several years now Marconi has successively made inventions through his most able but very laborious and costly experiments, constantly rendering his system more practical and more efficient.

In addition, during these years he has himself directed, sometimes even at the risk of his life, the installation of 45 coast stations of ordinary power in different parts of the world; of three stations of great power in England, Canada and the United States; of several stations on board Italian, English, French and American war vessels; of 32 stations for the commercial vessels of the principal shipping lines of the world. I am able to state that I have personally seen his apparatus fitted upon the ships of the Norddeutscher-Lloyd, Hamburg-American, Transatlantique Française, Cunard, and American lines. He has brought the radio-telegraph service to a point of great reliability; and all this, Gentlemen, is the result of experiments which are, in my opinion, amongst the boldest which have been made in the history of the world. Other discoveries, also very useful to humanity, have been developed in physical laboratories, but these experiments of his have required the courage to choose a physical laboratory which occupies the space between the old and the new world.

It appears to me, therefore, that the same treatment should not be meted out to him who has carried out a work of genius with boldness, in defiance of dangers and sacrifices, at an expense of several million francs, as to those who have sought to profit by it while only contributing a small share to the progress of the invention.

This is the reply that I give to the Delegate of Germany who has asked what injury would be caused by a general service without distinction as to the system employed. On the subject of charges and of indemnification, the Italian delegation, while expressing its entire willingness to arrive at a general understanding, retains the opinion that, in order to place several systems in general operation, it is necessary that all these systems should provide a similar guarantee for the range and efficiency of the service.

The PRESIDENT said that the German Government was of opinion that all inventors' rights arising from patents should remain reserved to the inventors and companies working the patents. It followed that these patents would give a legitimate profit to the inventor. On the other hand, the Marconi Company had already made a large profit from the present development of wireless telegraphy, and, in addition, free competition would develop and increase the traffic between coast stations and ships in such a way as to increase also the profit of the Marconi Company by multiplying the proportion accruing to the stations.

Mr. LAMB, British Delegate, spoke in the following terms on the question of a surtax to be collected by the coast stations of the existing systems: We desire once more to make it clear that we do not recognise, in favour of any company whatever, a right of indemnification by the Government of the country in which this company has established stations; nor do we any the more admit an arrangement applicable to a single company or a single country. The German Delegate stated, at the third sitting, "that there already are in the different countries a considerable number of coast stations which are fitted with apparatus other than that of Marconi, and which might with equal right lay claim to an indemnity." We recognise that it would be just, if any company whatever had the right of collecting a surtax, that other companies which might compete with it should enjoy the same privilege. If it is wished to develop an invention

by means of free competition, it is logical to leave private enterprises free to make arrangements calculated to protect their financial interests.

As regards Administrations which may decide to work wireless telegraphy as a State service, it is not necessary, perhaps, to attach the same importance to the financial results of the working: they must consider primarily the interests of the public; but it might be desirable, even in the case of these Administrations, to accord special remuneration for communications exchanged with ships provided with apparatus of another system than that of their country. If there had not been a working company whose position it was necessary to consider, it would always have been possible to claim special remuneration for a national inventor or national manufacturers of the invention. As regards Great Britain, it is in the first place a question of working, but it is necessary also to recognise that the company which, with us, works the invention, manufactures also the apparatus, consequent upon an arrangement with the inventor.

M. BORDELONGUE, French Delegate, expressed himself as follows: Gentlemen, Lieutenant Solari, Italian Delegate, has just made a brilliant recapitulation of the researches of Mr. Marconi. I must declare, at once, that it cannot enter into the mind of anyone, and least of all into the mind of the representatives of the French Administration, which has facilitated experiments by this inventor upon its territory, to depreciate the merits of Mr. Marconi and the value of his remarkable labours.

But the question which suggests itself is quite another one: it is that of the legitimacy of an indemnification to be granted him by the States which may adhere to the new Union for the working of wireless telegraphy. I am somewhat embarrassed in dealing with this subject in view of the successive and diverse phases through which it has passed since the opening of this Conference. It may be useful, in order to make clear the present position of this proposal, to recall its origin and the rapid modifications which it has undergone in the form of its presentation. Moreover, those of our colleagues who have spoken in its favour do not formulate it very clearly, and even seem to apologise for maintaining the principle.

Mr. Lamb, who was an advocate of it, has made reservations when it came to be dealt with precisely. On page 25, Minutes of the Third Sitting, I read, in fact, that he "disclaimed on behalf of his own country any obligation as regards an indemnification properly so called." Then he has supported the method of compensation by way of special surtax. At this moment he has just confirmed anew these reservations and this conclusion. He recognises, then, that an indemnity in respect of working is not justified, and he limits himself to recommending the protection of a system of apparatus. Will he permit me to say to him that such an attitude seems to me to be contrary to the British principle of free competition and to the regard for progress which should alone inspire the decisions of the States?

Lieutenant Solari, in the memorandum which he presented at the first sitting, not only did not seek indemnification in respect of working for the Marconi Company, but he ceases to-day to ask for a definite monopoly, and limits himself to recommending the temporary adoption of the apparatus of this inventor. That formula is, in our opinion, the most evident condemnation of the decision which he counsels. What interest have we, in fact, in discouraging initiative, in arresting progress at its commencement, and, under cover of the temporary adoption of a system, in making still more difficult, in a few years' time, the solution of the question?

Admiral Grillo, moreover, as regards himself, has already made an important concession. He has completely abandoned the principle of an indemnity in respect of working, and supports the formula of the British delegation, *i.e.*, the application of a surtax. It is thus admitted, in a forcible manner, that the grant of an indemnity in respect of working is not equitable. Why, moreover, should a company be indemnified which announces, of its own

motion, that it foregoes the benefits of general correspondence by its intention to restrict the use of its station to those messages alone which are transmitted by posts provided with its apparatus? It is sought in an exclusive manner to give favourable treatment to installations already protected by patents.

Now, to what would such a doctrine lead? If the favourable treatment requested by the Italian delegation were accorded to a certain class of instruments, we should be creating, together with a property of very great value, the necessity of indemnifying other inventors whose systems would be, by this very fact, excluded.

We hope the British delegation will not adhere to the idea of instituting a surtax in favour of the use of certain apparatus. This would be, we repeat, contrary to the principles which have always animated the British Administration and to those of the Telegraph Union of which it is an adherent. Is it not to be feared, moreover, that this charge would especially press upon its people, unless, as I cannot suppose, it were applied unequally?

There is still another point which the French delegation desires to emphasise. Admiral Grillo has stated that his Government was bound by agreement to the Marconi Company, but that it had, notwithstanding, obtained the modification of certain articles after the decision to join the present Conference, out of respect for the invitation of the German Government. If this consideration of high courtesy has sufficed to induce a private company, already in possession of a contract, to agree to the alteration of certain stipulations, it is to be presumed that this same company, upon further pressure from the Italian Government, as well as out of respect for the desire of the future contracting States and general interests, which are not distinct from its own interest, will not refuse some new modifications.

One of the Italian representatives, the distinguished Lieutenant Solari, commenced, at the second sitting, an explanation of the desiderata of the Italian delegation by a phrase which I am happy to adopt as the conclusion of my observations: "The Italian Government, influenced by the desire impartially to protect the general interest" without granting privileges, &c. This attitude appears to me to be the best; it is capable of forming the basis of our work, and I believe that each of us is interested in observing it.

Admiral GRILLO, Italian Delegate, gave certain explanations as to the scope of the contract between the Italian Government and Mr. Marconi, and said: The clause containing the reservation already mentioned on several occasions does not essentially modify the contract; the tenour of the said clause is that, with a view to the position which will arise when the Conference has formulated its wishes, the Italian Government reserves the right to modify the conditions in some respects, but subject to these modifications being accepted by the inventor. It has been said that free competition is necessary to secure the development of radio-telegraphy, and that, consequently, no particular system has the right to indemnification; but it is necessary to remark that, for the exchange of international communications, it is indispensable that the different systems should have relations with one another—a circumstance which might result in their interfering with one another. Thus one cannot regard each system as independent, as in ordinary free competition between manufacturers; and that is why I consider it equitable to compensate those who, owing to their having to correspond with others, have to submit to a decrease in the efficiency of their working and in their liberty of action. It is for this reason principally that we think it would be more advantageous to the public to admit, by mutual agreement, only the most perfect system; but, in any case, if we compel the system which is recognised as being the most advanced to communicate with others, it is necessary to grant it compensation. It is true that the Marconi Company already exercises a kind of monopoly, and it is led to maintain it in order to safeguard its interests; but it is just also to recognise that it could not be compelled to submit to conditions which would reduce its liberty of working without granting it compensation. Its right of making conditions cannot, then, be contested.

The PRESIDENT asked the Italian and British delegations how this indemnity was to be paid?

Commander CARDARELLI, Italian Delegate, replied that it might be provided for either by dividing the taxes collected so as equitably to remunerate the company whose system was most developed, or by fixing a supplementary fee ("royalty") in favour of the said company.

The PRESIDENT stated that, in the view of the representatives of the British and Italian Governments, the compensation claimed would not consist in an indemnity properly so-called, payable by the Governments, but in a surcharge to be collected from the public. The question arose, in what manner this surtax should be provided for, seeing that it had been proposed to grant a higher proportion to the coast stations, a lower proportion for the stations on board ship, and to fix a maximum.

Mr. LAMB remarked that at a previous sitting he had supported the German proposition, according to which the total charge must be fixed or approved by the Government of the country in which the coast station is situated; but after reflection he had arrived at the opinion that it would be preferable to separate the two elements forming the charge, and for the Governments to fix the charge for the coast stations, leaving to vessels full liberty to fix their proportions, subject to the consent of the Government whose flag they carried. In addition, he suggested that the surtax should not exceed 50 per cent. of the normal charge.

Commander CARDARELLI associated himself with Mr. Lamb's views.

The PRESIDENT invited the delegations to pronounce upon the question whether, in principle, the Governments were disposed to grant any indemnification whatever.

Herr VON STIBRAL, Austrian Delegate, did not perceive any obligation to indemnify, seeing that there would not be any actual damage, but merely a case of "profits not realised."

Major CALVO Y JUANA, Spanish Delegate, observed that at the present time, it was true, one company claimed to possess the best system, but perhaps to-morrow another company would take the first place and would also demand indemnification. The Spanish delegation was of opinion that in no case was there need to grant any indemnity at all.

Commander BARBER, United States Delegate, declared that he saw no reasons for granting an indemnity to existing systems.

Admiral GRILLO could not accept the opinion expressed by the Austrian Delegate, tending to deny the existence of actual injury to the companies concerned. In the opinion of the speaker, the interests of these companies would be seriously fettered by the admission of companies whose system was of inferior value.

Herr HOLLÓS, Hungarian Delegate, remarked that it was not a question of a maximum, but of several maxima, and that the charges might be scheduled according to the power used by the transmitting station. As to great range, he did not consider that this was a matter of the first importance which would justify an indemnity.

Captain SALEWSKY, Russian Delegate, supported the French proposition.

The PRESIDENT stated that, according to the opinion of the majority of the delegations, it would not be desirable to hinder free competition by granting indemnities to the companies. The British and Italian Delegates were of opinion that an indemnity was indispensable, in the shape of a surtax in favour of the existing efficient systems.

He then proposed to proceed to the discussion of the question of disturbances, *i.e.*, of Art. I., para. 4, of the German amendment (p. 26, Minutes of the Third Sitting).

Mr. LAMB made the following declaration : We understand that the German proposition would only sanction the general principle that each State should, as far as possible, have regard to the position of the other States. In the propositions formulated by the German Government before the meeting of this Conference no mention is made of the question of preventing disturbances, and we do not think it possible to agree on definitive measures on this subject at the present Conference.

M. BORDELONGUE adhered to the German proposition. He was of opinion that this proposal could only foster the efficient execution of the international service by means of wireless telegraphy.

In order to satisfy, within the limits of the general interest, the British delegation, he would propose to replace the words "the service of the stations" of the new para. 4 by the words "the working of the stations."

After the adhesion of the Italian delegation to this amendment, an exchange of views took place between Herr HOLLÓS (Hungary), M. BORDELONGUE (France), and the PRESIDENT upon the signification of the terms "public stations" and "private stations."

The PRESIDENT ended this exchange of views by observing that the Regulations must apply also to land stations which might affect coast and ship stations.

Herr HOLLÓS remarked that disturbances on the part of private stations must also be avoided as much as possible.

Colonel BOULANGER, French Delegate, returning to the tenour of Art. I., spoke in favour of suppressing the expression "*land* station," to avoid misunderstanding in connection with the expression "*coast* station." He proposed to give in Art. I. an interpretation of this term by inserting the following phrase : "By 'coast' station is meant every fixed station whose field of action extends over the sea."

The PRESIDENT observed that, while awaiting the formal French proposition, they should still maintain the German proposition (3rd), in order to protect the coast stations also against disturbances originating from inland stations ; but, to meet the point of the Hungarian Delegate as to disturbances emanating from stations on board ship, he would prefer to replace the words "land stations" in the German proposition by the words "all stations."

After a remark from Admiral GRILLO, who preferred the expression "station in the interior" to "land stations," the PRESIDENT stated that all the Delegates were in accord as to the principle. In order to meet the desires expressed he proposed to word Art. I. as follows :—

"Wireless telegraph coast stations are subject to the following stipulations :

"A coast station is defined as any fixed station whose field of action extends over the sea "

Afterwards a new Art. V. would be inserted after Art. IV., with the following wording :—

“All stations whose field of electric action extends to coast stations shall be subject to the stipulations of Art. I., para. 4.”

The discussion passed on to the proposition of France (wording of para 3, Art. I.), concerning charges, drawn up as follows :—

French Proposition.

ART. I., PARA. 3.

“The contracting States declare their adoption of the following principles for fixing the tariffs applicable to telegraph traffic exchanged between ships at sea and the international telegraph system :—

“The total charge to be collected for this traffic is fixed on a word basis ; it includes, as in the case of semaphoric telegrams,

“*a.* The charge appertaining to the land transmission, the amount of which is fixed by the current International Telegraph Regulations annexed to the St. Petersburg Convention ;

“*b.* The charge accruing to the maritime section.

“The latter is, like the former, fixed according to the number of words, this number being counted according to the International Telegraph Regulations, referred to in para. *a* above. It includes :

“1st. A charge called ‘the charge for the coast station,’ which accrues to the said station ;

“2nd. A charge called ‘the ship charge,’ which accrues to the station installed upon the vessel.

“The charge for the coast station is subject to the approval of the State upon whose territory this station is established, and that for the ship to the approval of the State whose flag the ship flies.

“Neither of these two charges may exceed a maximum fixed by the Regulations provided for in Art. III.”

Captain SELLNER, Austrian Delegate, observed that it might be desirable to regulate the charges for traffic between ships.

The PRESIDENT replied that the Conference had decided at the commencement of its labours that it would be preferable to limit itself to traffic between the coasts and ships at sea. This view was shared by the French delegation.

Mr. LAMB did not see his way to accept the last phrase of the French proposition, which contemplated the fixing of a maximum charge by the Regulations provided for in Art. III.

M. BORDELONGUE replied that the indication of a maximum need not alarm the companies, and could not cause any prejudice to the interests of Great Britain. His proposition had for its sole object to guard against any inflation of the tariff.

The PRESIDENT, in order to satisfy the British delegation, proposed to add at the end of the proposition, “each of these two charges must be reasonable.”

M. BORDELONGUE insisted upon the necessity which there was, in his opinion, for fixing a maximum. It was necessary that the public should be persuaded that the first Conference which had met to regulate the use of wireless telegraphy had sought to protect its interests, as in the matter of ordinary telegraph correspondence. The division of this maximum might be determined, he repeated, by taking account also of the cost of working. But some safeguard

was necessary against arbitrary action on the part of private companies. It was not necessary, for example, that the amount collected should be dependent on the value of the service rendered beyond the transmission of the message, but it should represent only an equitable remuneration for the telegraphic work. If it were not so, a private enterprise might, for example, trade upon calls for assistance from ships and consider it reasonable to demand an exorbitant sum—a million francs, for example, if a telegram which it had transmitted resulted in the salvage of a steamboat of the value of ten millions.

Mr. MACKAY, British Delegate, remarked that charges generally varied with distance. Without doubt it would be very difficult to establish a convenient scale of charges according to distance, and having regard to this difficulty a maximum could hardly be fixed which would meet all the needs of the case. It was only after many years that it had been possible to fix the normal rates in certain cases for international telegrams, and even to-day there existed many exceptions, so that rates are fixed, frequently or even ordinarily, not by the Telegraph Union, but by virtue of mutual agreement between the Governments interested. At the present moment sufficient experience had not been gained to enable the cost of the radio-telegraph service to be accurately known. It would be necessary to leave to the Governments concerned the right of fixing or approving the charge which appeared to them to be desirable, without any restrictions; and if any particular Government claimed an excessive remuneration, either for the coast station or for the ship concerned, which was not to be anticipated, an equilibrium would be established, as in the telegraph service, by the necessity of the two Governments interested arriving at an agreement as to the total charge which would meet the interests in question and the needs of the public.

Commander CARDARELLI considered that it was not possible to deal at present with the question of charges; moreover, in his opinion, the principle could not be accepted that each station (on the coast or on board ship) should retain the charges collected, because it would always be the ships which would more frequently need to communicate with the coast stations, and it might even happen that a coast station would not be called upon to send any messages to ships, while it had to bear a heavy expense for installation and for the receiving service. It was necessary, then, to divide the charges collected in proportion to the services rendered.

M. BORDELONGUE was of opinion that these remarks arose from confusion in regard to the expressions "maximum" and "proportion." A maximum would not prevent the States fixing reasonable charges and dividing them in a reasonable manner. It was only the public interest which dictated this proposition.

Major CALVO Y JUANA adhered to the establishment of a maximum, but only of a maximum for the ordinary range of the stations.

Mr. MACKAY was of opinion that, if account were not taken of distances, it would be necessary to fix an excessive maximum in order to provide for the case, for instance, in which a telegram might be exchanged with a vessel in the middle of the Atlantic Ocean. He came back to the argument with which he started, that it would be premature to attempt to fix a maximum at present. In any case he declared his inability to support the fixing of a maximum, but he would be prepared to support the proposition of the President, which would prevent any undue charge.

After a discussion between the Delegates of Great Britain, Italy, France, and the President, in regard to a maximum and to accounts, Mr. MACKAY declared the adhesion of the British delegation to the principle that the charge should cover only the radiograph service.

M. BORDELONGUE was prepared to agree that the question of a maximum should be remitted to a later Conference, but with the reservation which he had indicated.

After prolonged discussion upon the question of the maximum, the PRESIDENT stated that there was general agreement upon the following points :—

1st. The charge should not exceed what was equitable ;

2nd. It should represent payment for the radio-telegraphic work.

As to a maximum, most of the delegations were of opinion that it was necessary to refer the question to a later Conference.

Mr. LAMB urged that the duty of this later Conference would be only to *consider* the question of a maximum, instead of fixing the maximum.

The PRESIDENT, in noting this observation, proposed to accept the modification desired by Mr. Lamb, but at the same time to insert in the Minutes that the Governments of France, Russia, the United States, Spain, Hungary and Germany deemed it desirable and necessary to fix a maximum in the Regulations. On the other hand, Mr. LAMB declared that the British delegation still considered that it was neither desirable nor necessary to fix such a maximum.

The PRESIDENT proceeded to the discussion of the new reading of Art. II. proposed by France, namely :

French Proposition.

ART. II.

“If the contracting States concede to individuals or companies the construction or working of coast stations, they undertake not to concede or authorise the construction or working of such stations unless the applicants undertake to conform at all their stations to the stipulations of the present Convention and of the Regulations which it contemplates.”

According to the view of the PRESIDENT the question concerned, in the first place, the position of those countries which have self-governing colonies, and he reminded the Delegates that at the end of the Minutes of the Third Sitting the previous discussion had already been recapitulated. The opinion was unanimous that such a country had the right to adhere to the Convention either for the whole of its territory or part only. It only remained, then, at present to discuss the other question, namely, whether, in that part of the Empire adhering to the Convention, systems should be admitted which were admitted in non-adhering parts of the Empire, in virtue of special arrangements not in harmony with the Convention.

M. BORDELONGUE begged at once to erase in the French proposition the words “the construction or” after the words “or companies.” He then declared that the idea of the new wording was to give to the public the maximum of advantages and a perfected service. The stipulations did not limit the possibility of the companies receiving telegrams, but on the contrary compelled them to accept more. The acceptance of the French proposition would thus be in the interests of the companies themselves.

Mr. LAMB was of opinion that the stipulations formulated by France were too onerous, and that the British delegation was not in a position to accept them. To the PRESIDENT's question, “what was the extreme limit to which the British Government could go,” Mr. LAMB replied that, under the reservation already made, the British delegation would adhere to the proposed reading on condition that the words “on the territory of the contracting States” were inserted after the words “at all their stations.”

M. BORDELONGUE remarked that the proposed reading would prevent the boycotting of the ships of such and such a nation by certain companies.

Herr VON STIBRAL, Austrian Delegate, expressed the opinion that the British addition would be equivalent to the suppression of Art. II.

Commander BARBER, United States Delegate, made the following declaration in the English language: While recognising the importance of such action by countries having entire control of telegraphic installations, yet the Delegates from the United States are not in a position either to discuss or to agree to such limitation of the free development of wireless telegraphy as is suggested by M. Bordelongue. It is also impossible for the Delegates from the United States to consider the question of an indemnity or of a surtax.

Admiral GRILLO expressed himself in the following terms: The Italian delegation wishes to express its strong desire to adhere without reserve to the proposition under Art. II., either in the text proposed by Germany or in the modified text presented by the French delegation; but, having regard to the special conditions imposed upon our Government by the agreements with M. Marconi, it must limit itself to declaring, on the part of our Government, that what is possible will be done to introduce modifications in our agreements in the sense proposed by Art. II., while naturally admitting the recompenses or compensations, of which we have already spoken, in favour of companies which find themselves obliged to accept restrictions in their working.

Captain SALEWSKI, Russian Delegate, supported the French proposition.

The PRESIDENT invited the Delegates of the United States to describe precisely the state of their laws in relation to the said proposition.

It appeared from the discussion which then took place that all stations in the United States are compelled to submit to the Federal laws which prescribe the acceptance of paid messages from everyone. Those who did not observe this law would expose themselves to actions for damages or even to criminal prosecution. But the legislation of the United States cannot impose conditions other than those of the general laws. In view of the present state of the law, the delegation could not accept the stipulation imposing upon enterprises the obligation of submitting to international conditions in a non-adherent country. This would only be possible in a case where the Government had adhered to an international Convention prescribing such conditions. However, the delegation had no instructions as to whether the other competent authorities in the United States would be disposed to agree to such an international Convention.

According to the PRESIDENT's recapitulation, the position was as follows:—

The United States were prevented by their existing legislation from adhering to the French proposition. England wished to restrict the stipulations to stations upon the territory of the contracting States. Italy would do its best to bring about the adhesion of its Government by modification of the contract with Marconi, but on condition of indemnification. The other Governments accepted the proposition in question.

The Conference then passed to the consideration of Art. III., with reference to International Regulations.

Captain BONOMO DEL CASALE, Italian Delegate, read the memorandum annexed to the present Minutes.

[The sitting was closed at 1.20 p.m. Next sitting Wednesday, 12th August, at 10 a.m.]

SYDOW, *President.*

FÜHRKEN, LINDOW, PFITZNER, OBERLAENDER, *Secretaries.*

ANNEX TO THE MINUTES OF THE FOURTH SITTING.

MEMORANDUM BY CAPTAIN BONOMO DEL CASALE, ITALIAN DELEGATE.

Notes upon the Inconveniences which would most frequently occur in the International Radio-Telegraph Service in the most favourable event of the adoption of a Single System for Communications between Ships and Coast Stations.

In Proposition 3 the question of executive Regulations for the service between coast stations and those on board ships is dealt with.

On this subject I have the strongest conviction that, in the existing state of wireless telegraphy, it is not possible to think of laying down rules with the object of seriously ensuring exchange of communications with the apparatus of different systems. Even omitting commercial reasons, technical reasons and reasons connected with organisation are, in my opinion, obvious, but I think that there is no need to explain them again, since my colleague, Lieutenant Solari, has already treated the question at the second sitting with regard to another branch of the subject. I wish only to recall here that the greatest hindrance to establishing an international service is the wide difference between the range of the different systems; one can understand local organisations admitting every system, but not international organisations. Nevertheless, local and commercial organisations might often cause serious trouble to the international communications, trouble which could not easily be avoided by regulations, seeing the actual state of the different systems. It must, in fact, be recognised that, for an equal range, each of the systems employed would generally require a different power to enable it to communicate with the others. Even admitting that there were equality in the two elements of range and power, another element would interfere with regularity of communication—namely, difference in the length of wave.

It is also to be noted that other irregularities might result from the difference of sensitiveness in the instruments, from the difference of methods, from their regulation, and from the varying degree of experience of the staff who worked them. The training of the staff—as you, Gentlemen, know better than myself—is a factor of capital importance in the use of any apparatus whatever. In wireless telegraphy difference in the experience of the staff causes the working capacity of the apparatus to vary between very large limits, and may even prevent communication.

It follows from all these causes of irregularity, I repeat, that, in order that it may be possible, in the present scientific and technical position of the matter, to establish rules to organise the international radio-telegraph service, it is necessary that a single system be adopted, that the “tune” of the apparatus be uniform, and that the maximum range be fixed. The system and these data would naturally be altered from time to time by new international Conferences. It is only on the assumption that these conditions be met that I wish to submit for your consideration some observations in this connection.

The experience acquired during recent years as to the working of the radio-telegraph service in the Italian Navy permits me to affirm that, not only is it possible to draw up regulations for the communication, but that this is indispensable in order to assure the service in all cases. For international communications up to the maximum range the regulations must be observed by everyone, both by commercial and military stations; in this respect I would propose to simplify the tenour of Art. III. in the following manner:—

“Uniform rules for the international radio-telegraph service shall be laid down by Executive Regulations.”

In fact, each nation can establish rules for its military coast stations and for the ships of its navy. Now these rules should be such as cannot interfere with international communications at any point. In this respect I accept not

only the amendment proposed by the German Government for Art. IV., but I propose that the scope be wider, in order to include the posts on ships of war, thus :—

“ Each nation may make for its military coast stations and for ships of war such rules as it considers desirable, provided that they be not of such a nature as to dislocate the international communications.”

Thus I would propose that Art. V. of the German project be modified as follows :—

“ The countries which have not adhered to the present Convention, and which intend to use wireless telegraphy, should accept in their entirety the international rules adopted.”

An example will best explain our idea. Two coast stations belonging to the same nation, or to two different nations—A and B—distant from each other about 130 miles, are in communication ; the ships of a naval force, F, are at the anchorage near B, and signal between themselves with wave-lengths equal, or nearly equal, to the international waves ; or with an excessive power for the distance which separates them ; or, again, with non-syntonised instruments, and without regard to the communications between A and B. Almost certainly B's receiving will be unreadable, and, if the distance from B is short, this will also happen even when F uses a different “tune,” on account of the excess of power radiated by the ships F. It is necessary to remark that we have acquired great confidence in syntonised arrangements, after the conclusive experiments carried on at Spezia with Marconi instruments of the 1901 model. During these experiments we compelled, so to speak, the system to transmit simultaneously messages to the station of S. Vito (Spezia) from that of Leghorn (70 km.) with apparatus of low power, and from that of Palmaria (6 km.) with apparatus twice as powerful. The two messages were received very clearly at S. Vito.

But if these experiments have established the independence of the “tunes” which we have used, even under very unfavourable conditions, they have shown us, on the other hand, that, just as in the case of other phenomena of resonance, radio-telegraph syntonisation has a minimum limit of distance. In this respect we are of opinion that absolute syntonisation does not exist, just as in acoustics one cannot produce very clear phenomena if the power is not proportioned to the distance and if the “tunes” closely approach each other. Here, then, is a case in which warships, for example, must only use for communication between themselves at short distances “tunes” of very small range and very limited power ; or else, if they used “tunes” equal to or approaching the international “tune,” it would be necessary to use very low power.

Yet another example. The station on a ship, A, wishes to communicate with the coast station B, which is within the sphere of international communication in accordance with established arrangements ; the ship A straightway calls B, without first assuring itself whether or not the latter (or another station) is already in communication with others. Naturally, the communications of these latter will be more or less disturbed according to their respective distances from A. If, on the contrary, the ship, before commencing transmission, had assured itself through the medium of its receiver, adjusted to the greatest sensitiveness, or by means of a detector, that no communication was already taking place, and had awaited the end of the communication before commencing its own, inconvenience would have been avoided. If, however, the two stations in communication had been provided with “tunes” well removed from the international “tune,” the ship's call would probably not have upset the other communications, and would have been received by the station called. It would, therefore, be very desirable to provide “tunes” well removed from the international “tune” for other communications ; it would also be necessary not to commence a transmission if the receiver in “tune” with which it was intended to transmit indicated communications already passing.

One might cite many similar cases to prove the necessity of establishing at the earliest moment precise and clear rules to meet all the cases which might

occur. In practice we have confirmed the facts underlying the examples cited, as well as many others, and have experienced the beneficial influence of precise and absolute rules.

Regulations for international radio-telegraph communications might, in our opinion, comprise the following points :—

I. Rules relative to the apparatus, to their range, to the kind of “tunes” to be used by commercial coast stations and ships, to the reduction of the power used according to distance, and to the desirability or otherwise of using the apparatus when ships of commerce are at anchorage.

Rules for establishing the limits of use of radio-telegraph apparatus in military coast stations and upon ships of war. Rules for conceding to private persons the right to establish stations either for ships or coasts.

Rules for announcing the opening of new stations either on coasts or ships.

The duty of neutrals in time of war towards belligerents, and vice versa.

Rules for the charging of radio-telegrams, for their conveyance from ships to their destination and vice versa.

II. Rules and signals for reciprocal communications.

III. List of commercial coast stations and of ships open to service, with their denominations, list of the latter assigned to the different naval forces and to the shipping companies which have vessels provided with apparatus.

I do not think it necessary to examine in detail the arguments relative to the first part, because it has been sufficiently discussed and because we consider that their full development will depend upon the decisions which may be arrived at in future Conferences. However that may be, I think I can formulate some propositions which might constitute a portion of the first part of the Regulations.

All commercial vessels should be provided with such apparatus only as might be approved by an international commission, and should have an established maximum range and a single “tune.” Non-syntonised apparatus should be forbidden at all stations.

Unless in most exceptional circumstances, ships should not communicate with coast stations at greater distances than three-fourths of the maximum range of the apparatus adopted for international communication, the object being to increase the certainty of communication.

Ships which require to communicate with commercial coast stations should always do so with the nearest station.

International radio-telegraph communication should be reserved for ships at sea ; vessels at anchor should avail themselves, except under special circumstances, of the ordinary means of communication with the land, in order to avoid interference with coast stations in the neighbourhood.

Ships of war assembled in a port or manœuvring at sea near the land should reduce the power radiated to a minimum. In the present state of affairs, for instance, they should use simple and very short antennæ, or if not simple, the antennæ should be very small.

It would also be desirable, for these communications at very short distances, that special “tunes,” very weak and of very short range, should be used.

Only ships flying an admiral’s flag or that of the senior commander present in the roadstead, should be allowed to communicate with commercial coast stations.

Having briefly set out propositions, which would require to be supplemented by many others, I now desire to submit to you some other observations, specially relating to the argument of the second part, which I think will be useful when the time comes for studying the rules which might partly assure the working of the radio-telegraph service. I do not, however, claim to have completely exhausted this important question.

Permit me only to add that, according to our experience, it may be affirmed that the Morse alphabet, the signs of punctuation, those for special services, &c., the rules in force for the transmission, forwarding and receipt of ordinary messages, do not need, generally speaking, to be changed. This would, in my opinion, be a great advantage, because the present telegraph staff might be turned to account by giving them suitable instructions as to the handling of the new apparatus.

The special character of the new system, and also, let me say, the wide extent of the disturbances involved in its use, require, however, a slight modification of some signals, and the addition of other rules. One could not seriously lay down at present precise rules for the charging, &c., of international communications. That is not the object of this Conference, and moreover the apparatus is in a state of constant and rapid improvement which certainly would cause what we have established to-day to be reversed to-morrow. These other observations, which I am about to submit to your favourable consideration, should only be regarded as a point of departure in one of the discussions which may form the subject of the second Conference. These observations are as follows :—

The speed of transmission should be fixed within average limits. With the ordinary written receiving, it might be agreed that this speed could be extended to 60 or 80 letters and even more per first minute; but generally near this higher limit some difficulty is experienced in reception by ear on the telephone, except with excellent operators. In any case a speed of transmission less than 30 letters per minute would make the reading difficult in the case of recording instruments, especially where there were atmospheric discharges, which the French call parasitic.

On the other hand, a sensible difference between the rhythm of the transmissions would certainly prevent the establishment of communication; that tends again to prove the necessity for uniformity of organisation and of instruction of the staff. If a transmission begun is interrupted, except by conventional signals, the receiving operator might immediately think it due to the bad working of his receiver, and he would probably alter, and so spoil, the adjustment. If a station A in communication with a station B commenced to call the latter, without regard to whether other communications were taking place or not, it would interfere with these communications and would not succeed in making an effective call. It is, therefore, necessary to establish rules for the commencement and end of communications, rules of which it would be impossible to guarantee the efficiency for different ranges and different organisations. In our marine, which uses a single system and a single organisation, we have successfully tested the following rule: If a station, A, wishes to transmit to another, B, it regulates its receiver to the utmost sensitiveness in order to satisfy itself that there are not other transmissions taking place between other stations. If there are, A must not commence to transmit until its receiver ceases to indicate any reception. When that is so it transmits, for example, four or five "understoods" (---), followed four or five times by a call.

If after five minutes, for instance, A had not received any answer, it would repeat the call, and so on until it obtained a response. The station called, B, would answer, for example, by thrice transmitting "understood," followed thrice by its own call, *i.e.*, its own designation followed by that of A. The latter, once the acknowledgment was received, would make, according to the International Telegraph Regulations, its communications, beginning them with three or four "understoods," and having regard, for the successive transmissions and for repetition, to the rules just mentioned.

When the transmission of a message was finished, or when the correspondence had come to an end, the stations would give the relative signals followed by the respective calls. We believe this arrangement would be most important, *in the present state of radio-telegraphy*, in order to avoid in most cases dislocation of the communications.

In the case of "circulating" communications it would be necessary to fix the order of transmission absolutely. But with apparatus of different ranges it would be impossible to insist on that order; especially in the case of commercial stations worked by a staff subject to different organisations.

Between the stations of our navy and those of another country, using a single system, the difficulties in this respect have been easily overcome by a single and highly-disciplined organisation.

In transmissions of long duration, by the existing methods, it can only be ascertained at the end if the distant station has received them; it would perhaps be desirable for the latter to use some conventional signals after a certain number of words.

In case of the presence of atmospheric "parasites," the reception might be much dislocated. In that case it would be, perhaps, very useful for the receiving station to notify the fact, as soon as possible, to the transmitting station by a conventional signal, after which the correspondents might employ all the means at their disposal to overcome the influence of the atmospheric electricity, and thus improve the receiving. Naturally, a perfect understanding between the operators would be an indispensable condition.

The observations on the preceding cases do not take into consideration the superposition of two or more transmissions made with the same "tune," by stations of which two or more might be at a greater distance than the range of the apparatus. In these cases we think it possible to overcome the difficulties with apparatus of the same range and a strict organisation, but we do not know how they could be dealt with under different conditions.

A case which deserves all our attention is that of urgent signals from ships in distress. In regard to these, all stations should be compelled to do their utmost to receive them; and I consider it would be useful to agree at this Conference as to the method to be followed. However that may be, I propose the following rule: A ship in distress should send at intervals of some minutes the signal SSSDDD. Every station receiving this signal should suspend its communications and prepare immediately for reception; as soon as possible it would put itself in communication with the ship, commencing transmission by the same signal SSSDDD.

I do not imagine that I have examined all the difficulties which might manifest themselves in radio-telegraph communication, all the more because I am limited to the consideration of the apparatus under existing conditions. At present, owing to the rapid development of radio-telegraphy, in connection with which many questions are still unsolved, whilst others are the subject of lively discussions, I cannot consider the details of the working of the instruments and service. Nevertheless, after having cited the difficulties, I hope I have shown the necessity of a single system, of a single range, and of a single highly-disciplined organisation.

In regard to this Memorandum, Captain BONOMO DEL CASALE made the following additional statement at the commencement of the Fifth Sitting:—I think it right to inform the President that the shortness of the time within which I had to deposit the manuscript of my remarks during the last sitting at the office of the Conference, and in which they had to be printed, has prevented me from revising them carefully, and naturally there are some expressions, as well as mistakes, in the proofs which might give rise to misapprehension. With the object of avoiding all misunderstanding on the subject, I deem it my duty to make the following statement:

In making the above communication, which might furnish part of the material for formulating Regulations at a second Conference, in the most favourable event of the adoption of a single international system, the Italian delegation has considered it its duty to show, in a practical form, its lively interest in the

object for which we are gathered here. The remarks made and the rules which might be derived from them are the result, as I have already said, of the experience acquired in our military radio-telegraph service ; but we do not know what might happen in the case of commercial stations, of which we have no experience. For this reason, and because of the engagements which Italy has entered into with Mr. Marconi, in conformity with the preceding declarations, the Italian delegation could not at the present time take part in the formulation of rules of any kind relating to international commercial radio-telegraph communications, as to which my colleague, Lieutenant Solari, will be able to express some ideas. We think it right, however, to make an exception in regard to rules which might affect ships in distress.

FIFTH SITTING.

August 12, 1903.

The sitting was opened at 10.10 a.m. by the PRESIDENT.

All the members of the Conference who were present at the first sitting attended.

The PRESIDENT proposed that the Minutes of the fourth sitting be confirmed, subject to corrections which the Delegates interested might wish to notify, if necessary, before noon next day.

The discussion of Art. III. was entered on, regarding the Regulations to which the Memorandum of Captain Bonomo del Casale, Italian Delegate, annexed to the Minutes of the last sitting, relates.

Captain BONOMO DEL CASALE having read the statement given above (pp. 43-44),

The PRESIDENT proposed to attach this statement to Captain Bonomo del Casale's Memorandum, given on pp. 39-43.

Herr SCHRADER, German Delegate, discussed Captain Bonomo del Casale's Memorandum and the question of the Regulations generally in the following terms :—The honourable Delegate of Italy, Captain Bonomo del Casale, was good enough to give us at our last sitting a large number of general and particular points of view as to the executive Regulations which must complete the Wireless Telegraph Convention. The remarks of Captain Bonomo del Casale are, without doubt, of great importance, because they represent the valuable results of the copious experiments which have been made in the Royal Italian Navy. I feel sure, therefore, of being your interpreter, Gentlemen, in expressing our thanks to Captain Bonomo del Casale for his most interesting communications. But, in my opinion, International Service Regulations must be based upon the experience of all the contracting nations, and I hope, therefore, that at the next Conference other representatives will be able to communicate their experiences, and that the collation of all the experiences will afford a basis for the elaboration of Regulations. Under these circumstances, it seems to me that the present Conference will not desire to enter upon a consideration of the details which Captain Bonomo del Casale has been good enough to give us. Consequently, I limit myself to referring to some important observations only.

Captain Bonomo del Casale said that, in his opinion, in the present scientific and technical position of the matter, it is only possible to lay down rules

for organising the international radio-telegraph service on condition that a single system be adopted. For my part, I maintain that at the present time there is no universal system, and were one to accept a single system to-day a better system might be invented to-morrow. There is no system whose absolute and definitive superiority is generally recognised. Most of the nations possess systems which give satisfactory results, and the experiments made in Germany have established beyond doubt that good communication is possible between stations furnished with different systems. On our coasts there is a service for private radio-telegraph correspondence between stations of different systems, and telegrams have been exchanged, without difficulty, over a distance of more than 200 km. Mr. Marconi possesses the merit of having proved by his experiments that it is possible to transmit to great distances—of 3,000 km. and more—but, in my opinion, it is not a question at the present moment whether wireless telegraphy can replace submarine or transatlantic cables, while it is of the greatest importance to employ wireless telegraphy as a means of communication where no other exists, *i.e.*, between ships and coast stations over moderate distances.

Only the goodwill and the mutual labours of the nations are required to bring about the regulation of the radiograph service. The examples which Captain Bonomo del Casale has given us prove that the Special Commission which a later Conference will appoint to lay down the Service Regulations will find plenty of work; and there is nothing to prevent us from believing that this Commission will arrive at a satisfactory result. At present it will suffice to set forth some general points of view tending towards the formulation of executive Regulations. It is necessary, broadly, to indicate what they should contain, but not to fix the details of their contents. In our opinion the Regulations must contain, for example:

Rules for the technical service properly so called, *i.e.*, instructions for the staff.

Stipulations to prevent interference as much as possible.

Stipulations as to the application and collection of charges, the bases of these being fixed by the Convention itself.

Stipulations as to accounts, &c.

It will, therefore, be the task of a later Conference to examine the two questions:

1st. What articles of the ordinary International Telegraph Service Regulations are applicable to wireless telegraphy?

2nd. What special rules are necessary for wireless telegraphy?

As to special rules: while appreciating what Captain Bonomo del Casale has said, I think it will be necessary to take into account that the question concerns a new means of communication, the development of which may be retarded by rules which are difficult in practice. Goodwill on the part of all the undertakings and of the staff will, without doubt, be more helpful than stipulations which are too minute. Nevertheless, there are certain aspects of the question which, in my opinion, demand precise stipulations. It was mentioned at a preceding sitting that complete confusion might occur when several ships within the sphere of action of the same coast station simultaneously endeavoured to communicate with that station. It goes without saying that carefully drafted rules are necessary to avoid, or limit as much as possible, the grave inconveniences which would arise in such a case, and that each wireless telegraph station must be bound to observe strictly the stipulations relative thereto. Without anticipating the work of a later Conference, so far as concerns the regulation of the service, I consider that International Regulations must deal amongst others with the following two most important points:

1st. It must always be the coast station which prescribes the order of transmission when several ships are within the radius of action of that station and simultaneously require to correspond with it.

2nd. Communication between coast stations and ships must have priority over communications between ships themselves, cases of distress excepted.

As to the subsidiary question—annexed to Art. III.—“Is it necessary to create special privileges in favour of ships in distress?” I consider that, in accordance with the proposition of Captain Bonomo del Casale, it is necessary to fix a signal of urgency for ships in distress, and that all the stations which use such a signal should interrupt their transmission and immediately place themselves in communication with the vessel in distress.

Mr. GAVEY, British Delegate, proposed to strike out the word “uniform” in Art. III. He said: “Considering that the proposals of this Conference should be as general as possible, Great Britain thinks that it would be advantageous to eliminate at the commencement of Art. III. the word “uniform.” It would then read “Rules for the service,” &c. The science of radio-telegraphy has made such remarkable progress during the last five or six years that it is impossible to say at present that uniform rules would apply in two years’ time to all stations and to all kinds of installations.

The PRESIDENT, to avoid misunderstandings, made it clear that the object of Herr Schrader’s explanations was not to enter into details only, but to show that Germany was anxious to fix the service arrangement by regulations. I imagine that you all share this point of view. In order to give Art. III. the greatest scope, I am in accord with Mr. Gavey as to suppressing the word “uniform,” so that the tenour of the first sentence of Art. III. would be as follows:—

“Rules for the service between the coast stations and stations on board ships shall be fixed by Service Regulations.”

It remains still to discuss the question of special privileges in favour of ships in distress.

M. BORDELONGUE, French Delegate, considered it indispensable to create special privileges for reasons of humanity. Messages originating from ships in distress would be announced by a special urgency signal and would be entitled to priority over all the communications of the stations which received such signals.

The PRESIDENT stated that there was unanimity in this respect, that it would be for a later Conference to regulate the details, and he invited the Delegates to discuss the question of the Regulations.

Lieutenant SOLARI, Italian Delegate, made the following declaration: I do not consider that it would be possible to draw up at present International Regulations for radio-telegraph commercial communication between systems which are only known to us imperfectly. It would be necessary, in my opinion, to make trial of the systems before regulating them; it would be necessary to be acquainted with the different organisations in order to do what is done in the case of railways. International agreement will only be attained after the different regulations have been compared, and after those points have been considered which have shown themselves to be obstacles to a good international service. That is why I propose that each nation should present the regulations, if any, which it has in use; and if it has none, that it should take the necessary steps to draw them up, to test them, and to make them public, in order to render it possible to discuss them at the next Conference. On this point I may state that the regulations which will shortly be adopted for the Italian commercial stations are in the main the Marconi regulations, which have been drawn up after several years’ experience.

Having regard to the object of this Conference, we shall then be able to notify the number and the position of the Italian coast stations, and the general rules for entering into communication with them according to the regulations adopted. Next year Italy will place at the disposal of the public *twelve*

maritime stations on the Marconi system, which will be able to communicate with all domestic and foreign ships, provided that the amendments proposed by the Italian delegation during the discussion are adopted. In this way Italy desires to add to the facilities for over-sea communication between the various countries—facilities which contribute so greatly to the well-being and fraternity of the peoples.

The PRESIDENT reviewed the position by stating that the Delegates were agreed as to the necessity for Regulations, but that it would fall to the next Conference to settle the details and to create special privileges for the messages of ships in distress.

M. BORDELONGUE stated that the French delegation had prepared the following Article to be inserted after Art. III. :—

“Wireless telegraph coast stations which may not be open for private telegraph service with ships at sea must, except in case of material impossibility, receive requests for assistance which may reach them from such ships.”

The PRESIDENT stated that there was no objection to this amendment, and passed to the discussion of Art. IV., amended by Germany.

Captain HEATH, British Delegate, proposed the following :—

“The recommendations of the present Conference shall not apply to naval and military wireless telegraph stations, nor to naval or military communications.”

After an exchange of views as to the scope of this amendment, Professor OSADSCHY, Russian Delegate, remarked that he considered it necessary to add at the end of Art. IV. the words: “Nor to any other Government stations for special purposes which are not open for the public service.”

Captain SELLNER, Delegate of the Austro-Hungarian Navy, made the following proposition: “Radio-telegraph stations established by the military authorities for the needs of their service are not obliged to accept private correspondence nor that originating from foreign ships of war, in the absence of special understandings on this point. Such stations are, generally, excepted from the stipulations of this arrangement, but will, on their own part, take care to lend, *as far as possible*, assistance to ships in distress.”

Admiral GRILLO, Italian Delegate, was of opinion that, in order to allow the greatest liberty to each Government, the German reading, which was fairly concise, might be accepted. But, if it were wished to go further, it might be desirable perhaps to choose the tenour proposed by Captain Bonomo del Casale in his Memorandum (page 40) thus expressed :

“Each nation may make for its coast military stations and for ships of war such rules as it considers desirable, provided they be not of such a nature as to dislocate international communications.”

M. BORDELONGUE thought that the discussion was wandering somewhat from its principal object. The question submitted to the Conference could not be and was not the limiting of the rights of States so far as concerned their military or naval interests. The mission of the Conference was to regulate the exchange of public correspondence between stations open to the public service and ships at sea. A military station which did not fulfil this condition was under no obligation in regard to international correspondence. There did not, therefore, arise any obligation or restriction of working as regard those stations.

General GREELY, United States Delegate, associated himself with the suggestion to give an exceptional position to all Government stations.

The PRESIDENT proposed to exclude completely the case of war, as to which each State would naturally reserve every liberty of action. Russia had proposed the widest wording with a view to excluding from international regulations all Government stations not open for the public service. Fundamentally this was also the German project.

The British delegation was of opinion that it would be desirable to exclude naval and military communications as well as correspondence between war vessels and the coast stations open to the public.

After some remarks from Herr VON STIBRAL, Austrian Delegate, M. BORDELONGUE remarked that the fact that communications originating from or destined for ships of war are considered to be Government telegrams and have priority over other messages should dissipate the fears or differences of opinion which had just been expressed. He requested, in any case, that this priority should be recognised.

The PRESIDENT remarked that reciprocal disturbances and cases of distress would be discussed later. He invited the Delegates to pronounce upon the following questions :

- 1st. Whether there were means by which correspondence between vessels of war and coast stations open to the public could be excepted ;
- 2nd. Whether it would be desirable to grant to communications originating from and destined for ships of war priority over other radio-telegrams.

Herr VON STIBRAL, Austrian Delegate, recommended the postponement to a subsequent Conference of the study of the question both of the determination of the points of the International Regulations which it would be desirable to apply to Government stations, including those of the Navy and Army, and of the treatment of naval and military communications.

Major CALVO Y JUANA, Spanish Delegate, was of opinion that the same stipulations should not be applied to ships of war as to commercial vessels. In addition he adhered to the proposition to grant priority to the messages of war-ships.

M. BORDELONGUE emphasised the fact that wireless telegraphy was not, properly speaking, a new organisation for the exchange of correspondence, but merely an extension of the existing means of transmission. The Regulations should be drawn up by adapting the present arrangements of the telegraph service and not by limiting the advantages by which Government correspondence benefits.

General GREELY was of opinion that the proposition of the Russian delegation, being the widest, would give the fullest satisfaction.

Captain HEATH was in accord with General Greely.

M. HOLLÓS, Hungarian Delegate, preferred to submit the exchange of messages between ships of war and public coast stations to the International Regulations and would grant priority to the telegrams of such vessels.

Admiral GRILLO accepted completely the German wording. Vessels of war should be obliged to submit to the International Regulations as regards their correspondence with public stations and other ships. Further, he was in agreement with France as to priority for the telegrams of ships of war.

Captain SALEWSKI, Russian Delegate, expressed the same views.

The PRESIDENT recapitulated, as a result of the discussion, that the Delegates were of opinion :

- 1st. That questions relating to war should be totally excluded ;
- 2nd. That the Regulations should provide only for the service between coast stations open for the public service and ships. It followed that no station devoted to naval and military services exclusively would be subjected to the general stipulations of the Regulations.

The PRESIDENT said that, in addition, most of the Delegates desired that the correspondence of ships of war with public coast stations should also be subjected to the Regulations, and that the priority which Government telegrams enjoy should be granted to these messages. However, the United States and Great Britain would prefer to relegate this question of detail to a later Conference.

The Conference passed to the discussion of the interpolation proposed by Germany in Art. IV., *i.e.*, of the words "subject to the stipulations of Art. I., para. 4." The tendency of this proposition was to subject, in times of peace, stations for special purposes, and the exchange of messages with these stations, to Art. I., para. 4, in order to avoid as far as possible disturbances which might arise from such stations.

Captain HEATH remarked that he could not accept the German amendment, and that it would be better to settle this question by a special arrangement between the Governments interested.

M. BORDELONGUE entirely supported the German proposition. It was to the general interest to avoid disturbances, voluntary or otherwise, which might hinder the regular working of the international service.

The PRESIDENT invited the Delegates to express their opinions on the German amendment.

Captain SELLNER was of opinion that ships of war should not dislocate the working of the coast stations, but that it would not be necessary to insert a stipulation in Art. IV.

Major CALVO Y JUANA supported the German proposition.

Mr. LAMB, British Delegate, saw no necessity to subject the States to such obligations, seeing that their readiness to show all necessary regard for the international service could not be doubted. It was not to the interest of the States themselves to dislocate the radiograph service of the public.

The Italian, Hungarian, and Russian delegations were in accord with the German proposition.

The PRESIDENT, recapitulating, stated that, generally, the Conference considered it desirable to express in the international arrangement the readiness of the contracting States not to allow the working of the public stations to be dislocated by stations for special purposes.

He then opened the discussion on the suggestion to accord special privileges to vessels in distress. In accordance with the French amendment it would be desirable that stations not subjected to the International Regulations should respond to the call of ships in distress. Captain Sellner had made a proposition with the same object. The President stated that all the Delegates were in accord as to this measure of humanity.

He passed then to Art. V., as to which Captain Bonomo del Casale had suggested another wording in his memorandum (page 40) as follows:—

“ The countries which have not adhered to the present Convention, and which intend to use wireless telegraphy, should accept in their entirety the International Rules adopted.”

Admiral GRILLO explained the motives which had actuated the Italian delegation in making this proposition.

The PRESIDENT was of opinion that there was no fundamental difference between the two readings. In regard to the ulterior treatment of the matter, he proposed that the delegates of each country should meet in order to endeavour to find a precise wording of certain general theses which might form the contents of a final Protocol. The latter would have to be signed by those of the Delegates who were in accord with these theses, subject to the reservation that the minutes must represent only the views of the signatories, without prejudice to the definitive decision of their Governments. The other Delegates would have the right of putting on record their divergent opinions.

In case of acquiescence the PRESIDENT proposed that the Conference should meet again in his office at 3 o'clock.

Mr. LAMB agreed, except as to the question of signature. He would prefer to recapitulate the results of the Conference in a Memorandum to be communicated by the German Government to the other Governments interested.

The PRESIDENT was of opinion that the Protocol should be signed by the Delegates who thought fit to do so, and that it should be left open to those who so desired. These latter could adhere later.

M. BORDELONGUE emphasised the preliminary character of this Conference, which had for its sole mission to exchange views and, if possible, to arrive at general bases, the text of which would be submitted by the various delegations to their respective Governments with a view to an International Convention.

The French delegation recognised that regulations were even now necessary. They were disposed to draw up a text and to sign it, in order to state formally the agreement arrived at between the Delegates. But they desired that it should be indicated that this was a document which should be submitted by the Delegates to the examination of their Governments, whose decision should be entirely reserved.

The PRESIDENT said that the Protocol would have to be submitted by the Delegates to the approbation of their Governments, but that it would be necessary to formulate, as far as possible, the actual state of the different opinions. After having repeated his invitation to meet again at 3 o'clock, he closed the sitting at noon.

[Next sitting, August 13, at noon.]

SYDOW, *President.*

FUHRKEN, LINDOW, PFITZNER, OBERLAENDER, *Secretaries.*

*SIXTH AND LAST SITTING.**August 13, 1903.*

The sitting was opened at 12.10 p.m. by the PRESIDENT.

All the members of the Conference who were present at the first sitting attended, with the exception of Lieutenant Solari, Italian Delegate, who excused himself by letter for having had to leave before the close.

At the PRESIDENT's request the Minutes of the Fifth Sitting were approved by the meeting, subject to corrections to be notified, if necessary, by the Delegates concerned, up to noon next day.

The PRESIDENT: In the terms of the resolution included in the Minutes of the last sitting, a Special Committee met yesterday afternoon under my presidency. This committee proceeded to the elaboration of a collective Declaration, of which you have a proof. I invite M. Bordelongue, French Delegate, to act as reporter, and to read the said Declaration.

M. BORDELONGUE, French Delegate, stated that the editing Committee, which met under the presidency of Herr Sydow, had thought it right to fix textually the resolutions arrived at by the Delegates. These resolutions could, nevertheless, only possess the character of indications and opinions, the Conference being simply a committee for purposes of study, whose opinions would not bind the Governments represented. It was in this spirit that the text which he was about to read had been drawn up; it was in the same spirit that the delegations represented had agreed to sign it, with a preamble which explicitly reserved the consideration of the Governments. He then read the proposed text.

Discussion followed the reading of each Article and paragraph, the discussion being preceded, where necessary, by observations from the Reporter.

"The following delegations to the preliminary Conference regarding Wireless Telegraphy,

Germany, Austria, Spain, the United States of America, France, Great Britain, Hungary, Italy, Russia,

agree to propose for the consideration of their Governments the following general Regulative Principles, as being suitable to form the subject-matter of an International Convention."

On the proposition of the PRESIDENT, the question whether the States which had made reservations should be mentioned in the preamble was adjourned to the end of the discussion. Otherwise the tenour of the preamble was accepted.

"ARTICLE I.

"The exchange of correspondence between ships at sea and wireless telegraph coast stations, open for general telegraph service, is subject to the following stipulations.

"Para. 1. A coast station is defined as any fixed station whose field of action extends over the sea."

Admiral GRILLO, Italian Delegate, expressed the wish that there should be added at the end of Art. I., para. 1, the words: "less than 500 kilometres." After an exchange of views, however, the speaker did not press his request.

"Para. 2. Coast stations are bound to receive and transmit telegrams originating from or destined for ships at sea without distinction as to the systems of wireless telegraphy used by the latter."

No observations.

"Para. 3. The contracting States shall publish all technical information of a nature to facilitate and accelerate communications between coast stations and ships at sea.

"Provided, however, that each of the contracting Governments may, on such conditions as it shall deem suitable, authorise stations situated on its territory to use several installations or different arrangements."

The REPORTER proposed to replace the words "different arrangements" at the end of para. 3 of this Article by the more precise words "special arrangements."

This proposition was accepted.

"Para. 4. The contracting States declare their adoption of the following principles for fixing the tariffs applicable to telegraph traffic exchanged between ships at sea and the international telegraph system :

"The total charge to be collected for this traffic is fixed on a word basis ; it includes :

"(a) The charge appertaining to the land transmission, the amount of which is fixed by the current International Telegraph Regulations annexed to the St. Petersburg Convention.

"(b) The charge accruing to the maritime section.

"The latter is, like the former, fixed according to the number of words, this number being counted in conformity with the International Telegraph Regulations referred to in para. (a) above ; it includes :

"1st. A charge called 'the charge for the coast station,' which accrues to the said station ;

"2nd. A charge called 'the ship charge,' which accrues to the station installed on the ship.

"The charge for the coast station is subject to the approval of the State on whose territory this station is established, and that for the ship to the approval of the State whose flag the ship flies.

"Each of these two charges must be fixed on the basis of equitable remuneration for the telegraphic work."

On the proposal of Herr VON STIBRAL, Austrian Delegate, the words, "land transmission" in para. 4 (a) were replaced by the words "transmission over the lines of the international telegraph system," seeing that submarine sections as well as land sections were concerned.

The wording of para. 4b, 2nd, was, on the proposition of the REPORTER, modified as follows : "2nd. A charge called 'the ship charge,' which accrues to the post installed on the ship."

General GREELY, United States Delegate, observed that, in accordance with the legislation of his country, telegraph charges were not in any way submitted to the previous approval of the Government at all, and that, consequently, the latter would not be able to approve in detail the charges of the coast stations.

The PRESIDENT was of opinion that it would not be necessary to modify the wording in question, but that it would suffice to mention General Greely's observation in the Minutes.

With reference to para. 4, last clause, the PRESIDENT remarked that the question of a maximum charge, which was much discussed in the previous

deliberations, was not provided for, in view of the great divergence of the opinions expressed, and in view of the fact that the States which deemed it necessary to introduce a maximum by international regulation had already had their views put on record in the Minutes of previous sittings.

“ARTICLE II.

“The rules applicable to the exchange of communications between coast stations and posts on ships shall be laid down by Regulations which shall be annexed to the Convention to be entered into.

“The provisions of these Regulations may be modified at any time by mutual agreement between the Administrations of the Contracting States.”

“ARTICLE III.

“The stipulations of the Telegraph Conference of St. Petersburg are applicable to the transmission of messages by wireless telegraphy so far as they are not contrary to those of the Convention which is to be entered into.”

“ARTICLE IV.

“Wireless telegraph stations must, except in case of material impossibility, give priority to requests for assistance which reach them from ships.”

“ARTICLE V.

“The working of wireless telegraph stations must be organised, as far as possible, in such a manner as not to interfere with the working of other stations.”

No observations with reference to Articles II. to V.

“ARTICLE VI.

“The Contracting Governments reserve to themselves respectively the right to make among themselves special arrangements with the object of compelling persons working upon their territory to observe, in all their other stations, the provisions of the Convention to be entered into.”

On the proposal of Herr VON STIBRAL, the words “working upon their territory” were replaced by the words “working wireless telegraph stations upon their territory.”

The REPORTER made the following remarks: The Delegates of the United States have stated that the legislation of their country allows, in point of fact, the admission of radiograph stations in the United States on condition of their submission, within that territory, to the principles of the Convention to be entered into, but not on condition that they submit to these principles in other countries also. Seeing that the obligation concerning the stations in the country immediately concerned already falls within the tenour of Art. I., para. 2, Art. VI. has been limited to the question of obligation in foreign countries, and this matter has been reserved for ulterior arrangement. The Delegates of the States represented, with the exception of the United States, Great Britain and Italy, have expressed the opinion that their Governments would give their adhesion to such an arrangement.

“ARTICLE VII.

“The provisions of the Convention to be entered into shall not be applicable to Government wireless telegraph stations not open for private telegraph correspondence, except so far as concerns the conditions which form the subject of Articles IV. and V.”

Lieutenant GARCIA DE LOS REYES, Spanish Delegate, proposed to strike out in Art. VII. the words "not open for private telegraph correspondence," and to add at the end of the sentence "the same shall apply to telegrams exchanged between the said Government stations and ordinary stations, and, in all cases, to Government telegrams."

After an exchange of views, in which the PRESIDENT and the REPORTER took part, the Spanish representative did not press his amendment. Nevertheless, to meet the objections of Lieutenant Garcia, the text of Art. VII. was altered as follows: the words "for private telegraph correspondence" were replaced by the words "for general telegraph service."

"ARTICLE VIII.

"Countries which have not adhered to the Convention to be entered into shall be admitted to it at their request."

No objections.

The discussion of the draft of the Committee being finished, it was agreed, on the proposal of the President, to style this document the "Final Protocol."

The PRESIDENT then invited those of the Delegates who had reservations to make to formulate them.

Mr. LAMB, British Delegate, made the following declaration on the subject of his reservations: While undertaking to submit the above bases for the consideration of its Government, the British delegation declares that, in view of the position of wireless telegraphy in the United Kingdom, this delegation must maintain a general reserve. This reserve relates specially to Art. I., para. 2, and to the application of the stipulations of Art. V. to the stations mentioned in Art. VII.

Admiral GRILLO, Italian Delegate, then declared: The Italian delegation, while agreeing to submit for the consideration of its Government the propositions contained in the Final Protocol of the Conference, must, according to the declarations made by its members at the different sittings, make, on behalf of its Government, the following reservations:

Art. I., para. 2. The Italian delegation would accept the proposed text only on condition of the following addition being made: "Provided that all these systems give satisfactory guarantee for good mutual working as to range, perfection of organisation, and certainty of communication."

Art. I., para. 3. The Italian delegation cannot accept the first clause of this paragraph, because, by the agreements made with Mr. Marconi, its Government is bound to preserve secret the details of the installations.

Art. VI. The Italian delegation cannot accept the text of this Article, and must limit itself to declaring that on the part of its Government everything possible will be done to introduce modifications in the sense desired in the agreements entered into with Mr. Marconi.

Admiral GRILLO concluded his declaration by saying that, subject to these reservations, he would be most happy to adhere to the Convention to be entered into.

The PRESIDENT pointed out that the reservations formulated by the British and Italian delegations were so important, especially as concerned Art. I., para. 2, that they modified the scope of the Final Protocol in a very material manner. It would not be desirable, therefore, in his personal opinion, to leave the names of "Great Britain" and "Italy" in the preamble, and he thought it would be better to record in the Protocol, following the signatures of the majority, the reservations formulated by the delegations of these two countries. This proposition received

the approval of the Delegates of Great Britain and Italy, as well as of the other Delegates. A copy of the Protocol, thus expressed, would, the President announced, be prepared by three o'clock of that day for signature by the Delegates.

As regarded the Minutes of the present sitting, which would not be long in reaching the hands of the Delegates, it would be desirable to notify corrections, if any, by the end of the following week.

These proposals were accepted.

The PRESIDENT then announced that authenticated copies of the Final Protocol, as well as the Minutes of the sittings, would reach the Governments concerned through the diplomatic channel.

He continued in the following terms: Gentlemen, I hope you are agreed that Germany, through the same channel, should invite all the maritime States of Europe and the United States of America to meet next year at Berlin at a Conference of a more general character.

On the suggestion of Mr. LAMB that Japan also should be invited, the PRESIDENT expressed the opinion that it would be preferable to leave this question to diplomacy, seeing that this Conference was not competent in that respect.

As regarded information for the Press, the PRESIDENT proposed to communicate provisionally only a note to the effect that the Delegates of most of the States represented at the Conference were in accord as to the most important principles for regulating wireless telegraphy, and that, on the basis of this accord, Germany would probably, before long, send an invitation to the maritime States for a Conference of a more general scope, with a view to the drawing up of an international arrangement concerning the organisation of radio-telegraphy, and of executive Regulations relative thereto. Beyond this the contents of the Minutes, in the President's view, should continue to be treated as confidential until the Delegates had been enabled to make their reports to the respective Governments. In view of the long journey of the United States delegation, it would be convenient that there should be no publication before the 1st September, 1903.

These proposals were accepted.

Towards the end of the sitting Herr KRAETKE, Secretary of State for the Postal Department of the German Empire, entered the room and pronounced the following discourse:

Gentlemen, I have not failed to submit to his Majesty the Emperor the respectful homage which the Delegates were good enough to present to His Majesty through the intermediary of the Honourable Delegate of Great Britain, Mr. Lamb, in the course of the First Sitting. I am happy to say that the Chief of the Imperial Cabinet has just sent me a communication of which the following is a translation:—

“His Majesty the Emperor and King has deigned to accept the homage which the foreign Delegates to the preliminary Conference regarding Wireless Telegraphy have presented to him. His Majesty follows the labours of the Conference with the liveliest interest, and begs you to express, on the occasion of the close of the Conference, his sincere thanks to the Delegates of the foreign Governments.”

Gentlemen, you have finished your labours. They have lead to results which allow the hope of real success in the future. Most of the States represented

here are in accord upon all the principal points, and, above all, the desire is manifested to use this accord in order to attain fresh progress in international communication. If certain difficulties still remain to be surmounted, these exist less in objection to the international regulation of this service than in the desire to consider private enterprises which are already in possession of a number of installations and to the present position of the internal legislation of the countries.

Gentlemen, it is always manifest that a spirit of conciliation unites the great States of Europe and the United States of America when the question is one of fresh advancement in civilisation, and I am glad to believe that this same spirit, which has shown itself also during your deliberations, will be sufficiently strong to overcome the difficulties which may still oppose themselves to the international regulation of wireless telegraphy.

Gentlemen, I express the hope of greeting you here again next year at a larger Conference. And in thanking you for your assiduous labours, proofs of your high intelligence, I close the Conference. However, I do not say "Adieu!" but rather "Au revoir!" (Loud applause.)

In reply to the speech of the Secretary of State, General GREELY, United States Delegate, in the name of the foreign delegations, expressed their warmest thanks to the German Postal Department for the kindly reception given to the Delegates. He then thanked the President for his able and impartial direction of the deliberations and the Office for its assistance in expediting business.

The signature of the Final Protocol, annexed in its definite form to the present Minutes, took place at three o'clock.

SYDOW, *President.*

FUHRKEN, LINDOW, PFITZNER, OBERLAENDER, *Secretaries.*

Annex

TO THE MINUTES OF THE SIXTH SITTING.

PROTOCOLE FINAL.

Les délégations à la Conférence préliminaire concernant la télégraphie sans fil, désignées ci-après :

Allemagne, Autriche, Espagne, États-Unis d'Amérique, France, Hongrie, Russie,

sont d'accord pour proposer à l'examen de leurs Gouvernements les bases générales de réglementation suivantes comme pouvant faire l'objet d'une Convention internationale.

ARTICLE I^{er}.

L'échange de la correspondance entre les navires en mer et les stations côtières de télégraphie sans fil, ouvertes au service télégraphique général, est soumis aux dispositions suivantes.

§ 1^{er}. Est appelée station côtière toute station fixe dont le champ d'action s'étend sur la mer.

§ 2. Les stations côtières sont tenues de recevoir et de transmettre les télégrammes originaux ou à destination des navires en mer sans distinction des systèmes de télégraphie sans fil employés par ces derniers.

§ 3. Les États contractants rendent publics tous les renseignements techniques de nature à faciliter et à accélérer les communications entre les stations côtières et les navires en mer.

Toutefois, chacun des Gouvernements contractants peut autoriser les stations

FINAL PROTOCOL.

The following delegations to the preliminary Conference regarding Wireless Telegraphy :

Germany, Austria, Spain, the United States of America, France, Hungary, Russia,

agree to propose for consideration by their Governments the following general regulative principles as being suitable to form the subject matter of an International Convention.

ARTICLE I.

The exchange of correspondence between ships at sea and wireless telegraph coast stations, open for the general telegraph service, is subject to the following stipulations :

Para. 1. A coast station is defined as any fixed station whose field of action extends over the sea.

Para. 2. Coast stations are bound to receive and transmit telegrams originating from or destined for ships at sea without distinction as to the systems of wireless telegraphy used by the latter.

Para. 3. The Contracting States shall publish all technical information of a nature to facilitate and accelerate communications between coast stations and ships at sea.

Provided, however, that each of the Contracting Governments may, on such

situées sur son territoire, et cela dans les conditions qu'il jugera convenables, à utiliser plusieurs installations ou dispositifs spéciaux.

§ 4. Les États contractants déclarent adopter, pour la fixation des tarifs applicables au trafic télégraphique, échangé entre les navires en mer et le réseau télégraphique international, les bases ci-après :

La taxe totale à percevoir pour ce trafic est établie par mot ; elle comprend :

(a) la taxe relative au parcours sur les lignes du réseau télégraphique dont le montant est celui fixé par le règlement télégraphique international en vigueur, annexé à la convention de St. Pétersbourg ;

(b) la taxe afférente au parcours maritime.

Cette dernière est, comme la précédente, fixée d'après le nombre de mots, ce nombre de mots étant compté conformément au règlement télégraphique international visé au paragraphe (a) ci-dessus. Elle comprend :

1° une taxe appelée "taxe de la station côtière" qui revient à la dite station ;

2° une taxe appelée "taxe du bord" qui revient au poste installé sur le navire.

La taxe de la station côtière est subordonnée à l'approbation de l'État sur le territoire duquel cette station est établie, et celle du bord à l'approbation de l'État dont le navire porte le pavillon.

Chacune de ces deux taxes doit être fixée sur la base de la rémunération équitable du travail télégraphique.

ARTICLE II.

Un règlement qui sera annexé à la convention à intervenir établira les règles applicables à l'échange des communi-

conditions as it shall deem suitable, authorise stations situated on its territory to use several installations or special arrangements.

Para. 4. The contracting States declare their adoption of the following principles for fixing the tariffs applicable to telegraph traffic exchanged between ships at sea and the International Telegraph system :

The total charge to be collected for this traffic is fixed on a word basis ; it includes :

(a) The charge appertaining to transmission over the lines of the telegraph system, the amount of which is that fixed by the current International Telegraph Regulations annexed to the St. Petersburg Convention ;

(b) The charge accruing to the maritime section.

The latter is, like the former, fixed according to the number of words, this number being counted in conformity with the International Telegraph Regulations referred to in paragraph (a) above ; it includes :

(1) A charge called "the charge for the coast station" which accrues to the said station ;

(2) A charge called "the ship charge" which accrues to the post installed on the ship.

The charge for the coast station is subject to the approval of the State on whose territory this station is established, and that for the ship to the approval of the State whose flag the ship flies.

Each of these two charges must be fixed on the basis of equitable remuneration for the telegraphic work.

ARTICLE II.

The rules applicable to the exchange of communications between coast stations and posts on ships shall be laid down by

tions entre les stations côtières et les postes placés sur les navires.

Les prescriptions de ce règlement pourront être à toute époque modifiées d'un commun accord par les Administrations des États contractants.

ARTICLE III.

Les dispositions de la convention télégraphique de St. Pétersbourg sont applicables aux transmissions par la télégraphie sans fil en tant qu'elles ne sont pas contraires à celles de la convention à intervenir.

ARTICLE IV.

Les stations de télégraphie sans fil doivent, à moins d'impossibilité matérielle, accepter par priorité les demandes de secours qui leur parviendraient des navires.

ARTICLE V.

Le service d'exploitation des stations de télégraphie sans fil doit être organisé, autant que possible, de manière à ne pas troubler le service d'autres stations.

ARTICLE VI.

Les Gouvernements contractants se réservent respectivement le droit de prendre entre eux des arrangements particuliers ayant pour but d'obliger les entrepreneurs exploitant sur leur territoire des stations de télégraphie sans fil à observer, dans toutes leurs autres stations, les prescriptions de la convention à intervenir.

ARTICLE VII.

Les prescriptions de la convention à intervenir ne sont pas applicables aux stations d'État de télégraphie sans fil non ouvertes au service télégraphique général sauf en ce qui concerne les clauses qui font l'objet des articles IV. et V.

Regulations annexed to the Convention to be entered into.

The provisions of these Regulations may be modified at any time by mutual agreement between the Administrations of the Contracting States.

ARTICLE III.

The stipulations of the Telegraph Convention of St. Petersburg are applicable to the transmission of messages by wireless telegraphy so far as they are not contrary to those of the Convention to be entered into.

ARTICLE IV.

Wireless telegraph stations must, except in case of material impossibility, give priority to requests for assistance which reach them from ships.

ARTICLE V.

The working of wireless telegraph stations must be organised, as far as possible, in such a manner as not to interfere with the working of other stations.

ARTICLE VI.

The Contracting Governments reserve to themselves respectively the right to make among themselves special arrangements with the object of compelling persons working wireless telegraph stations upon their territory to observe in all their other stations the provisions of the Convention to be entered into.

ARTICLE VII.

The provisions of the Convention to be entered into shall not be applicable to Government wireless telegraph stations not open to the general telegraph service, except so far as concerns the conditions which form the subject of Arts. IV. and V.

ARTICLE VIII.

Les Pays qui n'ont point adhéré à la convention à intervenir, y seront admis sur leur demande.

Fait à *Berlin* le 13 août 1903.

For Germany :

SYDOW.
STRECKER.
WACHENFELD.
SCHRADER.
FLÜGEL.
RIEVE.

ARTICLE VIII.

Countries which have not adhered to the Convention to be entered into shall be admitted to it at their request.

Done at Berlin the 13th August, 1903.

MOST.
Dr. FELISCH.
Dr. BEGGEROW.
OSCHMANN.
KLUSSMANN.

For Austria :

STIBRAL.
ARTHUR LINNINGER.
SELLNER.

For Spain :

CALVO.
PALAEZ CAMPOMANES.
MATEO GARCÍA.

For the United States of America :

GREELY.
BARBER.
J. I. WATERBURY.

For France :

BORDELONGUE.
SINS.
MAGNE.
BOULANGER.
HOUDAILLE.
F. ARAGO.

For Hungary :

CHARLES FOLLÉRT.
ANDRÉ KOLOSSVARY.
JÓSEF HOLLÓS.
SELLNER.

For Russia :

BILIBINE.
P. OSSADTCHY.
POPOFF.
ZALEWSKI.

DECLARATION OF THE BRITISH DELEGATION.

While undertaking to submit the above bases for the consideration of its Government the British delegation declares that, in view of the position of wireless telegraphy in the United Kingdom, this delegation must maintain a general reserve. This reserve relates specially to Art. I., para. 2, and to the application of the stipulations of Art. V. to the stations mentioned in Art. VII.

Done at Berlin the 13th August, 1903.

J. C. LAMB.
J. GAVEY.
R. J. MACKAY.
R. L. HIPPISEY, Col.
H. L. HEATH, Capt. R.N.
R. PAYNE, Lieut. R.N.

DECLARATION OF THE ITALIAN DELEGATION.

The Italian delegation, while agreeing to submit for the examination of its Government the propositions contained in the Final Protocol of the Conference, must, according to the declarations made by its members at the different sittings, make on behalf of its Government the following reservations :

Art. I., para. 2. The Italian delegation would accept the proposed text only on condition of the following addition being made: " Provided that all these systems give a satisfactory guarantee for good mutual working as to range, perfection of organisation, and certainty of communication."

Art. I., para. 3. The Italian delegation cannot accept the first clause of this paragraph because, by the agreements made with Mr. Marconi, its Government is bound to preserve secret the details of the installations.

Art. VI. The Italian delegation cannot accept the text of this Article, and must limit itself to declaring that on the part of its Government everything possible will be done to introduce modifications in the sense desired in the agreements entered into with Mr. Marconi.

Done at Berlin the 13th August, 1903.

C. GRILLO.
BONOMO.
CARDARELLI.

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