

**Report on seventh International Congress of Military Medicine and Pharmacy and meetings of the Permanent Committee, Madrid, Spain, May 29-June 3, 1933 / by William Seaman Bainbridge.**

**Contributors**

Bainbridge, William Seaman, 1870-1947.  
International Congress of Military Medicine and Pharmacy 1933 : Madrid, Spain)

**Publication/Creation**

[Menasha, Wis.] : [Collegiate Press, George Banta Publishing], [1934]

**Persistent URL**

<https://wellcomecollection.org/works/hgdwze5y>

**License and attribution**

Conditions of use: it is possible this item is protected by copyright and/or related rights. You are free to use this item in any way that is permitted by the copyright and related rights legislation that applies to your use. For other uses you need to obtain permission from the rights-holder(s).



Wellcome Collection  
183 Euston Road  
London NW1 2BE UK  
T +44 (0)20 7611 8722  
E [library@wellcomecollection.org](mailto:library@wellcomecollection.org)  
<https://wellcomecollection.org>

REPORT ON SEVENTH INTERNATIONAL  
CONGRESS OF MILITARY MEDICINE  
AND PHARMACY, MADRID, SPAIN,  
MAY-JUNE, 1933

BY

WILLIAM SEAMAN BAINBRIDGE

CAPTAIN, M.C.F., UNITED STATES NAVAL RESERVE

M:  
WB3  
1933  
I61R


M  
24794



M 24794



22101899291



Digitized by the Internet Archive  
in 2018 with funding from  
Wellcome Library





REPORT ON  
Seventh International Congress of Military  
Medicine and Pharmacy

Composed, Printed and Bound by  
~~The Collegiate Press~~  
George Banta Publishing Company  
Menasha, Wisconsin

Report  
on  
Seventh International Congress  
of Military Medicine  
and Pharmacy  
and  
Meetings of the Permanent  
Committee

Madrid, Spain, May 29-June 3, 1933

BY  
CAPTAIN WILLIAM SEAMAN BAINBRIDGE, MC-F., USNR  
*Member of the Permanent Committee*  
*Delegate from the United States*

[1934]



## FOREWORD

A Wise Physician Skill'd Our Wounds to Heal,  
Is More than Armies to the Public's Weal . . . Homer.

The value of military medicine and pharmacy to the State is aptly expressed by the above lines.

The seven International Congresses of Military Medicine and Pharmacy have so far brought many benefits to the countries participating in them. The interchange of ideas regarding the prevention of disease; the study of organization for the transportation of the sick and wounded to where the facilities of medical science can best be utilized; the provision of the highest standard of medical and surgical care to bring about early recovery; are matters of the greatest importance to all nations. This international consultation of medical men from many countries against the common enemies of mankind—disease and pain—is also a step toward mutual understanding and international good-will.

The first of these Congresses was held in Brussels, the seventh in Spain, a land toward which, because of its relation to the infancy of the New World, the United States bears a particular relation of friendship. We are grateful now to that country for the hospitality and courtesy extended to our delegates.

We are indebted to Captain William Seaman Bainbridge, a delegate for the United States and also a Member of the Permanent Committee, for this splendid and comprehensive report of the Seventh Congress.

P. S. ROSSITER  
*Rear Admiral, Medical Corps*  
*United States Navy*  
*Surgeon General*

WELLCOME INSTITUTE LIBRARY	
Coll.	welMOMec
Call	M
No.	WB3
	1933
	I61r

M24794



## TABLE OF CONTENTS

INTRODUCTION .....	1
LOCAL OFFICERS OF THE CONGRESS .....	3
LIST OF FOREIGN OFFICIAL DELEGATES .....	4
LIST OF UNITED STATES DELEGATES .....	8
STATUTES OF THE SEVENTH CONGRESS .....	9
PROGRAM OF THE SEVENTH CONGRESS .....	10
INAUGURATION OF THE CONGRESS .....	10
PERMANENT COMMITTEE MEMBERS .....	15
MEETINGS OF THE PERMANENT COMMITTEE .....	15
SUBJECTS REPORTED UPON AT THE CONGRESS	
I. GENERAL PRINCIPLES REGARDING MEDICAL SERVICES IN WAR TIME; THEIR APPLICATION TO THE NEW RULINGS OF THE GENEVA CONVENTION.	
GENERAL PRINCIPLES OF MEDICAL ORGANIZATION OF A NATION AT WAR	
By Medical Colonel José Potous Martinez (Spain) .....	18
APPLICATION OF THE NEW RULINGS OF THE GENEVA CONVENTION.	
By Medical Lieutenant Colonel Federico Gonzales Deleito (Spain) .....	19
MEDICAL-PHARMACEUTIC ORGANIZATION IN CASE OF WAR.	
By Sub-Inspector Pharmacist de 2° Enrique Fernandez de Rojas (Spain) .....	22
HYGIENIC-SANITARY FUNCTION OF THE CIVILIAN PHARMACIST IN THE GEN- ERAL MOBILIZATION FOR WAR.	
By Carmelo Muela Laguna, Director of the Sanitary Brigade of Valde- peñas, José Bayona Sánchez, President of the Pharmaceutic College of Cordoba, Nazario Diaz López, Pharmacist (Santander), Heliodoro Fernández Rojo, Military Pharmacist, Honorary Mem- ber of the Palencia Pharmacists, and Leopoldo López Pérez, Sen- ior Pharmacist (retired) of the Navy, Honorary President of the Lerida Pharmaceutic College (Spain) .....	23
IMPORTANCE OF THE VETERINARY SERVICES IN THE ARMY.	
By Veterinary Sub-Inspector Medina Garcia and Veterinary Surgeon Sáenz de Pipaón (Spain) .....	24
GENERAL PRINCIPLES OF THE MEDICO-MILITARY ORGANIZATION OF A NA- TION IN WAR.	
By Medical Lieutenant Colonel Oscar Nordlander, Chief of the Bureau of the Military Health Service (Sweden) .....	25
COMMUNICATIONS .....	27
II. PREVENTIVE VACCINATION IN THE ARMY, NAVY AND AIR FORCE.	
PREVENTIVE INOCULATION IN THE BRITISH NAVAL, MILITARY AND AIR SERVICES.	
By Surgeon Captain Sheldon F. Dudley, O.B.E. Royal Navy, Group Captain Harold E. Whittingham, C.B.E. Royal Air Force, and Lieutenant Colonel A. Dawson, Royal Army Medical Corps (Great Britain) .....	27



## TABLE OF CONTENTS (Continued)

THE CONTROL OF TYPHOID GROUP IN THE IMPERIAL JAPANESE NAVY.	
By the Medical Department of the Japanese Navy .....	29
PROPHYLACTIC INOCULATION IN THE JAPANESE ARMY.	
By Major Masaji Kitano, Medical Corps, Imperial Japanese Army (Japan) .....	30
PREVENTIVE VACCINATION IN THE ARMIES ON LAND, AIR AND SEA.	
By Army Pharmacist Carlos Sáez y Fernández-Casariago (Spain) ....	31
PREVENTIVE VACCINES IN THE ARMIES ON LAND, SEA AND IN THE AIR.	
Medical Lieutenant Colonel Paulino Fernández Martos, Director of the Academy of Military Hygiene (Spain) .....	33
COMMUNICATIONS .....	34
III. TREATMENT IN THE ADVANCED POSTS OF URGENT SURGI- CAL CASUALTIES IN A WAR OF MOVEMENT. PLAN OF A SPE- CIALIZED FORMATION; ITS TECHNICAL ORGANIZATION AND ITS EMPLOYMENT FROM THE TACTICAL VIEWPOINT.	
Report by Medical Lieutenant Colonel Gómez Ulla; Medical Commandant Sánchez Vega, Medical Commandant Herrer Menguijon, Medical Cap- tain Madruga Jimenez, Medical Captain Martin Santos, and Major Pharmacist Campoy Irigoyen (Spain) .....	34
Report by Medical Commandants of the Navy, Rafael Martinez Falero and Rafael Abengoichea Laita (Spain) .....	37
THE TREATMENT OF URGENT SURGICAL CASUALTIES AT THE FRONT. PRO- POSAL OF A SPECIALIZED FORMATION.	
By Medical Lieutenant Colonel Leman (Belgium) .....	37
VIEWPOINTS OF THE MEDICAL SERVICES OF VARIOUS NATIONS.	
Reports by Czechoslovakia—United States of America—Italy—Jugo- slavia .....	41
COMMUNICATIONS .....	46
IV. PRESERVED FOODS AS A REGULAR RATION FOR SOLDIERS IN PEACE TIME OR IN THE FIELD, THEIR MODE OF PREPARA- TION AND ANALYSIS.	
Report by Pharmacist Sub-Inspector Emilio Salazar Hidalgo, Pharmacist Commandant of the Navy Emilio Fernandez Espina, Chief Pharma- cists Juan Casas Fernandez, and Pedro Calvo Munoz-Torrero (Spain) ..	46
Report by Commandante de Intendencia Eduardo Robles Perez (Spain) ..	48
Report by Medical Lieutenant-Colonel Victor Herrero y Diez de Ulzurum (Spain) .....	49
Report by Colonel Thomann, Pharmacist-in-Chief of the Swiss Army (Switzerland) .....	53
COMMUNICATIONS .....	56
V. COMPARATIVE STUDY OF THE DENTAL AND ADMINISTRATIVE SERVICES IN THE DIFFERENT ARMIES, NAVIES, AND AIR FORCES.	
THE MILITARY DENTAL SERVICES.	
Report by Mexico .....	56
ORGANIZATION OF THE DENTAL SERVICES IN THE ARMY.	
By Dr. Angel Vázquez (Spain) .....	58
COMPARATIVE STUDY OF THE ADMINISTRATIVE SERVICES OF THE DIFFERENT ARMIES, NAVIES, AND AIR FORCES.	
By Lieutenant-Colonel de Intendencia Federico Abeilhe y Rodriguez	



## TABLE OF CONTENTS (Continued)

Fito and Pharmaceutic Sub-Inspector José Abadal y Sibila (Spain) .....	59
VI. (VETERINARY SECTION) a) CLINICAL AND PROPHYLACTIC STUDY. b) BACTERIOLOGICAL STUDY. c) ANATOMO-HISTOPATHOLOGICAL STUDY.	
a) CLINICAL AND PROPHYLACTIC STUDY.	
By Veterinary Sub-Inspector Sanchez Hernandez and Veterinary Major Cargallo Vara (Spain) .....	60
b) BACTERIOLOGICAL STUDY.	
Veterinary Sub-Inspector Huertas Lopez (Spain) .....	61
c) ANATOMO-HISTOPATHOLOGICAL STUDY.	
By Veterinary Surgeon Arroyo Martin (Spain) .....	61
HABRONEMIASIS.	
By Veterinary Surgeon Arroyo Martin (Spain) .....	63
COMMUNICATIONS: OPEN THEMES .....	
	64
CONCLUSIONS OF THE CONGRESS .....	
	64
I. General Principles Regarding Medical Services in War Time; Their Application to the New Rulings of the Geneva Convention.	
II. Preventive Vaccination in the Army, Navy and Air Force.	
III. Treatment in the Advanced Posts of Urgent Casualties in a War of Movement. Plan of a Specialized Formation; Its Technical Organization and Its Employment from the Tactical Viewpoint.	
IV. Preserved Foods as a Regular Ration for Soldiers in Peace Time or in the Field. Their Modes of Preparation and Analysis.	
V. Comparative Study of the Dental and Administrative Services in the Different Armies, Navies and Air Forces.	
SUPPLEMENTARY NOTES:	
Final Session of the Congress .....	67
International Assembly of the Chiefs of the Medical Services .....	69
International Office of Medico-Military Documentation .....	70
International Office of Medico-Military Documentation. Third Meeting ..	71
Second International Congress of Sanitary Aviation .....	73
Honors to General Granda .....	75
International Exhibition of Hygiene .....	75
Conferences and Practical Demonstrations .....	78
Medical Days in Brussels .....	78
MISCELLANEOUS—The Madrid Congress .....	
	79
Monaco Convention .....	80
Fourth Session of the International Office of Medico-Military Documentation .....	86
ALPHABETICAL LIST OF CONTRIBUTORS .....	
	88





HIS EXCELLENCY, MR. N. ALCALA ZAMORA, *President of the Republic of Spain*, who opened the Inaugural Session of the Seventh International Congress of Military Medicine and Pharmacy.



# REPORT ON SEVENTH INTERNATIONAL CONGRESS OF MILITARY MEDICINE AND PHARMACY.

Madrid, Spain, May-June, 1933

By CAPTAIN WILLIAM SEAMAN BAINBRIDGE, M.C.-F.  
*United States Naval Reserve, Member of Permanent  
Committee, Delegate from the United States*

## INTRODUCTION

**A**N INTERESTING and valuable addition to the Seventh International Congress of Military Medicine and Pharmacy, which met in Madrid from May twenty-ninth to June third, 1933, was the inclusion of experts in international law. There is a natural alliance between international law and military medicine, for both deal with the rights of human beings, one from the legal and the other from the humane standpoint. International rules have to be formulated, grave judgments rendered, methods of conduct of warfare decided, neutrality accorded establishments harboring the sick and wounded and the medical personnel, and so forth. For all this, the leaders in military medicine must turn to the leaders in international law. In addition, post war conditions, and the casualties of peacetime warfare with their toll of mortality and morbidity, have assumed greater and greater importance in governmental and industrial compensation. The experience of the World War and its aftermath, with the findings of these Congresses, has already entered into many medico-legal decisions, in some, resulting in saving the disabled veterans from unfair treatment, and in others, safeguarding the government or insurance company from being unjustly burdened.

The right or wrong of war, its necessity from any angle, the fixing of the guilt of the aggressor, are not questions with which the military surgeons concern themselves. Their duty and strength lie in other directions—in keeping the soldier fit and ready for any emergency, in alleviating suffering on the battle-field, in saving life and limb, in restoring the fighting personnel to such physical and mental condition as to enable them to rejoin the ranks as speedily as possible, or to become independent economic factors in their community and useful members of society. In their care of the sick and wounded in war, the military surgeons know no enemies—the individual who has been struck down by disease or machine gun receives care and attention, no matter



on which side he may be. Upon the efficiency of the Sanitary Services depends, in a large measure, the future of the battle casualties.

Because of their common mission of help to the stricken, it should not be difficult after a war, for military surgeons to have a joint assembly and, in open meeting, give the results of their medico-military experience and make an effort to codify and standardize the lessons that wars have taught. All the ruthless destruction of life and limb, the maiming of the body, and the concomitant diseases that descend upon communities of soldiers in particular, as well as civilians, have developed a work of repair, medication and prevention, which should have an international system of reference and action. It is with this thought in mind, this aim toward a unification of treatment and method, with war experience as a basis, that the International Congress of Military Medicine and Pharmacy meets every two years and receives the contributions of the represented nations. The acknowledgment of the worth of these gatherings is expressed by the number of delegates who attend the meetings—at the Seventh Congress there were fourteen hundred, a remarkable growth since the idea was conceived by Colonel Jules Voncken and the author directly after the World War, and the first Congress was inaugurated and organized at Brussels in 1921.

Peace, too, has its casualties, many of which are similar to those of actual hostile warfare. And for these the war lessons may be utilized. War has been the starting point of many advances in medicine, surgery and sanitation. That “necessity is the mother of invention” has been proved over and over again in battle experience by the medical personnel, and the “inventions” have been perfected and utilized for the relief of the sick and wounded, during peace. However, medical history records instances where methods of treatment brought suddenly into being by the vital necessity of the moment as occurs in warfare, are just as suddenly forgotten until another war has brought forward a similar need, and when an old treatment has been proclaimed as new, and too often again forgotten. The International Congress of Military Medicine and Pharmacy endeavors to change all this and to have the medical experience in war of all in the Sanitary Services of the world put into such shape that a ready reference may be available.

In previous Reports the plan that has been followed has been explained, i.e.: At each Congress a number of questions are taken up for consideration. Each question is allotted to two countries for official reports to the country acting as host to the Congress and to the nation selected by the Permanent Committee as having special experience in the subject under discussion. Short communications relevant to the



subjects before the Congress may be submitted by delegates from any nation. The general conclusions of the Congress, formulated by the Permanent Committee, after conference with those who presented official reports or communications, or who joined in the discussion, must have the unanimous approval of the entire Congress before they are accepted. They are then sent to the participating governments.

While the great hope of the world is that of permanent peace, the history of nations, even in the days of the so-called heights of civilization, shows the futility of the realization of this desire until there is a firm, basic confraternity between the peoples of the earth that has not heretofore existed. Until the dawn of such a day, the Medical Services of the nations of the world must continue in their work of mercy.

#### LOCAL OFFICERS OF THE CONGRESS

General José González Granda, Inspector of Military Sanitation of Spain.

#### *Honorary Presidents*

<sup>1</sup> Dr. Th. Tuffier, Member of the Academy of Medicine, Paris; President of the Inter-allied Surgical Conferences.

<sup>2</sup> Inspector-General Wibin, Inspector-General of the Belgian Army Medical Services; President of the First International Congress of Military Medicine and Pharmacy, Brussels.

Major-General Francesco Della Valle, Former Director General of Medical Services of the Italian Army; President of the Second International Congress of Military Medicine and Pharmacy, Rome.

Medical Inspector-General H. Vincent, former Inspector General French Army Medical Services; President of the Third International Congress of Military Medicine and Pharmacy, Paris.

General Stanislaw Rouppert, Director of Medical Services, Polish Army; President of the Fourth International Congress of Military Medicine and Pharmacy, Warsaw.

Lieutenant-General Sir Matthew H. G. Fell, K.C.B., C.M.G., K.H.P., F.R.C.S., Former Director General Royal Army Medical Services; President of the Fifth International Congress of Military Medicine and Pharmacy, London.

Major-General Johan Carel Diehl, Director of the Service de Santé of The Netherlands Army, President of the Sixth International Congress of Military Medicine and Pharmacy, The Hague.

<sup>1</sup> Deceased December, 1929.

<sup>2</sup> Deceased August, 1931.



*Vice-Presidents*

Medical General Luis Ubeda, Spanish Army.

Inspector Pharmacist Ladislao Nieto.

Inspector Pharmacist Felix Gomez Diaz.

*General Commissary*

Lieutenant Colonel Augustín Van-Baumberghen, Spanish Army.

*Secretaries*

Medical Commandant of Military Sanitation Antonio Jimenez Arrieta.

Medical Commandant of Military Sanitation José Rueda, Spanish Army.

Pharmacist Major of Military Sanitation Rafael Roldán Guerrero.

Pharmacist Major Emilio Fernández Espina, Spanish Army.

Veterinary Major Victorio Nieto Macán.

Military Dentist Florentino Mallol de la Riva, Spanish Army.

*Treasurer*

Captain Joaquín Linares Amayas.

*Committee on International Relations and Reception*

Inspector General of Sanitation Ernesto Botella, Spanish Army, President.

*Committee on Scientific Demonstrations*

Inspector of Military Sanitation José Augustín, President.

*Entertainment Committee*

Inspector of Military Sanitation Juan Valdivia, President.

## LIST OF FOREIGN OFFICIAL DELEGATES

[NOTE: The following list of official delegates is given as submitted by the Spanish authorities. Because of their large number the Spanish official delegates are not included.]

*Argentina*

De Olliveira

*Austria*

Emerik Janetzky, General Surgeon, Director Army Medical Corps.

Fritz Tintner, General Surgeon.

*Belgium*

Marcel Casier, Capitaine Pharmacist.

M. Derache, Lieutenant General Surgeon, Inspector General of the Medical Service.

I. Etienne, Capitaine en I<sup>r</sup>. Reserve Pharmacist.

William Proot, Major Pharmacist.

Van Olmen, Lieutenant Colonel.

J. Voncken, Lieutenant Colonel of the Military Hospital of Liège.

*Chile*

José Santelices Lantano, Doctor, Direccion de la Oficina de Sanidad.

*Colombia*

Francisco Gnecco Mozo, Medico Cirujano.

*Czechoslovakia*

Dominik Capek, Lieutenant Colonel Surgeon, Chief of the Medical Group of the Technical and Aeronautic Institute of Prague.

Ludvik Fisher, General, Chief of the Medical Department.

*Denmark*

A. Jurgens, Major, Army Surgeon.

H. W. Scheuermann, Major, Marine Surgeon, First Class.

*Dutch East Indies*

J. C. Hubach, Military Surgeon, First Class.

J. F. Hulk, Chief of the Naval Medical Service.

*Ecuador*

Abel Romeo Castillo y Castillo, Doctor.

*France*

G. H. Barthet, Major, Reserve Pharmacist, President of the French Association of Reserve Military Pharmacists.



Budin, Surgeon Dentist of the Reserve. Representative of the National Federation of Dentists of the Land and Sea Forces.

Carmouze, Colonel Surgeon of Colonial Troops.

Cras, Surgeon Vice-Admiral, Director General of Naval Medical Service.

Dopter, Medical Inspector General, President General of the Medical Consultative Committee.

Duthilloeul, Lieutenant Colonel of Administration, General Directorate of Medical Services.

Huber, Major Surgeon (Reserve) of the Hospitals of Paris, Representative of the Federative Union of Reserve Medical Officers.

Jouvelet, Lieutenant Colonel Surgeon of the Directorate of Colonial Troops.

Manceau, Major Pharmacist, Professor agrégé at Val-de-Grâce.

R. F. Pâitre, Colonel, Professor at Val-de-Grâce.

Pilod, Lieutenant-Colonel, Professor at Val-de-Grâce.

Rouvillois, General, Director of the Medical Service.

A. Saint Sernin, Pharmacist Chemist, First Class, Chief of the Pharmacy Service at the Port of Brest.

A. Schickelé, Colonel, Chief of the Technical Service of the Medical Department.

V. G. J. Vansteenbergh, Captain of Administration, Reserve, Representative of the Union of Officers of Medical Administration.

Vaucel, Major Surgeon Second Colonial Infantry Regiment.

### *Great Britain*

Bond, R. St. G. S., Surgeon Vice-Admiral, Medical Director General of the Royal Navy.

Ford, Surgeon Commander, R.A.F., M.S.

Frederick Gladstone Hines, M.D., President of the Pharmaceutical Society of Great Britain.

G. Lloyd, Major, D.S.O., F.R.C.V.S., R.A.V.C.

W. P. MacArthur, Colonel, D.S.O., O.B.E., M.D., F.R.C.P.I., K.H.P., R.A.M.C.

J. MacIntyre, Group Captain, Royal Air Force, Medical Service, D.B.M.B., B.C.H., K.H.S.

A. D. Stirling, Lieutenant Colonel, D.S.O., M.B., R.A.M.C.

### *Guatemala*

Virgilio Rodriguez Betla, Doctor, Encardago de Negocios.



*Hungary*

D. Andrés Petrásovitz, Doctor of the University of Budapest.

*Italy*

Virginio de Bernardinis, Lieutenant Colonel Surgeon, Editor in Chief of the *Giornale di Medicina Militaire*.

Luigi Franchi, Lieutenant General Surgeon, Director General of the Military Medical Service.

*Japan*

Masaji Kitano, Major Surgeon, First Class; Ministry of War.

Shimpei Takemasa, Chief Surgeon, Second Class of the Navy; Ministry of Marine.

*Monaco*

Louet, Colonel Surgeon, Surgeon-in-chief to H.S.H. the Prince of Monaco.

*Mexico*

Roberto Alvarez Boettiger, Subteniente Cirujano Dentista.

Francisco Castillo Najera, C.C. General Brigadier Medico Cirujano.

*The Netherlands*

J. C. Diehl, Doctor, General of Brigade, Inspector of Military Sanitation, Director of the Medical Service.

J. F. Hulk, Superior Officer, First Class, Director of the Medical Service of the Navy.

H. H. Poelman, Lieutenant Colonel Pharmacist, Chief of the Military Pharmaceutical Service.

S. W. Praag, Surgeon Major, First Class.

*Nicaragua*

D. Manuel Ignacio Terán, Doctor, Consul General de Nicaragua en Barcelona.

*Paraguay*

Carlos Dáz de León, Doctor, Coronel de Sanidad.

*Philippine Islands*

C. A. Santos, Doctor.

*Poland*

Jean Czys, Colonel Surgeon, Medical Department, Ministry of War.



Jean Garbowski, Colonel Surgeon, Instruction Centre of the Medical Service.

Jean Kawinski, Colonel Surgeon, Medical Department, Ministry of War.

Etienne Krupiński, Colonel Pharmacist, Medical Department, Ministry of War.

Stanislaw Rouppert, General of Brigade, Director of the Medical Service, Ministry of War.

*Portugal*

Manuel Fernandez Gíao, Colonel Surgeon, Director of the Medical Service.

*Roumania*

C. Wistor Anastiasu, Colonel Surgeon.

I. Balanescu, Colonel Surgeon.

V. Brezeanu, Major Surgeon.

M. Butoianu, Inspector General, Medical Service.

N. Marinescu, Colonel Surgeon.

G. H. Parvulesco, Colonel Surgeon.

C. Suhateanu, Colonel Surgeon.

*Santo Domingo*

Porfirio Dominici, Doctor.

Juán de Olózaga e Hidalgo, Doctor.

Pedro Sanchez Merino, Doctor.

*Switzerland*

K. Hauser, Colonel Surgeon, Chief of the Medical Service of the Army.

J. Thomann, Colonel Pharmacist, Chief of the Pharmaceutical Service.

P. Vollenweider, Lieutenant Colonel Surgeon.

*Turkey*

Turgut, Doctor.

*Delegates from the United States of America*

Wm. Seaman Bainbridge, Commander Medical Corps Fleet, U. S. Naval Reserve.\*

Harold D. Corbusier, Colonel Medical Reserve, U. S. Army.

F. E. Fronczak, Lieutenant Colonel Medical Reserve, U. S. Army.

Julius F. Neuberger, Lieutenant Commander Medical Corps, U. S. Navy.

\* Promoted to Captain, Medical Director, M.C.-F., U.S.N.R., March 2, 1934.

*International Committee of the Red Cross*

G. Patry, Colonel Surgeon, Vice-President of the Committee.

*League of the Red Cross Societies*

D. Vincente Jimeno, Colonel, Army Medical Service, Inspector General of the Spanish Red Cross.

D. A. R. Larrosa, Assistant Secretary General.

Réné Sand, Doctor, Technical Advisor to the League.

Ernest J. Swift, Secretary General of the League.

Jorge Navarro Viola, Member of the Governing Council and the Executive Committee of the League.

*Italian Red Cross*

Caccia, General Surgeon.

*Sovereign Military Order of Malta*

Marqués de Rafal, President.

Conde de Vallengano, Member.

Enrico Blanco Soler, Member.

*International Office of Public Hygiene*

Julio Bejarano, Director General of Sanitation.

*International Commission of Standardization of Sanitary Material*

K. Hauser, Colonel Surgeon (Switzerland).

STATUTES OF THE SEVENTH CONGRESS

1. The nation which acts as host furnishes a report for each question under discussion. The Permanent Committee designates the other countries that will furnish reports.

2. The manuscripts must reach the Secretariat of the Congress four months before the meetings in order that they may be published and distributed to the delegates at the opening of the sessions.

3. The reading of each report during the Congress must not exceed twenty minutes.

4. The reading of communication relevant to the questions on hand, may not exceed ten minutes.

5. Five minutes are allowed to each member for general discussion.

6. The discussion being closed, the authors of official reports and of communications, and those who take part in the discussion will meet



and draw up the general conclusions, which are then submitted to the vote of the Congress.

7. Only official delegations are permitted to vote, each nation having the right to one vote.

8. The conclusions that are accepted will be communicated to the various governments.

9. The reports and communications may be given in any language, their text being followed by a summary in one of the following languages: English, Spanish, French or Italian. The text will be printed only in Latin letters.

#### PROGRAM OF THE SEVENTH "INTERNATIONAL CONGRESS OF MILITARY MEDICINE AND PHARMACY"

The meetings of the Congress were held in the Palacio de Exposiciones del Retiro.

*Sunday, May 28.*—Meeting of the Permanent Committee, Banquet offered by the Personnel of the Congress Commissions to the Permanent Committee.

*Monday, May 29.*—Delivery of Documents, Reunion of the Chiefs of Services and Delegates. Presentation of Delegates. Presentation of these to the Ministers of State for Foreign Affairs, War and Admiralty. Inaugural Session.

*Tuesday, May 30.*—Plenary Session. Subject I. Reading of Papers.

*Wednesday, May 31.*—Plenary Session. Subject I. Discussion and drawing up of conclusions.

*Thursday, June 1.*—Separate Sessions. Subjects II, III, IV, V and Veterinary Section. Assembly of Directors and Chiefs of the Army Medical Service.

*Friday, June 2.*—Separate Sessions. Subjects II, III, IV, V and Veterinary Section. Discussion and drawing up of conclusions. Assembly of Directors and Chiefs of the Army Medical Service.

*Saturday, June 3.*—Scientific demonstrations. Closing Session. Official Farewell Banquet.

*Sunday, June 4.*—Field Maneuvers. Review of the Medical Service Troops.

#### INAUGURATION OF THE CONGRESS

The inaugural session of the Congress was held in the Teatro de la Comedia in Madrid, with the President of the Republic of Spain, Alcala Zamora, in the chair. Twenty-eight nations were represented by fourteen hundred delegates. High officials of Spain, in military and civil life, were seated on the platform, together with the members of the Permanent Committee and the heads of delegations. The theater



was beautifully decorated. Addresses were made by Medical Lieutenant-Colonel Jules Voncken, Secretary of the Permanent Committee, Medical Lieutenant-Colonel Augustin Van Baumberghen, General José González Granda, General Stanislaw Rouppert, and Medical General Dopter, as follows.

*Medical Lieutenant-Colonel Voncken*

Colonel Voncken expressed thanks in the name of the Permanent Committee for the generous hospitality so kindly extended to the Seventh International Congress of Military Medicine and Pharmacy. Repudiation of war, disarmament, universal peace—this ideal of those who have known the tragic era of 1914-1918, where has it vanished, he asked? We medical officers have always joined our efforts with those who endeavor to realize and to maintain unending peace among men. It has been our work, since the first meeting in Brussels, and our constant care, to create this fraternal spirit even among the armies. The pursuit of this ideal has led us through the different capitals of Europe here to Madrid, where for the first time the responsible representatives of International Law meet the Chiefs who represent the Medico-Military Services of the Armies. This encounter alone is profoundly suggestive, showing the development of this conception of the international rôle of Military Medicine. The power of this symbol and the importance that may be attached to it, must be credited to Spain, who, by associating in an efficient collaboration our medical officers and jurists, has today written the preface of a world work of conciliation and serenity. In order to attain our goal, it is necessary to create a medico-military soul and spirit, above hatred and passions, so as to give to men and to the peoples the vision of what it is in our power to do to limit the destruction and reduce the cruelties of future war.

*Medical Lieutenant-Colonel Augustin Van-Baumberghen*

Colonel Van-Baumberghen welcomed all who had come from far away, from the most remote parts of the globe, to do honor to Spanish soil! In order to get here and to leave from here, he continued, you have had to traverse many regions of this country, and have seen that nothing of the legendary Spanish chivalry has vanished. The spirit that animates us in these Congresses, the hopes on which they are founded and the accomplished results, are recorded in the account rendered by the Secretary of the Permanent Committee. It is our hope that the scientific interest of this Seventh meeting will not prove inferior to that of its predecessors. The speaker expressed the gratitude of the Organizing Committee to the authors of the official reports



and communications and to all who helped toward the accomplishment of the work of the Congress. Certain innovations are started at this Seventh Congress which were suggested by experience. The first concerns the formulation of the General Conclusions which are the basis for future regulations of the Medico-Military Services in their multiple aspects. In order for these conclusions to reflect as accurately as possible the sentiments of all participating therein, the Directorates and Commands of these Services were asked to give the viewpoint of their country on each of the questions. The request was carried out and thus our conclusions are based on solid grounds. Second, the former collective visits have been replaced by a series of scientific demonstrations. Third, Civilian Medicine has responded in a truly splendid fashion to the call of her sister, Military Medicine. The Veterinary Services, an integral part of medicine, have offered their assistance, and the Permanent Committee has accepted the establishment of this new section on trial and as an exception, until further decision as to its permanence. Fourth, the Assembly of the Directors and Chiefs of the Medico-Military Services likewise constitutes an innovation of the highest significance. Fifth, the international task of medicine expands from day to day. To the expert representatives of International Law, who are present, we also wish to express our gratitude for their inestimable co-operation.

*General José González Granda*

The President of the Congress extended a most cordial greeting to the Presidents who preceded him in this position in the assemblies which were held in various European nations. It is distressing, he stated, to see the empty place of a deceased pioneer of these Congresses: Medical Lieutenant-General of the Belgian Army, our unforgettable colleague Dr. Wibin. All our dear comrades, Generals, Chiefs and Officers of the Medico-Military Services, who have come from so many different countries, guided by their love of science, by the spirit of confraternity and by sympathy for our beloved Spain, "I greet most cordially in the name of the Spanish Medico-Military Corps, the Organization Committee, and in my own name, and wish sincerely that their stay among us may prove most useful and agreeable; useful, so that our Congress may prove fruitful; and agreeable, so that the noble and affectionate character of my compatriots, as well as the natural beauty, the historical charm and the artistic treasures in the possession of Spain may engrave on their minds a pleasing and interesting memory such as to remain imperishable."

General González Granda pointed out that these conferences have



the mission of collecting information furnished as a result of the War, and that thus the Presidential Addresses constitute real lessons. He is firmly convinced that it is absolutely indispensable to give scrupulous attention to all the theoretical or practical contributions submitted to the Congress and based this opinion on an interesting and instructive personal experience with first aid treatment to gassed soldiers. He classifies medico-military services in the field into services before, during, and after the engagement. The Medical Division Chiefs must look to the hygiene of the localities destined as quarters for the Reserves, with due observance of the rules concerning situation, capacity, illumination, ventilation, cleanliness, and in the winter season, the appropriate heating of these quarters. In order to guard against epidemics, the Divisional Medico-Military Chief must learn sufficiently in advance the names of the villages from which the reservists come, for some of these places might be the seat, epidemically, endemically or sporadically, of contagious diseases whose development in the Division would prove disastrous. In his opinion, the Divisional Medical Chief should provide printed booklets containing the general hygienic measures to be observed by the soldiers in a variety of military circumstances (marches, camps), in clear, concise words, without technicalities. These sanitary booklets were carried by the Spanish soldiers in the Cuban campaign. In the Russo-Japanese war, both the belligerent armies were supplied with them.

In the Spanish Army, water is rendered potable by means of the German Henneberg system, which achieves a preliminary filtration and purification under pressure of a hemi-atmosphere, (temperature of 110 degrees C.). For the disinfection of wounds, the Dakin-Carrel solution is utilized, which also purifies water for drinking purposes. Thirty drops of fluid per liter of water and a half hour's action are sufficient, always working on the basis that two milligrams of free chlorine are sufficient for one liter of water. When the water is under suspicion this figure is advisably raised to five milligrams, in order to secure a reliable purification.

The Spanish Field Hospitals are under the orders of the Medical Chief of the Army Corps. There exists one per Division, and each can receive two hundred wounded. It is readily understood that for purposes of classification of the wounded, it is necessary to X-ray them in the Divisional Medical Formations and in the Army Corps Hospitals. All the dressing stations, especially the divisional, are principally classification posts, so that the transportable wounded may be withdrawn more and more to the rear. The wounded who are able to walk (25 per cent) and who are evacuated sitting from the divisional



posts, form, with the others, a total of 40 per cent of men transported seated; 40 per cent still remain who must necessarily be transported in the recumbent position. Twenty per cent of the casualties remain dead on the field.

*General Stanislaw Rouppert*

General Rouppert extended greetings in the name of the Polish Government and the Polish Army as well as of the Honorary Presidents of the Congress. He stated that every time the International Congress of Military Medicine and Pharmacy reopens its sessions, the fruits of past labor, experience and collaboration are evident to a greater degree. At this seventh meeting, it is the hospitable soil of Spain which offers to the discussions the majestic background of her incomparable monuments, her sublime landscapes and the imposing spectacle of the progress accomplished by a great democracy. The ancient walls of the famous Spanish Universities that have sent forth so many learned men, indicate the importance attached to science by the Spanish nation; our Spanish colleagues add the precious gift of their devotion to the noble cause that unites us all and in which we co-operate in a spirit of solidarity and enthusiasm. The Congresses of Medical Aviation and the Session of the International Office of Medico-Military Documentation, which are being held at the same time, show the extent and far-reaching significance of the problems about to be studied.

*Medical General Dopter*

Medical General Dopter, Inspector of the Medical Services of the French Army, presented the greetings of the official and other delegates and their thanks for the warm welcome extended to them, which is really traditional on entering the glorious soil of Spain. The purpose of these periodic reunions is simple: It consists in an international collaboration in a purely humanitarian task to insure the hygienic welfare of the soldier and relieve his sufferings in peace time as well as during war. In all his military life, but especially in the field, the soldier is exposed to microbic infections, against which he must be immunized. In addition, he is exposed to the enemy's fire, which may either kill him or perhaps result in permanent infirmities and bodily damage. It is, therefore, extremely necessary to join all our efforts in order to improve the conditions under which the wounded must be picked up on the battle field, then transported to the medical formations, and then operated upon, so that the surgical intervention may be perfect of its kind and capable of giving the best possible result. While the fighting armies are engaged in a work of destruction, the Medico-Military Service is there to heal and repair. Surely there is



no nobler rôle to fill from the humanitarian and social viewpoint, and no more generous deed to be done, especially when it is indiscriminately exerted on soldiers of the belligerent armies, irrespective of their nationality, or their enlistment in the ranks of friend or foe. It is in this exalted spirit that the officers of the Medico-Military Service, here present, will combine their beneficent activities.

\* \* \*

The meetings of the Congress were held in the Palacio de Exposiciones del Retiro. The first session was opened by the President of the Seventh Congress, General Granda, who then turned the chair over to Medical Lieutenant General Franchi of Italy.

#### PERMANENT COMMITTEE

##### *Members*

President: General José González Granda (Spain)

Secretary: Lieutenant-Colonel Jules Voncken (Belgium)

Members: Medical Colonel Augustin van-Baumberghen (Spain)

Medical Lieutenant-Colonel Virginio de Bernardinis (Italy)

Colonel Schickelé (France)

Captain Wm. Seaman Bainbridge (United States of America)

Major A. D. Stirling (Great Britain)

Pharmacist Colonel Jules Thomann (Switzerland)

General Tourkino (Brazil) (absent)

Jonkheer Sandberg van Boelens (The Netherlands—temporary—to complete the work of the Sixth Congress held at The Hague—1931)

Honorary Presidents: General Wibin\* (Belgium)

General Della Valle (Italy)

General Vincent (France)

General Rouppert (Poland)

General Sir Matthew Fell (Great Britain)

Major General Diehl (The Netherlands)

There have been several changes in the Permanent Committee because additional arduous duty of certain of its members, have made their usual work on this Committee impossible:

Colonel de Bernardinis takes the place of General Caccia (Italy)

General Tourkino takes the place of General Soares (Brazil)

Colonel Schickelé takes the place of General Malaspina (France)

#### MEETINGS OF THE PERMANENT COMMITTEE

A great deal of work was covered by the Permanent Committee

\* Deceased.





Meeting of the Permanent Committee in the Hall of Exhibitions Palace of the Retiro, with its subcommittees at meetings directly previous to, during, and after the Congress sessions.

This Committee is the center upon which the working basis of the Congresses is founded. It organizes the Congresses, publishes the *International Bulletin of Military Medicine*, carries on the International Office of Medico-Military Documentation, and the International Assembly of the Chiefs of the Medical Services of the Armies, studies technical problems having an international character, and has connection with international organizations.

The policy of having international inquiries on various questions has proved most successful. Numerous inquiries have been received and have been answered by many countries.

National correspondents transmit to the *International Bulletin*, by one of the military services, technical contributions for publication. At least one such from each correspondent must be forthcoming during the year when there is no Congress. These correspondents have also the duty of forwarding reviews of military publications of their country and of events that transpire in the medico-military field. The National Correspondents thus form the Educational Committee of the *International Bulletin*, the Chief Editor being the General Secretary of the Permanent Committee, and the Permanent Committee staff, the directing organ.



The question which arose at the first meeting of the Permanent Committee at the Seventh Congress as to the admission of German as an official language was held over for later decision.

It was decided that only as an exception may the Veterinary Service be admitted to the Congresses, inasmuch as this Service does not enjoy neutrality conferred by the Geneva convention.

In regard to the understanding between the *Archives Médicales Belges*, with which the *International Bulletin* is fused, and the Office of Medico-Military Documentation, it was adopted by the Permanent Committee that the two organs which provide the basic capital (the *Archives Médicales Belges* and the *International Bulletin*) at the end of each year share the profits and losses.

In accordance with the new statutes, two temporary members are elected to the Permanent Committee for two years. At this Seventh Congress, Lithuania and Mexico were unanimously elected. These Governments will be requested to name the individual to represent it. Medical General Nagevicius, Chief of the Medical Service of the Lithuanian Army, and Dr. Castillo Najera, Mexican representative at the League of Nations, were provisionally appointed to fill the positions.

The gracious invitation of the Roumanian Government to hold the Eighth Congress at Bucharest in September 1935, was cordially and unanimously accepted.

The following subjects were decided upon for consideration at the Eighth International Congress of Military Medicine and Pharmacy:

1. Principles of organization and the functioning of the Medical Services in mountain warfare. (Reporting countries—Roumania and Italy).

2. Determination of fitness for the different specialties of the Armies, Navies and Air Forces (Reporting countries—Roumania and France).

3. The Post Traumatic Abdomen (Reporting countries—Roumania and the United States of America).

4. Investigation in the unification of methods of analyzing the food and drink destined for the soldier (Reporting countries—Roumania and Czechoslovakia).

5. Bucco-Dental Care at the Front (Reporting countries—Roumania and Lithuania.)

6. Comparative Study of the powers of the Sanitary Administration Service in the different Armies, Navies, and Air Forces (Reporting countries—Roumania and Chile).



The following are the subjects reported herein :

1. General Principles Regarding Medical Services in War Time; Their Application to the New Rulings of the Geneva Convention.
2. Preventive Vaccination in the Army, Navy and Air Force.
3. Treatment in the Advanced Posts of Urgent Surgical Casualties in a War of Movement Scheme of a Specialized Formation; Its Technical Organization and Its Employment from the Tactical Viewpoint.
4. Preserved Foods as a Regular Ration for Soldiers in Peace Time or in the Field. Their Modes of Preparation and Analysis.
5. Comparative Study of the Odonto-Stomatological and Administrative Services in the Different Armies, Navies and Air Forces.
6. (VETERINARY SECTION) Glanders. a) Clinical and Prophylactic Study. b) Bacteriological Study. c) Anatomico-histopathological Study.

GENERAL PRINCIPLES REGARDING MEDICAL SERVICES  
IN WAR TIME; THEIR APPLICATION TO THE NEW  
RULINGS OF THE GENEVA CONVENTION

OFFICIAL REPORTS

(Sweden and Spain were delegated to prepare the official reports on this first subject. Since they had not participated in the World War, they naturally met with many difficulties in their efforts to cover their subject. Spain had sent military surgeons to the prison camps, and thus had been able to collect important data.)

*Martinez (Spain).*—As pointed out in the detailed and comprehensive paper by Medical Pharmacist Colonel José Potous Martinez on "General Principles of Medical Organization of a Nation at War," these principles are not easily envisaged and explained in advance on account of the vague impression as to the conduct of future warfare. In view of the attempts made by various important nations for the protection of the civilian population against possible attacks with poisonous war gases, it would seem that a new war will assume this aspect; although the other resources which constitute the fighting potentialities of a nation cannot be disregarded. The purpose is to equal or, if possible, to surpass the resources of the enemy, some of the characteristic features of which may be learned in advance by a competent Intelligence Service. Parallel with the fighting factor, the economic factor, which is so closely connected with it, must figure basically in the preparation and maintenance of the war. Both must be reflected in the medical resources as well as in the presumptive number and nature of the losses and casualties. In order to enable the Medico-Military Service to carry on, smoothly accomplishing its mission in the field, these resources should be regulated and developed



through an appropriate distribution, the result of training and fitness of the personnel of the General Staff, and the multiplication of specialties, chiefly hygienic and surgical; and of the officially regulated material as well as the supplies furnished by the Aid Societies, public benefactions, commandeered and mobilized commercial and industrial provisions.

Organization in the front zone, the means for rapid clearing in the first-aid stations and specialized treatments in the various medical posts, will also greatly facilitate the work of the Directors in the different Medical Posts, provided the necessary autonomy can be relied upon for the solution of their respective problems.

Due to experiences in the World War, the Geneva Convention of 1929 provided greater advantages than heretofore for the wounded and sick soldier, as well as for the medico-military personnel. However, in order to facilitate the work and the position of the personnel, with better control and utilization of the material prescribed, it is in need of further elucidation in the matter of neutrality and other points. It is likewise also desirable that these questions be unified in the different Armies, in an effort to introduce in the new Regulations of the Military-Medical Service in the field, a few paragraphs to clear up the subject of war losses in the future, under circumstances sanctioned by International Agreements and established by the Geneva Convention.

*Deleito (Spain).*—In his paper on the "Application of the New Rulings of the Geneva Convention," Medical Lieutenant Colonel Federico Gonzales Deleito emphasized that the adhesion of all civilized countries to the various agreements accepted in Geneva by the Red Cross Association, aiming at the improvement in the care of the wounded and sick in the field, must inevitably be reflected in the regulations of the Medical Service at the front. The mission of military medicine is to lessen, as far as possible, the unavoidable cruelties of warfare, by assisting the fallen, sheltering them and obtaining the restoration of their health. This is the essential point and the guide of the military surgeon in the field. His service must be in accord with that of all the agencies which aim at the same objective.

#### CONCLUSIONS

I. In formulating the general principles to serve as a standard of a nation's medico-military organization in the event of war, the principal difficulties consist in the lack of knowledge concerning the offensive measures to be predominantly utilized by the enemy, the consequences resulting from an extension of the hostilities, the theater or theaters where these occur, and the special type of enemy encountered.



II. As a corollary of the foregoing statement, and aside from the personnel and material, prescribed by regulations, it will likewise prove difficult to adjust the reserves and the eventually utilized or acquired new material to the extent or gravity of the engagements, or to the necessities which may arise in the course of the campaign.

III. In order to estimate as nearly as possible the medical emergencies of the conflict, it is necessary to take into consideration the financial resources of the country, its fighting strength (without overlooking in this connection the resources of a possible enemy); the theater or theaters on which the fight will presumably develop.

IV. The provisions of an exclusively medico-military plan must principally concern the training, selection and distribution of the entire technical as well as auxiliary personnel; the equipment with regulation medical supplies, as well as material derived from other sources; the organization and rules of the Services.

The considerations relating to the foregoing conclusions may be summarized as follows:

#### A

(a) To be a Medical Officer (under this term are here included the other technical and auxiliary corps which make up the Army Medical Service) requires preparation, training, and practice aiming at specialization.

(b) Although the purely professional instruction given in the Universities and required for Entrance Examinations by the Army as well as the Technical Colleges and Application Schools is superior to all other preparations, it is necessary to study everything related to the peculiarities of the work done in the military environment. Extensive facilities and ample resources must be made available for this purpose.

(c) Everything that tends to facilitate the work and to improve the personnel, materially and mentally, will stimulate the zeal felt by all members of the Medico-Military Service in the discharge of their arduous duties, and will affect their enlistment and selection, as well as their efficiency on the battle field.

(d) The important contribution furnished by the Organized Reserve and Auxiliary Personnel, as well as that represented by the Civilian Medical Service and the Aid Societies, must be classified and organized in the same spirit, always keeping in view the respective activities of these workers in warfare.

(e) The development and growth of the specialties, especially with respect to hygiene and surgery, benefit the Army itself and the popula-



tion at large, and contribute to the division of labor and the saving of material, in peace as well as in war.

(f) The organization of the Medical Units in the various echelons, while adjusted to the Army regulations, requires theoretical and practical specialization of the personnel during peace. This specialization will be obtained by instruction more or less modified by the lessons of war, leaving a wide margin of initiative, and constituting an ample selected reserve of trained personnel.

## B

(a) The regulation allowance of materiel and the reserve supplies for their replacement should be complete during peace time, and during the mobilization the more elaborate units for which there is no immediate need should be parked in order not to hinder the rapid transportation of the troops and their services.

(b) These reserve supplies as well as those obtained by requisition, from industrial and commercial mobilization and manufactured in shipyards and workshops should be controlled and tried out before shipment, practical instructions being given for their employment, replacements being arranged for and likewise the auxiliary personnel, expert or trained in handling them.

(c) The supplies donated by the public, after a previous examination by a technico-financial commission directed to the more definite control of the expenditures and acquisitions of this kind which are its special concern, will be regulated by an incoming and outgoing flow according to the progressive needs of the campaign.

(d) The Aid Societies and the Public Health Service should always keep in touch with the Army Medical Service in case of war or when war is imminent so that it may be possible to use to advantage their help, since past experience has taught us that they must contribute considerable medical materiel.

(e) In spite of the fact that no such extensive and long continued conflagration as the World War is to be expected and in view of the uncertainty of war as a science, it is necessary to make plans for the procurement, manufacture and upkeep of the medical supplies which are needful for the good operation of both large and small military units and of the medical formations attached to them in an ordinary war without losing sight of the reserves and precautions required for more important military operations.

(f) After adequate theoretical and practical instruction the civilian population should be provided with means of defense and protection against possible gas warfare.



## C

The regulations must aim at autonomy in the technical direction of the Services, as well as at the listing and classification of the casualties in behalf of their easy evacuation and hospitalization. A full, clear and, at the same time, simple record is required.

*de Rojas (Spain).*—Sub-Inspector Pharmacist E. Fernandez de Rojas divides his report on "Medical-Pharmaceutic Organization in case of War" into three parts: 1) Pharmaceutical Services. 2) War Gases. 3) Industrial Mobilization. A short sketch is given of the Pharmaceutic Service in general, with a rapid glance at the War Gas Service, and the article is terminated with a few comments on industrial mobilization.

It is shown that the successful transition of a nation from peace to war is dependent upon perfect organization, carefully studied in the calm days of peace. In both periods, the Direction of the Pharmaceutic Service should never fall beyond the scope of the technical expert. The directing organs of this Service must therefore be the General Inspection of Pharmacy and the Directorates or Heads of the Pharmaceutic Service at the General Headquarters of large units. In the military domain, while technically dependent upon the pharmaceutic chief of the next higher post, these Services are governed by the High Command. The nation must be in possession of laboratories, medical supplies, and divisional drug stores, in connection with hospitals. The laboratories should be localized at the appropriate points for the manufacture or preparation of medicinal agents and sanitary material. Their headquarters must be established at the principal railway junctions available to the nation, in order to afford more rapid transportation and delivery to the various pharmacies. The fighting troops must be equipped with "Pharmacy Groups," belonging to one of the great units.

It must not be forgotten that during peace, a National Committee of Medicinal Plants must be organized; also that in case a nation does not possess all the indispensable remedies for the requirements of her Army in war time, she must be in possession of a carefully selected stock of the eventually needed medicinal products, because the transformation from peace to war is chiefly a question of quantity, in the distal posts which constitute the army. Thus, in peace as well as in war, the military pharmaceutic service will depend, technically, on the General Inspection of Pharmacy and on the pharmaceutic chiefs in the various units constituting the Army, while from the military viewpoint, this Service is governed by the corresponding military authorities. The executive organs of the Service will be the Pharmacy Groups,



attached to the great units, comprising the fighting force of the nation, and must ensure the functioning of the services of toxicology and analysis, hygiene and disinfection, medicinal therapy and supply. In peace as well as in war, Pharmacy Depots should exist at the most convenient railway centers and junctions for the renewal of supplies to the Pharmaceutic Services and substations of the corresponding zone. Laboratories must be provided for the preparation in sufficient amounts of medicinal and chemical products, and antiseptic dressings, for the requirement of the different Services which the civilian industry is unable to furnish. The General Headquarters, assisted by the General Pharmacy Inspection, will keep statistics of production and consumption of medicinal agents, chemical products, dressings, pharmaceutic material, in peace and in war time, corresponding to a general mobilization of ten per cent of the inhabitants of the country.

The Medical Plants Committee will take charge of the cultivation of these plants and will study the acclimatization of species which are not indigenous to the country, but are imported from abroad. In case of war, a prepared nation will be stocked with remedies, chemical products, pharmaceutic material and medicinal plants, which the country cannot produce.

In the War Gas Service, the pharmacist in his capacity as chemist, should preferably occupy a post in the department dealing with analysis of the gases, defensive means, preservation of material employed in their utilization, as well as in that dealing with the processes of production and improvement of this new type of warfare, which will be a powerful weapon in future conflicts.

*Laguna, Sanchez, Lopez, Rojo, Perez (Spain).*—The following representatives of the National Pharmaceutic Union took up the question of the "Hygienic-Sanitary Function of the Civilian Pharmacist in the General Mobilization of War": Carmelo Muela Laguna, Director of the Sanitary Brigade of Valdepenas; José Bayona Sanchez, President of the Pharmaceutic College of Cordoba; Nazario Diaz Lopez, Pharmacist (Santander); Heliodoro Fernandez Rojo, Military Pharmacist, Honorary Member of the Palencia Pharmacists; Leopoldo Lopez Perez, Major Pharmacist (retired) of the Navy, Honorary President of the Lerida Pharmaceutic College.

The services that the civilian pharmacist can render in the event of general mobilization must be subordinated to the degree of the country's wealth and resources. His task must be discharged in close collaboration with all the branches of pharmacy. It is only in this way that such assistance will be of actual value. The realization of these



concepts demands an idealistic viewpoint, based on the most absolute patriotism, which alone can imbue it with life. The Ministries for Foreign Affairs, in agreement with those for National Defense, in association with the Directorates of Agriculture, Industry, Commerce, and Hygiene, should formulate regulations for the organization of complete industrial mobilization of the country in case of war. They must issue definite instructions to the civilian population, for their protection against war gases and concerning emergency measures to be utilized for the "gassed," until they can be treated at the nearest aid post. Through his education and knowledge, the civilian pharmacist can at all times render efficient assistance in this respect, especially in rural populations, in the event of a war. Due to his competence in questions concerning hygiene, bacteriology and chemistry, it is his duty to lend his valuable co-operation in the various problems directly related to National Defense.

*Garcia, Pipaon (Spain).*—Veterinary Sub-Inspector Medina Garcia and Veterinary Surgeon Saenz de Pipaon in their report on the "Importance of the Veterinary Services in the Army," stated that in order to obtain a perfect functioning of the Veterinary Services, the highest efficiency of the military veterinary surgeons, and the greatest good from their personal qualifications, the Veterinary Corps must have a personality of its own, and its organization must rely on the acceptance of an authority ample enough to permit personal as well as collective initiative, to develop in harmony with the general objectives of this Service and to guard against all friction, complications and delays in the advantageous application of measures of a technical character, indicated by the existing circumstances.

The general principles of the veterinary organization in case of war must comprise the following: 1. Rules for the enlistment, mobilization, and distribution of the personnel, so that its rôle may be most useful in the hygienic, medical and surgical management of the animals in the concentration camps, during transportation, in and after the engagements. 2. The relations between the Veterinary Service and the Medical Service, in the human health problem of the fight against animal diseases transmissible to man. 3. Finally, the rules to be followed for the discharge of the sanitary duties of the veterinary surgeons with relation to food which increase in importance during war, with the need of preservation of the health of the troops. The various functions exerted by military veterinary surgeons in war time require a special preparation for which it is necessary to maintain an organization during peace, adapted to the military purposes of the Service, and in keeping with the economic capacity of the country.



*Nordlander (Sweden).*—"General Principles of the Medico-Military Organization of a Nation in War" was the subject of the report of Medical Lieutenant Colonel Oscar Nordlander, Chief of the Army Medical Service of Sweden. After a brief review of the Geneva Convention, with special reference to newly introduced details, Colonel Nordlander pointed out that the protection accorded to the medical personnel and material is subject to certain conditions specified by this Convention. In all circumstances, the activity of the Medical Posts is to be carried out under the shelter of the emblem of the Red Cross. Unfortunately, the possibility of abuses must always be reckoned with. One such occurred in the last war, and perhaps also in the course of preceding wars, where the convention of Geneva was recognized by the belligerent. It consisted in the tendency of persons not belonging to the Medical Service to wear the Red Cross arm piece, in order to escape ordinary risks. In order to guard against this abuse of the emblem, Article 21 of the Convention prescribes that the medical personnel be provided, in addition, with a special identity mark, which is designated as an "identity card." It behooves each of the interested nations to define the shape and aspect of this document. However, we are still waiting for the Commission on Standardization to propose a uniform type, a project for which has been elaborated. Sweden is already utilizing an identity card for the entire medical personnel of the Army, the Navy and Aviation, as well as for the entire medical personnel of the voluntary Red Cross posts. This card is contained in a paper envelope having a window of transparent paper, revealing the stamp of the military authority or of the Red Cross Headquarters, as well as the photograph of the bearer, in the case of those not clad in uniform. It is to be carried in the breast pocket of the coat. The arm piece worn by the entire *ordinary* personnel of the Medical Service must be provided with the stamp of the military authority or some other corresponding authority.

The progress achieved by aviation in the course of the last ten years has caused a more and more extensive employment of aeroplanes in the transportation of sanitary material. In various countries this transportation is made in aeroplanes specially equipped as ambulances and has proved very serviceable. Sweden has had occasion to acquire a great and valuable experience in this domain. The new Geneva Convention foresees the utilization of this mode of transportation in war time and has established a certain number of fundamental rules for this Service (Article 18). These aeroplanes must likewise, in conformity with the rules, be provided with the emblem of the Red Cross. It is noteworthy in this connection, that ambulance aeroplanes utilized



in peace time by private societies or by various concerns, for medical transportation, are not permitted to carry the emblem of the Red Cross. It would seem to be advisable, however, that the use of this emblem be authorized in peace time, with the reservation that the owner of the aeroplane place the apparatus at the disposal of the Army in case of war. These medical aeroplanes might eventually be required to meet certain official conditions of installation and equipment. The foregoing statements with respect to medical aeroplanes are applicable, in a corresponding measure, to automobile ambulances not belonging



A group of delegates at the reception by the Spanish Minister of War.

to the Medico-Military Service or to the Red Cross. Such is the organization adopted by Sweden for the past several years.

Movable or stationary aid posts enjoy protection under the emblem of the Red Cross. It was found, however, that this protection sometimes proved insufficient. The aid posts must therefore be indicated in a more efficient manner, and the emblem of Geneva must be rendered distinctly visible to the enemy. The question as to whether the aid posts should be compelled to declare their site during the various positions of the conflict, is of pure military interest and is entitled to closer study and discussion. Meanwhile it is necessary to complete the mechanical equipment by appropriate signs for recognition. Sweden on its part has solved the problem in the following manner: All aid posts are supplied with special sheets bearing a red cross and destined



to be spread out on the ground, on the tents, or on the roof of buildings employed for medical purposes. These sheets measure four meters in circumference and the arms of the cross must have a length of 0.8 m. This arrangement seems to ensure a more satisfactory protection. It is not possible to achieve an efficient protection in all cases.

#### COMMUNICATIONS

The following Communications were presented on the first subject:

*"Utilization for the Medical Service, of the Means of Transportation Offered by Modern Industry."*

Medical General Uzac (Reserve) France

*"Transfer and Transportation of Sick and Wounded Soldiers and Those Who Have Had Operations."*

Dr. José Luis Sanfelices, Medical Office, Vina del Mar (Chile)

*"General Principles Regarding Medical Services in War Time; Their Application to the New Rulings of the Geneva Convention."*

Dr. Enrique Blasco Salas, Medical Captain (Spain)

#### PREVENTIVE VACCINATION IN THE ARMY, NAVY, AND AIR FORCE

##### OFFICIAL REPORTS

*Dudley, Whittingham, Dawson (Great Britain).*—"Preventive Inoculation in the British Naval, Military, and Air Services" was taken up by Surgeon Captain Sheldon F. Dudley, O.B.E., Royal Navy, Group Captain Harold E. Whittingham, C.B.E., Royal Air Force, and Lieutenant Colonel A. Dawson, Royal Army Medical Corps.

The preventive inoculations considered in this paper are those against the enteric fevers (typhoid and paratyphoid), diphtheria and scarlet fever, influenza and the common cold. In the Royal Navy, men are inoculated against the typhoid fevers before proceeding to foreign service, but those serving at home are not inoculated.

Since 1921, the technique of manufacture and administration of the vaccine used in the British Navy has been the same as that used in the Army, except that *Bacillus paratyphosus C* is included, because this organism is alleged to be especially prevalent in the Mediterranean, where a large portion of the British fleet is employed. The vaccine now in use, known as the T A B vaccine, contains *Bacillus typhosus*, 1000 millions per cc., *Bacillus paratyphosus A*, 750 millions per cc., *Bacillus paratyphosus B*, 750 millions per cc.

All army troops proceeding to the Colonies and to India are advised to undergo inoculation and a very high percentage of the overseas troops are so protected. In the Royal Air Force, personnel are



inoculated against the enteric groups only on proceeding overseas, and yearly while abroad. The inoculations are carried out in the cold season as far as possible. Broadly speaking, the incidence of enteric fevers is in inverse ratio to the degree of civilization of the countries concerned. Experience confirms the well known but often forgotten importance of general sanitation. No vaccine can be expected to give adequate protection against massive infection. The present T. A. B. vaccine is efficacious, as the relevant statistics of the World War and of the post-war period testify; but it is submitted that the judicious introduction of several strains of the various organisms concerned might enhance its protective value.

With respect to immunization against diphtheria and scarlet fever, no definite policy regarding the immunization of personnel has been adopted as yet in the Royal Navy, Royal Army, and Royal Air Force, as the incidence of these diseases is low. At the Army Technical School for Boys, at Beachley, all boys entering the school are now immunized with toxoid-antitoxin mixture. Since the autumn of 1931, recruits throughout the Eastern Command have been immunized. While this is not compulsory, there has been no difficulty in getting the men to submit to the inoculations. No immunized soldier has contracted diphtheria. Scarlet fever has at times been very prevalent in naval training establishments. The results of a prophylactic campaign with the use of anti-scarlet fever inoculations, as seen in the short training establishment called H.M.S. St. Vincent, are encouraging, and the method merits an extensive trial.

There is ample evidence from observations made without and within the Services to justify the adoption in boys' training establishments, at any rate, of the Schick and Dick tests to detect non-immunes, and the subsequent immunization of these non-immunes. This procedure would practically eliminate diphtheria and scarlet fever from the service schools and training establishments.

Reports on the use of vaccine for the prevention of influenza and the common cold in the Services are not unanimous as to the value of inoculation, although they are on the whole favorable. In the Royal Navy, a mixed vaccine containing all the usual organisms isolated from minor respiratory infections is supplied for those who want to use it. The vaccine is always made with strains of bacteria isolated from recent epidemics. There has been no properly controlled investigation on the value of anti-influenza and catarrh vaccines, in the Navy or other Services. Vaccination against influenza and colds is not compulsory in the British Army.



## SUMMARY

The results of the experience of the British Navy, Army and Air Force show that immunization by the inoculation of vaccines against the enteric fevers leads to the establishment of a very considerable degree of protection against these diseases, but that general measures of sanitation must not be neglected.

Immunization against diphtheria and scarlet fever has not been applied extensively, as the incidence of these diseases is low in the British Services, but it has proved of value when it has been employed. In service schools and training establishments, prophylaxis by active immunization has been used to a considerable extent and has been found to be very efficacious.

Immunization against influenza and the common cold is a problem of great magnitude, and although the employment of vaccines has been reported on favorably by various officers in the Services, others have reported unfavorably. In order to decide on the efficacy of the vaccines in use, these vaccines would have to be employed on a large scale for several years, during which time accurate records would have to be kept of the occurrence of influenza and of colds of all degrees of severity, in the population under observation. At present it appears to be possible to record only those cases admitted to hospital or presenting themselves for medical treatment.

(*Japan*).—The Medical Department of the Japanese Navy discussed in its report "The Control of the Typhoid Group in the Imperial Japanese Navy." The national epidemics-preventive law and its regular enforcement should unquestionably be observed in dealing with typhoid cases, as the disease is known to be communicable. Independently of this law and its provisions, however, the organization and regulations for the prevention of an epidemic have been established in detail in the Japanese Navy, through the protection regulations, the service instruction for the staff on war ships, protective regulations in naval stations, and the customary control of war ships. In the first place, it is characteristic of the Japanese Navy that the Chief or Commandant of each marine office or vessel serves as a unit responsible for the prevention of an epidemic. In the above mentioned regulations, all precautionary measures against the epidemic are formulated, from general outlines to minor details. The medical authorities aim at the prevention of the importation of the infectious germ and at the eradication of the root of the epidemic, by the adequate and infallible enforcement of suppression of the cause of infection, and individual precautionary measures.



Preventive vaccination is the first front line for the prevention of typhoid fever in the Japanese Navy, where a mixed preventive vaccination of typhoid, paratyphoid A and paratyphoid B is applied every year, regardless of the presence or absence of the epidemic. It goes without saying that the effect of the preventive vaccination is not absolute, and inoculated individuals sometimes contract the disease, owing to such factors as a strong infectious power of the causative agent or a weak protective potency due to the body constitution of the inoculated individual.

*Kitano (Japan).*—In his report on "Prophylactic Inoculation in the Japanese Army," Major Masaji Kitano, Medical Corps, Imperial Japanese Army, considers anti-typhoid and anti-paratyphoid inoculations; preventive injection against bacillary dysentery; preventive injection against cholera; preventive injection against the plague; preventive injection against epidemic cerebrospinal meningitis; vaccination against smallpox; preventive injection against influenza-pneumonia in the Japanese Army; also other contemplated preventive injections, such as against diphtheria, scarlet fever, typhus, tetanus, gas gangrene and Weil's disease. Major Kitano emphasizes that the efficacy of any protective inoculation is not absolute, but is relative, due to the reciprocal relation between the immunity of an individual and the virulence of the causative organism. He summarizes as follows:

1. Protective inoculations against smallpox, typhoid and paratyphoid B have been usually carried out even in peace time throughout the Japanese Army. Anti-paratyphoid A and anti-dysenteric inoculations are carried out chiefly in the troops showing a comparative prevalence of these diseases. Protective inoculations against epidemic cerebrospinal meningitis, plague and influenza-pneumonia were carried out, as occasion demanded. Anti-tetanic inoculation was performed on wounded soldiers. Some other inoculations were carried out very rarely or not applied at all. Oral administration is used against bacillary dysentery, but its use against other diseases is not considered necessary at present.

2. The anti-typhoid inoculation causes a comparatively considerable decrease in the rate of infection, and a slight decrease in the mortality, in most cases showing somewhat milder but irregular symptoms. The anti-paratyphoid A and B inoculations generally show nearly the same results as mentioned, but their efficiency is lower than that of the anti-typhoid inoculation.

3. The anti-dysentery inoculation slightly reduces the rate of infection. It is noteworthy that in the Japanese Army, a special method has been used for oral administration against dysentery, with a prophy-



lactic effect apparently nearly the same as that of the protective inoculation.

4. The result of protective inoculation against cholera is generally good and when carried out at the proper time shows a decrease in the rate of infection and mortality.

5. The anti-plague inoculation is recognized to reduce the rate of infection and mortality.

6. Protective inoculation against cerebrospinal meningitis appears to be fairly efficacious, but cannot always be relied upon.

7. Vaccination against smallpox is the most effective of all prophylactic inoculations. Its effect is of long duration and strikingly reduces the rate of morbidity and mortality. However, the duration of effectiveness may sometimes be unexpectedly short. All the vaccines may not be of the same potency, and it is recommended that vaccine with a strong eruptive power should always be chosen for use in the army.

8. A definite efficiency of the protective inoculation against influenza-pneumonia is not to be expected, because the influenza virus still remains unknown. Protective inoculation using Pfeiffer's influenza bacillus and pneumococci, apparently reduces complications and secondary pneumonia infection, as well as the mortality, but further investigations are still needed along this line of inquiry.

9. Protective inoculation of anti-tetanus serum has been proved to be fairly efficacious when applied to wounded soldiers in war time. However, protective inoculation by means of both active and passive immunization is recognized as more suitable. Active immunization has been experimentally studied in the Japanese Army, and favorable results have been obtained in some cases.

10. Protective inoculations against diphtheria and scarlet fever are not necessary because of the rare incidence of these diseases in the Japanese Army.

Pamphlets entitled "Directions for Prophylactic Inoculations" are distributed among the troops for information regarding the application of prophylactic inoculations giving the method and dosage, as well as the precautionary measures to take before and after the inoculation. Medical officers and soldiers should be ready to apply first aid treatment during the period of general reactions and symptoms.

*Casariago (Spain).*—Reporting on "Preventive Vaccination in the Armies on Land, Air and Sea," Army Pharmacist Carlos Sáez y Fernando Casariago (Spain), stated that the recruiting of soldiers into the Army involves the assembly, in military quarters, of several hundreds and sometimes several thousands of men. These come from very different districts and regions, some of which may be considered as



healthy, while in others typhoid fever, Malta fever, or malaria may be endemic. Such recruits are naturally germ carriers and potential sources of infection. Therefore, it is proposed that the local and regional conditions of the entire country be ascertained, so that men coming from a region infected by an epidemic or endemic outbreak may be kept under observation and given the necessary preventive treatment in order to guard against the spread of the infection to healthy districts. Before their entrance into the Army, recruits who are obliged to enlist in infected districts should receive preventive vaccine treatment in an effort to avoid the contagion to which they will be exposed. Recruits enlisted for the Colonies, where experience has shown the need of preparedness against special, more or less endemic diseases, should likewise be subjected to corresponding preventive vaccinations before their departure for their destination.

At the beginning of their military service, all recruits should be vaccinated against smallpox, no matter what the date of their last vaccination.

In regions where there has been an influenza epidemic within the last ten years, especially if there has been a recurrence during that period, the entire garrison must be vaccinated during the month of September, after a preliminary medical examination to decide the dosage.

In war time, at the commencement of the campaign, the entire fighting army should be vaccinated against all ordinary infectious diseases and re-vaccinated as experience advises it. Against the typhoid-paratyphoid-coli-bacillary group, entero-vaccine should be utilized; against the cholera vibrio, the plague bacillus and others, a polyvalaccine of Castellani type should be prepared, with the object of protecting the men against the greatest possible number of infections in the shortest period of time and with the least discomfort to the individual.

The Field Ambulances and Hospitals should keep on hand the vaccines recommended as preventives against gangrene. For the more efficient protection of newly admitted patients, vaccine should be prepared from the infected wounded on their arrival.

The experience of the World War showed that every epidemic outbreak of various infections or eruptive fevers coincided with the arrival at the front, of reserve troops coming from the interior, without previous examination or observation. Much money would have been saved and numerous lives spared if the mobilized Army had been formed exclusively of individuals immunized against all possible epidemics, instead of being the carriers of epidemic germs, with consequences as dangerous for their compatriots as the bullets of the enemy.



*Martos (Spain).*—A survey of the results of anti-typhoid-paratyphoid, anti-plague, anti-cholera and smallpox vaccination was made by Medical Lieutenant Colonel Paulino Fernandez Martos, Director of the Academy of Military Hygiene (Spain) in his report on "Preventive Vaccines in the Armies on Land, Sea and in the Air." He believes that anti-smallpox vaccination should be obligatory in the troops, and applied with a regulated technique using a vaccine of the greatest purity, prepared and preserved in the Institute of Military Hygiene. Anti-cholera vaccination is an efficient prophylactic weapon for the protection of the Army and the endangered civilian population. In 1917 in Spain, an anti-rabies vaccination service was established in the Institute. Since then, this service has been normally developed and has prepared as much vaccine as needed by the Army and the civilian population of the Spanish Protectorate Zone in Morocco. The accomplished result could not be more favorable, as not a single case of rabies was lost among the vaccinated, nor were there any of the paralytic sequelae as reported in other statistics. The preparation and preservation of the fixed virus is carried out according to the classical procedure, by means of subdural inoculation into the cranium of trephined rabbits. The method of vaccination which is strictly followed consists in the customary procedure of Hoyes. With regard to the preparation and administration of the fixed virus, the anti-rabies service is centralized in the First Section of the Central Establishment of Military Hygiene; and with regard to human vaccination, in divisional laboratories, except in Madrid, where the Institute of Military Hygiene takes their place.

The above mentioned vaccines are regularly applied in the Spanish Army. Up to date certain other infections, such as diphtheria and scarlet fever, have not assumed the character of a medical problem, though in other countries they require strong measures of immunization. Should the need arise, the First Section of the Central Establishment of Military Hygiene will efficiently meet all eventualities, for it possesses a trained personnel and sufficient material. Sero-prophylaxis and sero-therapy of diphtheria, tetanus and gangrene have been established, with material produced in the Institute since the years 1900, 1915 and 1926, respectively. With regard to cholera, the Spanish epidemiology of this disease necessitates provisional measures, and the Institute therefore keeps itself in readiness to protect the country against possible importations of cholera. Anti-cholera vaccination is an efficient prophylactic weapon, which should always be available to all Armies, for their own defence and for the protection of the civilian population.



## COMMUNICATIONS

The following Communications were presented on the second subject:

*"Attempts at Preventive Vaccination with Tetanic Antitoxin in the Polish Army."*

Dr. Owezarewicz, Dr. S. Saski, and Dr. Stethiewicz (Poland)

*"Comparative Antityphoid Vaccinations by the Hypodermic and Buccal Route in the Polish Army from 1928 to 1932."*

Dr. V. J. Babeski (Poland)

*"Remarks on Ultra-Virus."*

Dr. Cesar Tejada Salgada, Medical Commandant of the Navy (Spain)

*"Immunity against Infections in the Army."*

Dr. Martin Salazar (Spain)

*"Routine Vaccination of the Newborn with the B.C.G.—Results."*

Dr. Tormos de Benito Landa (Spain)

*"Antityphoid Vaccination in the Expeditionary Corps in Cirenaica (1914-1916)"*

Medical Captain Fiore Mario, Udine Military Hospital (Italy)

TREATMENT IN THE ADVANCED POSTS OF URGENT  
SURGICAL CASUALTIES IN A WAR OF MOVEMENT.  
A SPECIALIZED FORMATION; ITS TECHNICAL  
ORGANIZATION AND ITS EMPLOYMENT  
FROM THE TACTICAL VIEWPOINT

## OFFICIAL REPORTS

*Ulla, Vega, Menguijon, Jimenez, Santos, Irigoyen (Spain).*—The first part of Spain's report was submitted by Medical Lieutenant Colonel Gomez Ulla; Medical Commandant Sanchez Vega; Medical Commandant Herrer a Menguijon; Medical Captain Madruga Jimenez; Medical Captain Martin Santos; and Major Pharmacist Campoy Irigoyen, who stated that the assistance rendered to the wounded in warfare has been and always will be a problem surrounded by difficulties. Aside from certain invariable fundamental principles in warfare, much is incidental and hard to foresee and control. As these hazards and surprises are more frequently observed in a war of movement, the difficulties sometimes increase in unsuspected proportion, suggesting that in a future war, the surgeon's task will be very precarious and difficult, as it already proved to be during the World War. Surgical activity begins at the moment when the wounded is struck down.

The medical organization of the extreme vanguard is formed in all





SOME OF THE CHIEFS OF DELEGATIONS WITH MEMBERS OF THE  
PERMANENT COMMITTEE

armies by the so-called Battalion, Regimental and Divisional Aid Posts. The operative indications to be met at the front line are:

(1) Surgery of extreme urgency, i.e. emergency surgery (profuse hemorrhages; emergency tracheotomy) entirely restricted to and practised by the regimental service and first line ambulances. (Field Hospitals)

(2) Primary emergency (wounds of the large body cavities and major fractures); to be carried out at a distance of fifteen to thirty kilometers to the rear in specialized Field Hospitals, mobile surgical stations, and certain specialized hospitals close to the front.

(3) Secondary emergency surgery (more or less seriously wounded, who can be transported without increasing the danger to life); to be practised at a distance of over eighty kilometers to the rear, constituting the genuine medical organization, with its specialized and evacuation hospitals. From this simple classification, it follows that practically the primary duty of the first line personnel is to place the wounded in safety and security, for later transportation to the rear.

The organization of the Vanguard or Army Corps is represented by specialized stations situated at more or less distance from the fighting line, according to the conditions of the territory, the lines of evacuation, and other considerations. Here the following groups of wounded are to be operated upon, and in the following order:



- (1) Vascular wounds, apt to endanger life.
- (2) Abdominal wounds, without exception.
- (3) Thoracic wounds, in cases requiring immediate treatment.
- (4) Wounds of the skull, when evacuation to more stationary posts at the rear cannot be carried out within twenty-four hours.
- (5) Wounds caused by shrapnel, artillery and explosives.

The most urgent casualties, where the necessity for intervention is a question of hours, perhaps minutes, call for treatment on the battle field itself or its immediate vicinity and consists almost exclusively in the control of grave hemorrhages which directly endanger life. Unfortunately, in some cases, these hemorrhages come from wounds of the large abdominal or thoracic vessels, which are beyond the help of surgery; these casualties succumb in a few minutes on the battle field. As expressed by Wieting: First line surgery is the surgery of hemorrhages.

Accordingly, at the advanced posts, in a war of movement, surgical treatment is equivalent to zero. The task is that of giving the wounded the simplest and most urgent care required by their condition, and providing adequate means for their transportation, with suitable apparatus, as may be required. Successful treatment is based upon the rapidity and efficacy of evacuation to the nearest Surgical Centres.

The proposal of a Specialized Station must necessarily in a war of movement, rest from the surgical viewpoint upon the lessons taught by the World War, taking as a basis the practical Unit proposed by Marcille with its successive modifications and improvements. In view of the characteristic features of a war of movement, the 1917 type of Field Surgical Hospital (Plisson) appears too complicated, and the Field Surgical Group model 1925, constructed in Paris for the Spanish Army, is recommended as a more movable formation. The material entering into the composition of this Group is actually transported by automobile lorries, but aerial means of transportation must be kept in mind, and the opportune utilization of machines like the Autogiro Cierva, capable of landing without the usual indispensable aviation grounds should be taken into account. The contemplated Formation requires a fixed personnel to insure its functioning and an incidental personnel for the technical-professional service which continues the surgical treatment of very urgent casualties in need of it, and also attends to the emergency casualties previously mentioned. The said Unit will constitute an Army Corps Service, intermediate between the Services of the extreme Vanguard or the Divisions, and the more stationary Army Services. It will carry out its technical task by endeavoring to follow all the movements of troops of which it forms a part. For the accomplishment of its functions, it should be installed in the immediate



vicinity of the Field Hospital or commandeered buildings, as the case may be, and possess ambulances and hospital aeroplanes of the autogiro type, for the evacuation of the wounded who have been operated upon. For mountain warfare, in the absence of means of communication, the authors propose the "Gomez Ulla Mountain Surgical Hospital," employed by the Spanish troops in Morocco.

*Falero, Laita (Spain).*—The second half of Spain's report was taken up by Medical Commandants of the Navy, Rafael Martinez Falero and Rafael Abengoichea Laita. The prospects of the recovery of a wounded soldier are better, the earlier and more complete is the surgical assistance he receives. No other intervention is equally capable of preventing the infection of a wound as its prompt "trimming" (debridement). A surgical operation should not be performed in any place where it cannot be absolutely guaranteed that the necessary work may be completed without interruption and under proper technical conditions. The Service must be specialized as much as possible. The personnel or staff should likewise be specialized and be distributed in such a way as to achieve the maximal results.

In the Regimental Aid Posts, only the most urgent operation should be performed, of the type of first aid. All wounded soldiers, in this first station, should be given prophylactic injections of anti-tetanus and anti-gangrene sera. Special care should be exerted in these Posts for the rapid evacuation of the wounded to the nearest Surgical or Base Hospital. In a war of movement, the placing of Field Hospitals very near the fighting line is dangerous on account of the enemy's fire, and is therefore useless. In such a war, it is necessary for the Surgical Hospital to make a selection of the wounded, separating those requiring an emergency operation and the non-transportable casualties from the remainder which are to be speedily evacuated to the Evacuation Hospital. In order for the Surgical Hospital to attain its maximum mobility, it is imperative that its hospitalization capacity be reduced to the absolutely lowest necessary figure. The Complementary Surgical Group is indispensable so that the services rendered by the Field Hospital may at all times be proportionate to the number of admissions.

The specialized surgical formation is, accordingly, composed of the Surgical Hospitals and the Complementary Surgical Group. This service is not complete without reinforcing it by the Surgical Section of the Evacuation Hospital, which Hospital must be provided with the necessary means for the performance of all kinds of major surgical operations, as rapidly and promptly as possible, in order that as many wounded may be treated and attended to as its accommodations permit.

*Leman (Belgium).*—The Historical Chapter of Medical Lieutenant Colonel Leman's report on "The Treatment of Urgent Surgical Casual-



ties at the Front. Proposal of a Specialized Formation," covers the period prior to 1914, the features of the French Medico-Military Service in the second portion of the campaign, and the functioning of the Service at the end of the War. He then deals with the actual Belgian Organization. Taught and inspired by the experiences gained in the course of the war by the French Armies, the Belgian Army, in reorganizing its Medico-Military Service after the war, adopted in 1924 the system of Surgical Hospitals. These Formations, while complete in personnel, are still in the course of being established with respect to the material.

In a war of movement, casualties are relatively few and the mobility of the troops necessitates a constant displacement of the Aid Posts. These formations must therefore be flexible, light and fairly unencumbered. Their rôle must often be limited to the treatment of very urgent casualties, as close as possible to the troops, while the other wounded men can at once be transported to a greater distance. In many cases, moreover, the Army Corps Surgical Hospital cannot be charged with the actual selection among the total number of wounded. Experience at the end of the 1914-1918 War shows that in this respect this formation as a rule had to limit itself to the selection of the most urgent casualties.

So-called "heavy" surgical Hospitals were first installed in 1917 and were composed of a more numerous personnel and a material analogous to that of the 1915 Mobile Hospitals, but in a larger proportion. The Formation comprised nineteen Medical Officers, including two radiographers, one pharmacist, an Administration Officer and an extensive subordinate personnel. This heavy surgical Mobile Hospital was chiefly incorporated in the Medical Army Groupings, while the 1915 Formation was attached either to the same Groupings or to the lighter ones of the Army Corps.

The status of the functioning of the Medical Service at the end of the War, with regard to urgent casualties, in a war of movement, is best appreciated in the light of the lessons taught by the offensive battles fought in 1918 by the French armies, when movable surgical Field Formations had been organized. This functioning was prescribed by a general Headquarters Order, dated June 4, 1918. The regulation recognized the extreme difficulty of operative surgery in the Divisional Post in the majority of the situations of a war of movement. This large Unit was not readily adjustable to such conditions, requiring as it does, stability, calm, and the use of often non-obtainable means. On the other hand, the lesser mobility, the more assured stability and security of the Army Corps, permits the installation of surgical means of a



certain amplitude, in the great Unit. It is necessary, however, to preserve the character of mobility and flexibility, which permits a successive displacement in connection with the troops. The medium distance from the first lines is to be about ten, at most twenty to twenty-five, kilometers from the troops, when an advance is contemplated. Accordingly, rather light formations are needed, with a somewhat reduced hospital capacity, and consequently they must not be encumbered with types of wounded to be sent further to the rear. These Army Corps Formations are therefore to be reserved for non-transportable wounded soldiers and very urgent emergencies.

The special surgical attentions needed for the wounded whose condition requires an urgent surgical intervention can be bestowed only in the Divisional Surgical Hospitals adapted and equipped for this Service. A proportion of urgent casualties varying from four to eight percent is generally admitted, according to the nature of the tactical procedures and in conformity with the distance between the formations destined for the wounded and the medical station which supports these formations at the rear. Assuming six hundred casualties per army corps on the day of the battle, including 6 per cent of highly urgent or emergency cases, thirty-six seriously wounded will have to be operated upon. Experience teaches that an operating table at which surgeons work in rotation, taking turns without interruption during twenty-four hours, can serve for all the necessary operations in the course of that day. The Hospital must therefore have a minimum of three surgical teams. In a war of movement, this number will generally suffice, and it seems that the light hospital should be organized on this basis, in order to preserve its mobility. In this manner, too great a number of operating surgeons will not be needlessly immobilized at the Army Corps, in the event of fewer casualties. In providing for more numerous casualties, reserves in the form of supplementary hospitals or merely surgical teams, would permit eventual necessities to be met; this is an application of the well known military rule of economy of forces and utilization of reserves. Thus these reserves are shown to possess considerable importance and must be calculated on the basis of the maximum number of casualties which may be suffered by an army.

The history of the use of surgical hospitals during the last part of the War has shown that, in the majority of circumstances, it proved desirable to group this formation with other medical units in order to constitute a complete functional grouping. Being light, relatively slightly equipped with hospital material, the surgical hospitals found in this grouping a collection of means for facilitating their work. The



surgical hospital thus found it fairly easy to complete a pre-existing installation by bringing to the same its specialized means. In consequence of its delayed intervention, it could accomplish its work more rapidly, and could detach itself without too much difficulty from the nucleus, when its employment at this point was no longer required, while proving indispensable at another part of the front.

The study of the functioning of the surgical hospital of the Army Corps, a formation reserved for urgent casualties, cannot in the majority of the cases be dissociated from that of the "grouping" or "centre." This study must comprise the combined agency of the medical units under the authority of a single Chief; the designation of these units; the choice of their locality; measures relative to the installation; the functioning of the center.

In the Belgian Army, the various units which organically compose the Army Corps Medical Service form, through their administrative union, a body designated as the "Medical Corps of the Army Corps." This body is placed under the authority of a superior medical officer, Commandant of the Medical Corps, who is provided with a certain number of adjuncts, surgical, administrative, secretarial.

The choice of location of the medical units naturally devolves upon the Commandant of the Army Corps, on the basis of proposals made by his Medical Service Commandant. It goes without saying that these proposals must very strictly foresee a good union of the center with the Medico-Military Service as a whole. For the purpose of coordination, the Army itself may take charge of the choice of placement of the center; this will be notably the case when installations are concerned, which have already been utilized by medical formations, more particularly when these have been specially equipped for the Medico-Military Service. Suitable localities are hospital and industrial establishments, schools, convents, large castles and large farm houses. Many of these structures must be supplemented by the utilization of neighboring buildings, or by the erection of tents. They often involve the disadvantage of not complying with the condition of isolation, as required for the security of the center. Castles, when of sufficient size, often combine the desired isolation with connecting highroads, important annexes, good internal arrangements (heating, water, kitchen); the possibility of free access for vehicles; and the presence of lawns adapted to the erection of tents.

In the absence of buildings, the center must be established entirely under tents or in temporary barracks, which requires a solid, even territory connected with cross roads and highways, and near a water supply. Experience has shown that the initial situation of the center



must correspond to a distance of ten to fifteen kilometers from the front line. It must be of easy approach, placed along the connecting paths of the divisional medical service served by it, and in easy communication with the medical service to which it must evacuate. Importance is attached to placing the center at a distance of five hundred to one thousand meters from all important artillery objectives, such as cross roads, railway stations, munition stores.

Good functioning must be based on the specialization of the services and the proper distribution of the wounded and sick. The center is therefore subdivided as follows:

- (1) Reception: Surgical  
Selection: Medical (sick, gassed)
- (2) Surgical Service: Bandaging  
Surgical interventions, Operating Room  
Hospitalization, Radiography
- (3) Medical Service: Special interventions on entrance  
Installation for the Gassed  
Hospitalization
- (4) General Services: Pharmaceutic, Administrative.

The internal functioning, with respect to the wounded, is governed by two distinct methods according to the military situation:

(a) Few casualties: The center can be charged with the actual (or surgical) selection for all categories. It will retain at least the most urgent casualties. The other wounded, after they have been bandaged, will be sent to the Army Medical Formation.

(b) Numerous casualties (actual battles). The center receives only the most urgent wounded or at least wounded classified as such, roughly selected at the divisional station (10-15 per cent). The true selection, to be carried out by the Medico-Surgical Center of the Army Corps, will be restricted to singling out the wounded who are really urgent cases (5-6 per cent); those for operation and for hospitalization; and to evacuate the others.

The treatment to be applied at the center will be exclusively limited to real emergencies, the considerable number of which will necessitate this restriction. The casualties who have had their wounds dressed will be sent to the evacuation station, while the urgent cases pass through the radiographic room, and then to the operating room. After operation, they will be transported for hospitalization.

#### VIEWPOINTS OF THE MEDICAL SERVICES OF VARIOUS NATIONS

*Czechoslovakia.*—In the Czechoslovakian Army, the treatment of urgent surgical casualties in the fighting zone in the course of a war



of movement, is entrusted to the field hospital. According to the organization regulations, the most essential rôle of the hospital is to receive and treat the grave casualties which require immediate medical or surgical intervention. Hence, this hospital, from the surgical viewpoint constitutes a basic element in the organization of the Medical Service in the campaign. Its medical officers include at least two operating surgeons. The supply of material permits operating even upon complicated surgical cases. It possesses two operating tables with the necessary accessories and a field radiosopic apparatus. As to its tactical employment, the field hospital constitutes an organic element of the superior tactical units; it exerts its activity in the zone of military operations, behind the line of light artillery. The field hospital, when the necessity arises (very numerous casualties) can be re-enforced with respect to its surgical activity, by the co-operation of a special and independent unit, named "Surgical Team." This unit complements the field hospital in such a way as to provide an establishment endowed with a complete special surgical equipment.

*United States of America.*—For the purpose of this discussion, a very urgent surgical case is assumed to be one that in the American Army is classified as non-transportable. The treatment of such cases at stations in advance of the hospital station, that is, in the aid station and in the collecting station, is necessarily confined to such measures as immobilization of fractures, arresting hemorrhages and combating shock. When the patient reaches the hospital station a decision must be made as to whether he is in a condition such that immediate transportation by ambulance to an evacuation hospital would, of itself, destroy any chance of his ultimate recovery which he might have if not subjected to further transportation at this juncture. Experience in the World War has shown that the actual number of such cases is comparatively small, not over one per cent of the total wounded.

In the American Army, units known as surgical hospitals are organized and utilized for the care of the so-called non-transportables. These units are allotted at the rate of ten per type Army, and have a bed capacity of 250 patients each and an equipment which weighs approximately 35 tons. The personnel consists of twenty officers, twenty nurses and 110 enlisted men. It is necessary to provide motor transportation for the movement whenever a surgical hospital is to be moved by road, as the unit has transportation sufficient only for interior economy. Truck transportation is furnished by the Army from the most available source. It would often be practicable to utilize trucks pertaining to established or reserve medical regiments. Surgical hospitals should be held in reserve usually with other medical units, and so distributed as to be readily moved forward when required. When



combat is imminent, they should advance on rails as far as possible, and assigned ordinarily at the rate of one per front line division. They should be established within two hours after combat begins on or near the main routes of evacuation and near lateral routes to adjacent divisions. These points are, preferably, immediately adjacent to the sites of divisional hospital stations. Their specific locations are usually assigned on recommendation of the corps surgeon. Surgical hospitals may be turned over to the corps for movement and establishment, their location being reported at once to the Army surgeon. Although these hospitals are located in division areas, they usually remain under Army or corps control in order that medical units of the division may be unhampered when the division advances. Once established, surgical hospitals remain fixed until all patients are physically fit for evacuation.

Studies since the World War have shown that our present surgical hospitals are too large to insure ready mobility and in consequence it is now contemplated to reduce considerably their bed capacity and weight.

It is felt that in future warfare, the airplane ambulance will play an important part in evacuation and under suitable conditions surgical hospitals may be dispensed with, airplane ambulances carrying the so-called non-transportable and other severe cases from the division hospitals stations directly to the general hospitals in the communications zone.

*Italy.*—In the Italian Army, the most urgent casualties (asphyxia, grave hemorrhages) in a war of movement are treated on the battlefield and in the battalion or regimental aid posts. This treatment, however, is merely provisional. The actual and rational surgical care in urgent cases is applied in the light medical formations carried in automobiles and therefore easily movable though without means for lodging the wounded, who are always referred to other advanced medical posts provided with such means (medical sections, field hospitals). Such specialized medical formations (surgical centers) are equipped with personnel and material and provided with the latest technical improvements for the performance of any emergency surgical intervention. In view of their special constitution, the surgical centers (equipped with light trucks) are easily moveable and consequently can very rapidly arrive at the advanced medical stations.

In the first advanced medical formations, battalion or regimental aid posts, the urgent cases of minor surgery are cared for, and consist of first dressings, hemostasis and immobilization of fractures. The divisional medical service is charged with the duty of placing their wounded in condition for evacuation to the appropriate formation,



whose surgical work consists of emergency operations, hemostasis, control of dressings and of fracture apparatus, anti-tetanus and anti-gangrene injections. The wounded are thus put in proper condition to tolerate the transportation to the surgical formation where they are to be treated. The surgical work is done in the army corps formations, which are equipped with necessary material and personnel for the purpose. Here are performed all the major operations of emergency surgery, such as: interventions in internal hemorrhages, on large open or closed fractures, in contusions of limbs and wounds with extensive tissue destruction.

In moving warfare, aside from the advanced medical formations, use has been made of the mobile surgical outfits for the treatment of very urgent surgical casualties. They had the task of intervening where the need of treatment of the wounded was most acutely felt. They consisted of an operating surgeon as Chief, two subordinate medical officers, one a surgeon, the other a radiologist, and a medical non-commissioned officer as adjunct. The wounded who were operated upon in the fighting zone were evacuated behind the front in automobiles or carriages, to the triage post, whence they were evacuated by means of a medical train to the army hospitals.

It is suggested that these surgical outfits, such as were utilized in the War, should form an integral part of the Army Corps, and should consist of one Chief (operating surgeon), five assistant medical officers, two radiologists, one dentist, five attendants, ten stretcher bearers and mechanics, totaling twenty-four men, who form two surgical outfits, capable of working separately.

These two surgical formations are sent by the Army Corps as required. They may approach the front only up to a maximum of fourteen to fifteen kilometers, and that only when they find a shelter free from danger, in which to work. Nevertheless, these formations are insufficient to insure all necessary surgical treatment in great battles where the number of wounded is considerable; they must then be aided and re-enforced by mobile surgical outfits of the Army, always in automobiles. These outfits are four in number per Army and under the orders and at the disposal of the Chief Surgeon of the Army, who utilizes them as required.

From the technical viewpoint, these formations may be pushed, according to circumstances, as far as the medical formations of the extreme vanguard, in the case of advance of the troops, and may be attached to medical formations of more advanced posts in case of retreat, supplementing the surgical task of all vanguard formations in emergencies.



*Jugoslavia.*—Urgent operative intervention of the wounded can be carried out only in the Divisional Surgical Hospitals adapted to and equipped for this service. These Hospitals must be sheltered against the enemy's attacks and protected from artillery fire and aerial bombardment, so that all may have the necessary feeling of security. During the conflict, the work of the Surgical Posts consists of selection of the wounded, separation of those whose condition requires surgical intervention, and those who cannot be immediately evacuated, and assigning and directing those who can be evacuated at once, to a medical station. In these latter cases, a careful examination of the wounds is made, with any trimming and excisions considered necessary before their evacuation. The further work of these Surgical Posts consists in emergency surgical interventions. The Divisional Surgical Hospitals attend to the hospitalization of the wounded whose condition does not permit an immediate evacuation.

In view of the situation on the battle field and the surgical problem to be solved by it, the Hospital must be:

(a) Sufficiently movable to follow the troops in case of an advance and to avoid falling into the enemy's hands in case of a retreat.

(b) Capable of accomplishing much work in a very short time, so as to be enabled, on the sudden arrival of numerous wounded soldiers, to perform the greatest possible number of emergency surgical interventions.

In order to permit the performance of many surgical operations in a short time, the Surgical Hospital must contain a number of surgical "groups" (teams) working simultaneously in several posts. Therefore, it is important to avoid encumbrances which will deprive the Hospital of the necessary mobility. It is, likewise, very important to obtain the best possible yield from the surgical personnel, so that this personnel may be available at a given moment, at the exact point where the need is actually felt. Both of these objectives can be attained when the work is organized according to the principles of surgical staffs. Every surgical outfit forms a whole, and must have its own personnel, its material and its means of transportation. The personnel of the staff comprises an operating surgeon and his adjunct, one or two young assistants, who serve as anesthetist and superintendent of the necessary instruments and hospital attendants. The outfit is composed of a movable shed where the operations are performed; a tent sheltering from ten to twenty wounded; an operating table with all the material necessary for the surgeon's work. The outfit must be capable of installation and ready for work in four to six hours and of being packed up within one or two hours.



## COMMUNICATIONS

The following Communications were presented on the third subject:  
*"Organization of a Surgical Post at the Front with the Assistance of a Medical Aerial Fleet."*

Dr. Adan Huzca, Medical Colonel (Poland)

*"Surgical Treatment of Urgent Casualties at the Front in the War of Movement."*

Dr. Kenji Ybuea, Medical Lieutenant Colonel (Japan)

*"Specialized Pharmacy. Its Organization, Material and its Employment From the Tactical Viewpoint."*

*"The Organization of the British Army for the Treatment at the Front of Urgent Surgical Casualties in the War of Movement. Proposal of a Special Organization, its Equipment and Tactical Employment."*

J. W. Wert, C.M.C., C.B.E., K.H.S., Major General (England)

*"Extradural Anesthesia."*

Dr. Rafael Aiguabella y Bustillo, Medical Captain of the Marine (Spain)

*"Original Contribution on Absorbable Automatic Ligatures, as an Efficient Treatment for Hemorrhages."*

Dr. Sanchez Gomez, Medical Lieutenant Colonel of the Marine (Spain)

PRESERVED FOODS AS A REGULAR RATION FOR SOLDIERS  
IN PEACE TIME OR IN THE FIELD. THEIR  
MODES OF PREPARATION AND ANALYSIS

## OFFICIAL REPORTS

*Hidalgo, Espina, Fernandez, Torrero (Spain).*—Pharmacist Sub-Inspector Emilio Salazar Hidalgo, Pharmacist Commandant of the Navy Emilio Fernandez Espina, Pharmacist Primero Juan Casas Fernandez, and Pharmacist Primero Pedro Calvo Munoz-Torrero, covered the first section of Spain's report on the fourth question. The preservation of food involves putting it in such condition that putrefactive agents do not develop and destroy it. The development of these micro-organisms is favored by the action of heat, by the presence of air, and by humidity. The term "food preserve" is applied to all foods which after appropriate treatment, retain a good appearance, easy digestibility, and an energy approximate to that of the natural product. The preserved products should always correspond with their denomination, and no kind of substitution whatsoever is permissible. The employment



of antiseptic agents must be totally prohibited. As coloring matters, and only within certain limits, cochineal and agents of vegetable origin may be employed, with the exception of gamboge. The containers and the soldering substances must not impart metallic contaminations to the canned products.

All the procedures of preparation and sterilization of preserved foods must be carried out in such a manner as to guard against destruction of the vitamins. On account of the great difficulty encountered in preventing the destruction of vitamin C in preserved foods, it is advisable to add oranges or lemons to the so-called emergency or knap-sack ration, or if these fruits are not available, orange or lemon or tomato juice. These fruit juices, as well as honey, are easily preserved and supply vitamin C, which is missing in food preserves, and which is necessary to prevent scurvy. The preparation of the fruit juices by evaporation at a very low temperature, in the cold in the presence of sulfuric acid, gives a very good result, especially on addition of 10 per cent alcohol to the syrupy mass. In the French Navy, it is made to undergo alcoholic fermentation and is preserved in hermetically closed flasks. Concentrated cabbage juice, prepared in the cold, is likewise advocated as an anti-scorbutic agent as a substitute for lemon juice; but it has a much less pleasant taste and is not advisable for use in Spain, for financial reasons. Tomato juice is easily preserved for a long time and has the advantage of not losing its natural flavor or odor, provided it is prepared under good conditions by means of a vacuum and at the lowest possible temperature. Orange juice may be prepared like lemon and tomato juice. Honey is another food which is considered as one of the most powerful anti-scorbutics, with the advantage of not requiring any special preparatory measures for its preservation or transportation.

The emergency or so-called knapsack ration of the Spanish soldier was fixed in the *Reglamento de los Servicios de Intendencia en Campana*, in 1929, and consists of the following: 500 grammes of biscuit; 250 grammes of meat, preserved; 30 grammes of fat; 50 grammes of legume soup; 10 grammes of ground coffee; 25 grammes of sugar. The ration, if possible, should come in one package, the meat and fat in tins or cans, and the legumes, coffee and sugar in tablets, the last two in a single tablet. This ration may be increased, per individual, by one to two-fifths. The medium percentage composition of the biscuit is as follows: Protein substance, 10.00, fatty substances, 1.00, carbohydrates, 76.00, salts, 1.00, water, 12.00. The 500 grammes of the biscuit furnish 1,600 calories. Preserved meat for army use comes canned,



salted, smoked or frozen. The constantly growing importance of the employment of frozen meat has been taken into account in the Spanish Army. The 30 grammes of fat of the emergency ration furnish about 215 calories, when bacon is the utilized fat. The Spanish Army is supplied with butter by the national industry, which furnishes it in excellent condition. The butter comes in small portions wrapped in paraffin paper, and keeps a long time in this form. Its analysis is carried out according to the general methods. The thirty grammes of butter corresponding to the knapsack ration supply 226 calories. The 250 grammes of meat of the knapsack ration furnish about 465 calories.

The authors add a brief study of some foods which do not figure in the Spanish soldier's ration, but may eventually supply a greater variety in his alimentation. For example, a ration composed of lean bacon 250 grammes and fat bacon 100 grammes, has an energy value and a content in proteins and fats very near that of canned meat preserves. Raisins come packed in wooden boxes or in paraffin paper wrappings, and one hundred grammes furnish 273 calories. Dates are easily preserved and extensively consumed in the Spanish colonies in Africa. One hundred grammes furnish 246 calories. These and other dried fruits may be employed to replace from time to time the legume soup of the knapsack ration. Dried chestnuts have a composition closest to the legume soup; all the other fruits are poorer in proteins. As to chocolate, a tablet of 30 grammes in weight supplies 133 calories. This ration may replace a coffee and sugar tablet. One kilo of dried figs equals about 2,490 calories.

*Perez (Spain).* The second portion of Spain's report by Commandante de Intendencia Eduardo Robles Perez, aims chiefly at giving an account of the regulations in force in Spain, with respect to preserved foods for army consumption, and of the attempts for provisioning the soldier with knapsack or emergency rations. The evolution of modern alimentary ideas may be interpreted as a three-stage evolution, namely, chemical, caloric and vitamin.

### CONCLUSIONS

The principal conclusions to be drawn from this report are as follows:

1. So-called "war biscuits" should form a part of the knapsack or emergency ration of the soldier. As the preservation of ordinary bread for an indefinite time, or rather the prevention of hardening, which renders it uneatable, has not yet been accomplished—perhaps on account of ignorance concerning the physical and chemical causes of this phenomenon—the use of biscuits (crackers) should be accepted



instead of bread in the emergency or knapsack rations. The regulation formula for the preparation of this product appears acceptable.

2. The composition of the emergency or knapsack ration is not considered as entirely settled. This has been demonstrated by the recent experiences at the Pisuerga Grand Manoeuvres. It is therefore desirable that more intensive studies be continued along this line of inquiry.

3. The emergency ration type Sarmiento meets the purpose for which it was created. This ration must be complementary to the emergency or knapsack ration.

4. The theoretical problem of the preservation of meat and similar food stuffs, with respect to putrefaction, has been solved; but it remains unsolved from its practical viewpoint. It is accordingly necessary to continue the study of the installation of refrigerators and canning factories.

*de Ulzurrum (Spain).*—Medical Lieutenant-Colonel Victor Herrero y Diez de Ulzurrum took up the third part of Spain's contribution. Under the heading of general considerations, the author points out that the problem of alimentation in the armies is one of the most important and difficult questions, with regard to the preservation of energy and fighting fitness of the troops, the maintenance of discipline and morale of the soldiers, and their restoration to their homes in good condition. With special reference to preserved foods, it is evident that the changes imposed by time in war, have considerably increased the value of such foods. It is readily understood that preserved foods, perhaps more than any others, are governed by the general laws of physiology and hygiene.

The important vitamins which exist in all natural foods are enumerated in the following order: Vitamin A, which exerts a trophic action on growth and whose absence results chiefly in xerophthalmia and other grave ocular affections, with a predisposition to infections, more particularly tuberculosis. Vitamin B, which is anti-neuritic and whose absence determines beri-beri and other nervous changes; it co-operates with Vitamin A in growth and is resistant against boiling and ultra-violet rays. Vitamin C is the factor of nutritional maintenance and equilibrium. Its absence is revealed by the scorbutic syndrome. It is abundantly present in certain acid fruits, such as tomatoes, lemons and oranges, in milk, in cabbage and many other fresh vegetables, especially in those which receive much light. It is entirely absent in starch, flour, meat extract, and eggs. It is not attacked by ultra-violet rays. Vitamin D is anti-rachitic. The sunlight assists its action. Ergos-



terin, considered as a pro-vitamin and derived from cholesterin, acquires, under the action of the ultra-violet rays, certain properties of the D-factor. It exists in various fishes, more particularly codliver oil, in milk, butter, egg yolk. It is more resistant against oxydation than vitamin A and C; it gradually becomes attenuated on contact with the air. It keeps very well in an oily solution. Vitamin E, reproductive action, is of scanty interest for present purposes, on account of its great resistance and its wide distribution in nature. Vitamin P: Anti-pellagra; likewise very resistant and abundant.

A ration composed of about 90 grammes of protein, 45 of fats, and 350 of carbohydrates, equivalent to about two thousand utilizable calories, is the standard which, in temperate climates, corresponds to a healthy man weighing sixty kilos, at absolute rest. However, this ration must be modified in numerous circumstances:

1. Quantity of work. Under exertion, the heat or energy value of the ration must be increased in proportion to the amount of work, according to its being moderate, hard or very strenuous, up to the figure of four or five thousand or more calories. The Inter-Allied Commission fixed in the World War an approximate figure of three thousand seven hundred calories, which was actually exceeded in some armies.

2. Relation between body surface and volume. The more the surface predominates with respect to the volume, the greater is the food requirement, due to the relative excess of heat irradiation, with loss of most of the heat generated by the organism.

3. The alimentary needs are inversely proportionate to the surrounding temperature. In very warm climates, the ration may be one-fifth to one sixth part less than in moderate climes (Maurel). In very cold countries, mountainous regions, or in winter time, the ration must be increased and a greater part in it must be allotted to fats, in imitation of nature: In arctic regions, the carbohydrates, which are so abundant in tropical countries, may be almost entirely missing.

4. Occupation, habits, race, are other modifying factors, especially the latter as proved by the African, Australian, and other foreign contingents in the World War.

The author discusses the general preparation of food preserves and takes up preserved foods in particular such as:

1. Substances with protein predominance: Meat and its various modes of preservation; fish; eggs; milk, cheese.

2. Fatty substances: Butter, rich in vitamins A and E; bacon, a part of the soldier's ration in many armies, including the Spanish Army; olive oil, likewise furnished to the troops in various armies,



easily digested and readily absorbed. A highly important detail in the preparation of these fatty substances with a tendency to extend to other foods, consists in the possibility of enriching the same in Vitamin D by means of the action of the ultra-violet ray.

(3) Foods with carbohydrate predominance: Biscuit (crackers), tending to replace bread on the numerous occasions when bread cannot be furnished. It is made from flour and water, the latter in very small proportion, so that the mass becomes very consistent. It contains neither yeast nor salt, or, at any rate, these are added in very small quantity, so that fermentation is barely started and the water content does not interfere with preservation. The manufacture of the ordinary biscuit, as made at the present time in Spain and in many armies, gives a product which in a small volume contains all the constituents of bread, but not in a very appetizing form. It is very hard, compact, and very slowly takes up fluids. As its digestive and transforming ferment exists in the saliva and does not occur again until arrival in the small intestine, it follows that if mastication or salivation have been too rapid, as is very common in soldiers, the biscuit is not completely transformed in the stomach where it acts as a foreign body, and gives rise on prolonged use to symptoms of gastric irritation and dyspepsia. It is not surprising that some military hygienists have described a "biscuit diarrhoea." The product, when well made, as is usually done in Spain, can be preserved unchanged for a very long time, and the author has kept some samples for over two years, without the slightest change being demonstrable and without the production of any disturbances on consumption thereof. In Spain as well as in other armies, the soldier does not like the biscuit and often discards it. In spite of the care bestowed in Germany on the preparation with egg of her army biscuit, the results observed in manoeuvres of the Germany army in peace time as well as later in the War were unfavorable. This problem, in the authors' opinion, admits of no practical solution. Each nation has endeavored to solve the question in its own way; Italy, Turkey, Spain, and France manufacture the ordinary army biscuits, round in the two former, square in the two latter, which facilitates packing; in Germany, an addition is made with potato meal, sugar, milk, raw eggs and desiccated egg yolk; Belgium likewise adds egg and sugar.

Under the head of "greens" may be included foods of variable botanical origin whose common characteristic is their consumption in the fresh state. They are very rich in water and cellulose, organic acids and salts, but their nutritional value is scanty, lessening their importance from the viewpoint of this report. However, they contain vitamins,



especially B and C, and in this sense are entitled to attention. The tomato is especially noteworthy, on account of its abundant vitamin content in the four factors, A, B, C, and P, in the raw state, and retained after preparatory procedures, which is credited to the high acidity of the fruit. Vitamin C is the most abundant, and due to it, tomatoes and tomato preserves are deservedly becoming a standard anti-scorbutic factor. During the War, tomatoes formed a part of the ration furnished to the Asiatic and African sharpshooters in France, and at the present day are regularly supplied in some armies (Italy, Argentine). Experiments performed by Dr. Valladolid on scorbutic guinea pigs have shown the extraordinary efficiency of tomatoes, superior in strength and rapidity of action to oranges and to lemons.

The majority of disturbances following the use of preserved foods are caused by:

1. The employment of originally defective materials, such as the meat from sick, cachectic animals, in which a microbial invasion of the blood and organs often occurs before death, in consequence of general prostration and lack of resistance.

2. Absence of cleanliness and care in preparation and manipulation, by negligent, sick or convalescent persons or simple germ carriers; dirty localities and utensils; delayed wrapping or sterilization, which expose the substance to dust, contact with insects, or impurities of all kinds.

3. Insufficient sterilization, which leaves living germs in the food preserve, slowly developing therein if they are anaerobes, or readily multiplying when they receive oxygen and heat, if they are aerobes. However, the sterilization may be sufficient, while the preserve is altered by undestroyed toxins.

4. Small cracks of the containers which remain undetected in the autoclave or during transportation, permitting a contamination of the product.

5. Delayed consumption of the preserve, after the package has been opened, especially in warm or damp climates or localities.

The prophylactic rules are easily deduced from the foregoing statements.

The author, in conclusion, discusses the analysis of preserved foods, which must determine, in the first place, the physiological value of the preserve; second, its alterations (putrefaction of meat preserves). For the determination of foreign substances (very rarely found by the author) as well as for the general analysis of food substances, it would seem advisable to formulate official methods, national or international,



based upon a careful study by technical commissions of the highest standing. Such official, periodically revised methods besides serving the interests of the Army and social interests in general, would by their high scientific guarantee always permit a comparison of the results of individual investigators.

*Thomann (Switzerland).*—As stated by Colonel Thomann, Pharmacist-in-Chief of the Swiss Army, the preserved foods forming part of the ration furnished in peace time as well as in the field, to the Army of Switzerland are: Meat, bread (biscuits), soup and milk (unsweetened condensed milk and milk powder, or desiccated milk). Every soldier, non-commissioned officer and officer carries in his pack, preserved meat, bread and soup. These three form what is known as the reserve ration of the soldier (so-called iron ration). In the mountain troops, this ration may be supplemented by preserved milk. In peace time, the Swiss troops consume a certain quantity of these annually to accustom them to this kind of food, and in order to guarantee the necessary renewal of the preserves forming the stocks.

The chemical examination of preserved meat consists of the investigation of preservative agents (boric, salicylic, benzoic acids); the investigation of alterations of the preserve in general, and of changes of the fat in particular. The methods of analysis for chemical agents are sufficiently known and do not require mention. With the exception of small quantities of saltpetre, the addition of preservative agents is prohibited. Changes of the fat are looked into by organoleptic examination (aspect, color, taste), by the determination of the degree of acidity, and by the following reaction: Shake for one minute in a test tube about 1 c.c. of melted fat with 1 c.c. of hydrochloric acid (1:19), then add to the mixture 1 c.c. of a saturated solution of resorcin in benzol; again shake vigorously, once. Rancid fats strongly color the acid a purplish red. On employing, instead of resorcin, an ethereal solution of phloroglucine at 1 per cent, bright red colorations are obtained (rancidity reaction according to Kreis).

In the investigation of changes of the meat, the following reaction may prove serviceable: Reagent: One part hydrochloric acid, 20 per cent, three parts alcohol and one part ether. Pour into a test tube of suitable size a sufficient quantity of reagent to cover the bottom, then after having strongly shaken the tube, introduce into it a small piece of the suspected meat, so that it comes to lie 1 cm. from the surface of the liquid. If the meat is in a state of ammoniac putrefaction, white fumes are given off (reaction according to Eber).

A bacteriological examination is necessary to confirm the absolute sterility or the suspected cause of the modifications of the preserve. It



must include the search for aerobic and anaerobic microbes according to customary bacteriological technique. Dr. G. Grauz, in his "Study of Meat Preserves," examined 569 samples of preserved meat—some of externally good appearance were bad from the bacteriological viewpoint. As a rule, the sterilization was found to be insufficient. He emphasizes the importance of preserves in the soldier's alimentation, points out that a well appearing preserve is not necessarily fit for consumption and that the need for caution cannot be over-emphasized.

Swiss preserved breads are manufactured with wheat flour extracted at 70-72 per cent, by special procedures. They come in the form of well desiccated, rectangular biscuits, eight of which with a weight of about 30 g. form a ration of 250 g., net; equivalent to a portion of fresh bread of about 500 g. These biscuits have a homogeneous porosity and a very pleasant taste. Their chemical treatment as well as the addition of chemical products to the flour, are prohibited. These biscuits are manufactured by civilian factories, which must guarantee a perfect preservation for three years. The employment of injurious preservative agents is forbidden. It is very similar to the "war bread" of the French army, likewise destined for a long preservation. These biscuits are to be used in case of emergency and when no fresh bread can be procured. The examination must include organoleptic tests, the search for preservative agents, the determination of the water content, as well as the hunt for mineral substances added to the flour, such as alum, borax, persulfates, potassium borate. As in ordinary bread, however, it is not necessary to denounce small quantities of certain substances, such as rice flour, corn, peas or even malt, which is added to the dough in a proportion not to exceed 5 per cent, to facilitate bread formation. The water content of the preserved bread must not exceed 3 per cent, otherwise its good preservation will not be guaranteed.

Soup preserves contain everything that is necessary for the preparation of a palatable soup, namely cereals, legumes, fat, common salt and condiments. First class products are required for their preparation. It is forbidden to add a starchy material for "binding," for example corn. Only beef fat and first class lard are admitted. Fats of a lower quality, such as tallow and vegetable fats, are excluded from the making of these soup preserves. The employment of preservative agents, with the exception of common salt, and the use of coloring agents are prohibited. The content in common salt must not exceed 20 per cent, and the water content must not exceed 15 per cent. Ashes insoluble in 10 per cent hydrochloric acid must not exceed 0.2 per cent. The manufacturers must guarantee a perfect preservation of two and a half



years. The Swiss soup preserves come in the form of tablets weighing 75 g. One tablet suffices to make about three quarters of a liter of soup; for this purpose, it is broken up fine and stirred in a little cold water. The mixture is then poured into three quarters of a liter of boiling water, cooked over a gentle fire for fifteen to twenty minutes and stirred frequently. Eight different soups are utilized in the alimentation of the Swiss troops, including pea, rice and pea, pea and tapioca, barley, oatmeal flakes. The analysis of these preserves includes especially: the organoleptic examination, concerning appearance, odor and taste; the water dosage; the amount of ashes insoluble in hydrochloric acid; the amount of common salt; the amount of fats.

The preserved milk consists of:

1. Condensed (concentrated) milk, preserved by means of sterilization, or by addition of saccharose, and in this case not sterilized. The unsweetened condensed milk comes in hermetically sealed tin boxes of 350 g. and can generally be considered as sterile.

2. Desiccated milk, this is deprived of the greater portion of its water and generally reduced to a powder, which, on addition of hot water gives a liquid similar to milk.

The foregoing contribution is based on the conditions carried out in the Swiss Army, and the author emphasizes in conclusion that in view of the great importance of preserved foods in the soldier's alimentation, a good preservation is one of the first conditions to be met. In order to guarantee this, it is necessary:

1. To employ only first class products (meat, flour, milling products, milk).

2. To observe the greatest cleanliness during the preparation of the preserves.

3. To insure a correct sterilization without altering the organoleptic qualities. When sterilization is excluded, there must be sufficient desiccation (bread, soup). The employment of preservative agents, with the exception of common salt, must be interdicted.

4. There are no special analytical methods, the methods to be utilized being essentially the same as those employed in the chemical and bacteriological analysis of victuals. The good quality of the products will be ascertained by chemical investigation and determination. With the assistance of bacteriological investigations, which must comprise aerobic and anaerobic microbes, the correct sterilization of the products will be verified.



## COMMUNICATIONS

The following Communications were presented on the fourth subject:

*"Attempts at Chemical Determination of the Decomposition of Meat Preserves."*

E. Lempichi, Pharmaceutic Lieutenant (Poland)

*"The Stocks of Reserve Victuals Constituting the War Rations of the Belgian Army."*

Sillevaexts, Medical Major (Belgium)

*"Colorimetric Methods for Urine Analysis."*

C. Goutaland, Doctor of Pharmacy (France)

*"Preserved Foods as a Regular Ration for Soldiers in Peace Time or in the Field. Their Modes of Preparation and Analysis."*

William Preot, Major Pharmacist (Belgium)

*"Employment of Artificial Coloring Agents for Food Preserves in the Armies."*

Dr. H. Beker, Pharmaceutic Commandant (Poland)

*"Condensed Milk as an Indispensable Element in Field-life."*

Dr. Miguel Herrero Besada (Spain)

*"Raisins and Chestnuts in the Soldier's Knapsack."*

Dr. Miguel Campoy, Pharmaceutic Major (Spain)

*"Preserved Foods as a Regular Ration for Soldiers in Peace Time or in the Field. Their Modes of Preparation and Analysis."*

Dr. Carlos Mozzana, Chemist-Pharmacist Lieutenant Colonel (Italy) and

Dr. Carlos Gorreta, Chemist-Pharmacist Major (Italy)

*"Preserved Foods as a Regular Ration for Soldiers in Peace Time or in the Field. Their Modes of Preparation and Analysis."*

Dr. Carlos Galligari, Medical Captain, Udine Military Hospital (Italy)

## COMPARATIVE STUDY OF THE ODONTO-STOMATOLOGICAL AND ADMINISTRATIVE SERVICES IN THE DIFFER- ENT ARMIES, NAVIES, AND AIR FORCES

### OFFICIAL REPORT

*Mexico.*—A report on "The Military Dental Services" was presented by Mexico. Following some considerations regarding the importance of dental collaboration for hygienic and prophylactic purposes in any community, and after formulating the guiding lines for the mutual agreement which must exist between physician and den-



tist, a concise summary is given of the information furnished by different nations concerning the organization of their dental services. The information officially secured from each of the respective Governments is not as complete as might have been desired, for it was not forwarded by all nations.

The majority of nations consider the institution of dental services as necessary. Their number may vary in each country, but an endeavor should always be made to have sufficient to assure a good dental service. These centers should exist in connection with the Army Divisional Hospitals or be installed therein. A general co-operative service should also be established by means of ambulant consultation cabinets or by the appointment of dentists to the regiments.

Concerning the recruiting of dental surgeons, some nations consider these as military dentists, while others engage civilian dentists for this service. Some countries train them in Schools of Application, while others do not exact any special knowledge; some have an obligatory military service, others have not. All agree that:

(a) It is imperative to establish dental Services in the Armies.

(b) The establishment of Dental Centers should be primarily kept in mind.

(c) The number of these Centers should be sufficient for the requirement of a given nation.

(d) If it is not possible to have more than one Center, Ambulant Dental Services should be organized.

(e) In peace time, the Regimental Dental Services may be dispensed with.

The Report continues with the formulation of a detailed plan for a maximum and minimum program of military dental services, accompanied by discussions and demonstrations, together with a diagram of each project. These projects regard as the principal objective the establishment of Dental Centers, especially in each of the Military Hospitals, and attached to these, Ambulant Dental Services.

The conclusions of this part of the Report are as follows:

(1) That it is an imperative necessity to establish a Military Dental Service in all the nations of the world.

(2) That it is necessary to approve a plan of organization and development of the service to be established, and that this plan meets the requirements and resources of the nations.

(3) That it is necessary that the above mentioned plan not only gives the rules for the establishment of an ideal Dental Service, but that it also includes rules for a minimum Dental Service. The first,



perhaps, would be possible only for nations with large financial resources, and the second for the other countries.

(4) That it is necessary that the organization of these Services be of such a nature as to permit of variations, modifications and amplifications, in accordance with the different conditions of each country, without thereby losing the basic idea of the rules to be followed or to which the work of development of the Military Dental Service should be adjusted.

(5) That this service be so constituted as to have a close relation-



Japanese Minister to Spain with the Japanese Delegates to the Congress

ship with that of general medicine, so that there may be perfect harmony in the whole Medical Department, in order to make it possible to attend with more efficacy to the Army forces, which up to the present time has been sadly neglected in so far as Dentistry is concerned.

(6) That the staff of the Dental Service be completely informed of the principles and customs of the Army, so that at any given time when circumstances require it, the members of this service may meet the demands of their duty and be fully aware of the responsibility imposed upon them by their military character.

*Vazquez (Spain).*—"Organization of the Odontological Services in the Army," was the subject of the report of Dr. Angel Vazquez. The



World War was one of the causes which contributed most considerably to the progress of dentistry. In a very high percentage of casualties, the majority were wounded in the head. The changes were not only functional, but gave rise to great deformities, sometimes actually monstrous, and without the intervention of plastic surgery left these unfortunates entirely unfit for all social life. At first, the general surgeons performed the operations with the co-operation of dentists; but later on, the stomatologists took charge of the surgical work and accomplished truly marvellous results. As an outcome of this experience dental stations were formed in the military hospitals and in the centers of maxillo-facial surgery. Other promoters of these dental services were the Val-de-Grâce Hospital, the Rothschild Hospital, the Capital Hospital, the American Ambulance Hospital, and the Buffon Hospital, where Dr. Chutro, of the Argentine, operated upon wounded French soldiers.

The Argentine is a country which understood the importance and necessity of the installation of dental services in the Army; the nation not only attended to the soldier's health during campaigns, but also gave great care to the dental hygiene of every individual, often carrying out examinations in the stationary hospitals and in the so-called portable "consultories." Military medicine in Mexico has a station for every specialty; that of military dentists has four categories. Every Division has a hospital with its dental service. In Italy, which is especially well equipped with material, this specialty is served in the Army by specialists in stomatology. Germany, England, and the United States of America may be said to have reached the maximum in the domain of medical organization, and realize the necessity and importance of its employment, as shown by very numerous publications and scientific investigations.

It is to be hoped that the Government of the Spanish Republic will realize the necessity of the creation of a dental service and that this service will soon be an established fact.

*Fito, Sibila (Spain).*—Lieutenant-Colonel de Intendencia Federico Abeilhe y Rodriguez Fito and Pharmaceutic Sub-Inspector José Abadal y Sibila, took up a "Comparative Study of the Administrative Services of the Different Armies, Navies, and Air Forces," and stated that the restrictions imposed by the regulations of the Congress for the presentation of the Official Reports prevent an extensive paper but undoubtedly this one will be supplemented by information furnished by the representatives of other nations covering this Report.

The authors' work is limited exclusively to the administration of



the Medical Services in the European Armies. They summarize their conclusions as follows:

(1) It is indispensable—if there is to be a perfect functioning of the Medico-Military Services—that there be a single authority responsible to the Military Command. Notwithstanding the attributes and responsibilities of each of the collaborating Medico-Military Services, the entire personnel must be subordinated to the Director of the Service, whose control should extend not only to the proper functioning of the technical side, but also to the administrative end. The economic management of the Service exerts a decisive influence upon the results obtained. These results consist in the prevention of the onset and propagation of diseases, in the restoration of health, and in wound repair in individuals who compose the fighting forces in peace as well as in war. Its activity may on many occasions extend to the civilian population.

#### VETERINARY SECTION

“Glanders. (a) Clinical and Prophylactic Study, (b) Bacteriological Study, (c) Anatomo-histopathological Study,” was the subject of Spain’s first paper in this section.

*Hernandez, Vara (Spain).*—Veterinary Sub-Inspector Sanchez Hernandez and Veterinary Major Gargallo Vara took up “(a) Clinical and Prophylactic Study.” Glanders is an infectious contagious disease of animals, belonging to the group of diseases transmissible to man; of acute type in mules and asses; chronic in horses; produced by the bacillus mallei, and characterized by the formation of ulcers or chancres in the tissue of the mucous membranes, the skin and the internal organs. The inclusion of this disease among those transmissible to man is not exaggerated, although such cases are only occasionally observed.

Glanders is so widely spread in the mounts in the Army that in Spain as well as in Africa, this disease alone causes as many losses as all the other diseases of horses together, infectious or non-infectious. In the World War, glanders constituted a plague difficult of control, but in the British Army, due to strenuous endeavors, glanders mortality was reduced to the insignificant percentage of one per cent. Strict rules must be formulated and enforced to prevent the export of horses from Morocco during the prevalence of a glanders outbreak, as well as the transference of exposed animals from one contaminated regiment or infected stable to another. The recognition of the disease in suspicious cases is based on the outcome of the mallein reaction. When the existence of glanders has been ascertained in a given unit or



stable, general malleinization must be carried out and only those animals may be exempted from sequestration in which the mallein test, applied by the classical method, gives a distinctly negative reaction. All the remainder must be subjected to the rule of absolute sequestration and rigorous isolation, with formation of "doubtful" and of "positive" groups. With respect to horses, in the case of a glanders outbreak, all transfers of mounts should be prohibited for as long a period as possible after the contagiousness is declared to have disappeared. Veterinary surgeons should be granted full autonomy, without restrictions of any kind, in the discharge of their special functions, in order to insure the highest efficiency. Experience having shown that glanders is more dangerous and takes more victims among exhausted and poorly resistant animals, the best prophylactic measure would naturally consist in a better alimentation. The War Minister, on the proposal of the Veterinary General Inspector, should fix the quantitative ration and the duration of the extra feeding of the animals. As long as glanders is prevalent the horse contingent of an army corps must not be augmented, in the absence of ample guarantees of isolation. Complement deviation should be utilized whenever possible, in preference to any other serum reaction, for it constitutes a powerful auxiliary for the clinician.

*Lopez (Spain).*—“(b) Bacteriological Study” was submitted by Veterinary Sub-Inspector Huertas Lopez. It is necessary to organize infirmaries for the observation and isolation of the suspected animals, in order not to sacrifice any of these until the laboratory findings have confirmed the diagnosis or the veterinary surgeon has observed the appearance of the nasal chancre. In the absence of such infirmaries, doubts may exist as to the sacrifice of horses suffering from pseudoglanders which might have been cured, if the veterinary surgeon had not feared a spread of the disease. Certain forms of lymphangitis simulate glanders, and mallein injections may prove misleading, in cases of this kind. The *Bacillus Mallei* becomes attenuated by age; by culture in alkalinized media; by culture in malachite agar; and by microbial associations, chiefly with the *Bacillus Pyocyaneus*. Cultures harmless for guinea pigs can be obtained by the two last mentioned media, and it is hoped that by these means the immunization of soliped animals may some day be accomplished.

*Martin (Spain).*—“(c) Anatomo-histopathological Study” by Veterinary Surgeon Arroyo Martin formed the last part of this paper. Glanders is an inflammation of specific type, with respect to its causative agent as well as the resulting reaction in the affected tissues. The lesions are of exudative, proliferative, or mixed character; in the latter



form, exudation or proliferation may predominate, according to individual cases. The exudative form is the more dangerous; it is accompanied by tissue necrosis in the glanders nodule as well as in the diffuse foci. In the proliferative form, these lesions are less pronounced or non-existent, being replaced by a productive process. The principally affected organs are the lungs, the lymph glands, the respiratory mucosa and the skin; the digestive apparatus, the liver, spleen, kidneys, suprarenals, and the central nervous system are affected with less frequency. The infection occurs preferably by the digestive route, without the mucosa being changed in the great majority of the cases. The first manifestations usually appear in the lungs, the submaxillary glands, the retropharyngeal glands, the cervical and mesenteric glands. Nasal glanders originate by the hematogenous route, but may also be caused by contact. In the lungs, infection occurs by the hematogenous and bronchiogenic route. In the glands, the ordinary channel is the lymphogenous, the hematogenous being of less importance. In cutaneous glanders, the specific agent may penetrate through a lesion of the epithelial layer, through the orifice of a hair follicle, or through the secretory duct of a sweat gland, as well as through a wound. Still another avenue of infection is through the blood, the germs being derived from a focus situated at a distance from the skin. There is no absolute connection between the affected organs and the regional glands or vice versa. The opposite behavior has also been observed. The existence of ulcers in the nasal septum is not invariably accompanied by alterations of the submaxillary glands. Sometimes lesions appear in the glands without the nasal mucosa being altered.

Local eosinophilia is not of particular value for the differentiation of a glanders nodule from a parasitical nodule. Eosinophilia may exist in the former, but never in such large quantity as in the latter. No eosinophilic cells have been found in glanders nodules of the nasal septum, nor has calcification. The essential feature of the glanders lesion is the special and typical form of nuclear destruction. Inoculation of glanders products in guinea pigs is of limited diagnostic value, as the disease is not reproduced in a very high percentage of the cases.

When all diagnostic measures, bacteriological, serologic and allergic, have proved unsuccessful, it is still possible to establish the diagnosis by means of histological analysis. According to recent investigations, the determination of the lipoid substances in the necrotic foci is a good diagnostic supplementary. The differential diagnosis between cutaneous glanders and epizootic lymphangitis is finally secured through histological analysis: The typical picture of karyorrhexis and chromatotaxis does not exist in lymphangitis. The giant cells are dis-



tinged from those of glanders; the nuclei are irregularly distributed throughout the entire protoplasm (foreign body giant cells). Perforated cells or macrophages charged with parasites, are encountered only in lymphangitis. Plasmatic cells, very abundant in lymphangitis are rare in glanders or non-existent.

Recovery from glanders is possible and is now generally conceded. It takes place through calcification and fibrous new formation walling off the lesion. However, with respect to the advantages of treating, or not treating animals suffering from glanders economic and sanitary problems enter chiefly into consideration. To attempt treating the diseased animals in the barracks would seem to be inadvisable and erroneous. Treatment might and should be given a trial in special infirmaries.

*Martin (Spain).*—A second paper, dealing with "Habronemosis" was also submitted by Veterinary Surgeon Arroyo Martin. Habronemosis is a parasitical disease of solipeds, produced by a worm belonging to the genus habronema. Para-habronemosis is likewise a parasitical disease, affecting ruminants and is caused by a worm of the genus para-habronema.

The disease known as habronemosis assumes several forms: The principal or gastric form is caused by the parasite in its adult state, of one of the three species of the genus habronema: megastoma, mucae, and microstoma, whose larvae produce erratic forms of the disease. The most important known forms of erratic habronemosis are the cutaneous, the broncho-pulmonary and the conjunctival.

For its complete development, the parasite must pass through two different hosts. In the adult state, it lives in solipeds in the mucosa and submucosa of the right portion of the stomach. The female lays fertilized ova which reach the external world mixed with the excrements. The larvae of flies become infected with the habronema embryos in the feces of the solipeds. From the flies, the infected larvae make their escape, after having undergone the greater portion of their development cycle. According to the organ where the larva lodges, it will give rise to gastric habronemosis or to one or other of the erratic forms of the disease. Gastric habronemosis is not easily recognized in the living animal, and the same is true for the broncho-pulmonary form. The diagnosis is almost invariably made after death, especially in the broncho-pulmonary form. The cutaneous form, by its special character as a so-called "summer sore," involves no diagnostic difficulties, but the diagnosis must be rendered promptly, in order for the treatment to be efficient. It is based upon a histological examination of the scrapings from the sore, or a biopsy specimen. The presence of the larva or



its remnants and the abundant quantity of eosinophilic leukocytes serve to facilitate and confirm the diagnosis. Generally speaking, habronemosis is not a grave disease, but in its cutaneous form, on account of its long duration, leaves the affected animal useless during the greater portion of the year. In certain cases, on economical grounds, it becomes necessary to kill the animal.

The treatment of the disease, in all its forms, presents great difficulties. In the gastric form it is unreliable. In the cutaneous form, recovery is very slow in the majority of cases. On early recognition of the "summer sore," surgical treatment is the most reliable. Prophylaxis must always aim in the first place at the destruction of the habronema larvae and the flies. Contamination of the sores by flies must be prevented by all possible means. Finally, the larvae of the parasite and of the fly should be destroyed in the manure by the employment of appropriate methods.

#### COMMUNICATIONS: OPEN THEMES

The following Communications were presented on open subjects:

*"Contribution to the Treatment of the Itch in the Army."*

Dr. Manuel Conde, Medical Captain (Spain)

*"Individual and Social Prophylaxis against Venereal-Syphilitic Diseases. 'Preservol,' a New Individual Antivenereal Prophylactic."*

Dr. A. de Palacio (Spain)

*"The Anti-Tuberculosis Problem and the Anti-Venereal Fight in the Spanish Army."*

Dr. Emilio Alonso y Garcia Sierra, Medical Lieutenant-Colonel (Spain)

#### CONCLUSIONS OF THE CONGRESS

In accordance with the system as carried out at the six preceding Congresses, after the official reports and communications were read and discussed, sub-committees were formed to draw up the conclusions. These were submitted to the Permanent Committee and, after debate and necessary modification, the following were unanimously agreed upon by the entire Congress:

##### I

#### GENERAL PRINCIPLES REGARDING MEDICAL SERVICES IN WAR TIME; THEIR APPLICATION TO THE NEW RULINGS OF THE GENEVA CONVENTION

(1) In view of the broad nature of the subject, the conclusions must take on a general character, and cover the following points:



- (a) Prevention;
- (b) Evacuation;
- (c) Treatment;
- (d) Recuperation.

(2) Consequently, the complex activities for the promotion of the health of the army should develop under the general supervision of the commanding officer, but with complete independence in regards everything pertaining to the use of sanitary personnel and equipment.

(3) The quality of the service will be improved if the personnel of the sanitary corps has been carefully selected and has received a special military and technical training.

(4) Such training is necessary also for the supplementary and reserve personnel, an appeal being made to the mobilized civil practitioners in the ranks of the army.

(5) In view of the constant revolution of medical science, a body of specialists of proved ability should be organized within the army medical corps.

(6) The Geneva Convention, the magna charta, of the army medical corps, establishes only the general principles that must be applied by all in a uniform manner. It therefore appears desirable to codify all the measures to be adopted on the subject.

## II

### PREVENTIVE VACCINATION IN THE ARMY, NAVY, AND AIR FORCE

(1) Preventive vaccinations designed to protect the troops against infectious diseases, should be given, in times of peace as well as of war, in order to combat epidemics and outbreaks. The application of this measure will vary according to the existing health conditions in the armies concerned.

(2) Vaccination must not relieve one, by any means of using all other measures to combat contagion.

(3) The method of combined vaccinations is to be recommended.

(4) It is desirable that, before he is assigned to a unit, the soldier shall be immunized against those infectious diseases which are amenable to vaccination. It is recommended that, in each country, an understanding should be reached between the civil and military authorities as to the best methods of vaccinating.

(5) It is desirable that the methods employed in the various armies for the preparation of vaccines and other prophylactic measures be published.



## III

TREATMENT IN THE ADVANCED POSTS OF URGENT SURGICAL CASUALTIES  
IN A WAR OF MOVEMENT. A SPECIALIZED FORMATION; ITS TECHNICAL  
ORGANIZATION AND ITS EMPLOYMENT FROM THE  
TACTICAL VIEWPOINT

(1) The success of the treatment depends upon the rapidity and on the manner of the evacuation to the nearest surgical center.

(2) The conception of a specialized surgical unit must necessarily, in warfare, be based on the experiences of the World War.

(3) Considering the nature of open warfare, the types of surgical field hospitals in the last war appear too complicated. As a more mobile unit, the motorized, interchangeable surgical group is suggested.

(4) This unit would constitute an army corps service intermediate between the services of the extreme front line, the divisions, and the more fixed services of the army.

(5) For the performance of its duties, it will take up its position in the immediate vicinity of the field hospital or of requisitioned buildings, as the case may be, and must be supplied with suitable means of transportation.

(6) The proposed surgical unit will be modified as much as possible in accordance with the circumstances of the war and, especially, the nature of the terrain. It must be light and mobile.

## IV

PRESERVED FOODS AS A REGULAR RATION FOR SOLDIERS  
IN PEACE TIME OR IN THE FIELD. THEIR MODES OF  
PREPARATION AND ANALYSIS

(1) Preparation and Preservation: In view of the importance of preserved foods in the diet of the soldier, the first condition that such foods must fulfill is a good method of preservation.

(2) To assure good preservation, it is necessary that:

(a) The product used (meat, flour, ground products, milk and the like) should be of the best quality;

(b) During the preparation of the preserved foods, the greatest cleanliness must be observed, and the sterilization must be thorough and complete. If sterilization is not possible, desiccation (bread, soup and the like) may be sufficient.

(3) With the exception of sodium chloride, and saltpeter in minimal quantities, all preservatives must be prohibited.



(4) The date of manufacture must be stamped on the metal receptacle or printed on the package.

(5) Since, at present, the analytic procedures vary in different countries, it is desirable to bring about uniformity in the methods of analysis in use in the armies and to have these methods published either in the pharmaceutic formularies or in other documents placed in the hands of the military pharmacists.

(6) The control of preserved food products in the rations of armies should be entrusted in principle:

(a) To a bacteriologist and to a medical hygienist, for the appraisal of the nutritive value, and

(b) To specially qualified chemist-pharmacists, for the chemical aspects of the problem.

## V

### COMPARATIVE STUDY OF THE ODONTO-STOMATOLOGICAL AND ADMINISTRATIVE SERVICES IN THE DIFFERENT ARMIES, NAVIES, AND AIR FORCES

(1) The creation of a dental service for the whole army is desirable.

(2) Its activities would take the form of:

(a) Prophylaxis, hygiene and buccodental treatment, and

(b) Possible co-operation with the identification services.

(3) The technical personnel should be made up of professional dentists and stomatologists with legal diplomas.

(4) Medico-military specialization on the part of dentists should be based on a suitable preparation.

(5) Since a good administrative management constitutes an indispensable guaranty of the correct functioning of the sanitary services, it is desirable to entrust such duties to a body of officers specially trained for the work.

## SUPPLEMENTARY NOTES

### FINAL SESSION OF CONGRESS

At the last meeting the President of the Congress occupied the chair and with him on the platform were the members of the Permanent Committee. Practically all the fourteen hundred delegates were present. Dr. Ernest I. Swift, General Secretary of the League of Red Cross Societies addressed the assembly as follows:



"The International Red Cross, which I have the honor to represent, is so closely identified with the activities of those here present that it needs no introduction.

"The idea which brought the Red Cross into existence took shape on a battle field seventy years ago. Since that time the Red Cross has met its responsibilities in every major conflict.

"To meet its great responsibility in emergencies the Red Cross carries on a wide range of peace-time activities as it must be prepared with trained and untrained voluntary personnel.

"Its hospitals minister to the sick and injured, its schools educate thousands of nurses annually and in addition nurses trained in other ways are registered in a great reserve.

"The Red Cross also instructs and maintains numberless columns of stretcher-bearers and first-aid personnel. Field hospitals, ambulances, material of all kinds are available for great emergencies.

"Untrained voluntary workers are massed in thousands of Red Cross branches throughout the world ready to respond to the call of suffering humanity.

"It is because of the unlimited possibilities of immediate mobilization that the Red Cross is at the forefront with staff and equipment when demands are made upon it.

"I have briefly pointed out these facts because the Red Cross nationally and internationally offers its potential strength to those who are striving to promote health and alleviate suffering in time of peace or war.

"Today the Red Cross represents a humanitarian force of over twenty-five million members in fifty-nine countries. All are working together for the furtherance of common humanitarian ideals through their international organizations—the International Red Cross in Geneva and the League of Red Cross Societies in Paris. Both of these bodies offer fully their services for the promotion of the splendid ideals which have been so graphically expressed in this successful Congress."

Short addresses were also made by Captain William Seaman Bainbridge, of the United States of America, member of the Permanent Committee. Colonel Jules Voncken, General Secretary of the Congress, and Dr. F. Castillo Najera, representative of Mexico, expressing appreciation and gratitude for the great opportunities afforded the delegates by the Republic of Spain, and for the remarkable success of the meetings.



## INTERNATIONAL ASSEMBLY OF THE CHIEFS OF THE MEDICAL SERVICES

At the second meeting of the Chiefs of the Medical Services, which was held during the Seventh International Congress of Military Medicine and Pharmacy, the following were present: General Rouvillois, General Cras (France), General Rouppert (Poland), Dr. Olliveira (Argentina), General Diehl, Dr. J. F. Hulk (the Netherlands), Colonel Louet (Monaco), General Butoiano, Dr. Anastasio (Roumania), Colonel Giau (Portugal), General Gonzalez Granda (Spain), General Bond (Great Britain), Captain Bainbridge (United States of America), General Fischer (Czechoslovakia), General Nagevicius (Lithuania), Colonel A. Hauser (Switzerland), General Franchi (Italy), General Derache (Belgium), General Snikers (Latvia), Dr. Bergendal (Sweden), Major Kitano (Japan), Dr. Turgut (Turkey). They met in collaboration with jurists, representing international law, who submitted the opinion that the agreements of July 27, 1929, of the Geneva Convention on the "wounded and sick in the field," and on "war prisoners" (Articles 26 and 29), are so recent and represent such an important phase in the codification of the rights of people, that they do not believe it justifiable to advise an attempt at modification. They consider, furthermore, that the usual fault of this class of convention is the absence of specific provisions, and that the most interesting and appropriate for the time being would be:

1. That the States who signed the said Convention modify their field regulations, so that they agree with international standards specified.
2. That military Penal Codes fix penalties and formulate precise provisions in case of violation of the stipulations.

This was signed by Antonio Luna, René Wirth Lenaerts, Ignacio Oyarzabal, Tomas Elorrieta, Manuel Raventos.

The Assembly discussed at length the various questions raised by the foregoing and concluded by voting the following "Solemn Wish":

*Application of the Geneva Convention*

The Seventh International Congress of Military Medicine and Pharmacy expresses the earnest desire to see the stipulations of Articles 26 and 29 of the Geneva Convention of July 27, 1929, carried out, as soon as possible, by the States and the high contracting parties who signed the said Convention, in accordance with the following:

1. That the military regulations mention the principal provisions of the Geneva Convention.



2. That the codes of military justice contain provisions applicable to violation of this convention.

Mr. Manuel Azana, President of the Council of Spain, advised a proposal to the respective Governments in behalf of the "Internationalization of the Medico-Military Services in war time." In his opinion, the following guiding lines might be followed on this question:

1. Every signing country should maintain a minimum of Medico-Military Services, well organized and always ready to function; the minimum to be settled by a regulating International Committee appointed for this purpose.

(2) Adoption of equivalent programs and courses of instruction, in order to obtain an identical educational and technical preparation of the personnel of the different groups destined to compose the Medical Services of the armies.

(3) Standardization of the medical material.

(4) Equivalence of similar medical formations of the different armies.

(5) Unification of the regulations of the technical services, as far as possible.

(6) Intensive exchange of professional education and technique, by means of combined courses given by the Heads of the different armies, and which would affect at least the higher categories of the respective corps.

(7) Designations, categories, devices and emblems, adopted by international agreement for the medical personnel of all the corps.

(8) Obligatory loan of the field service by all the Medical-Military Corps of neutral countries, in order to re-enforce the Services of the belligerent armies. The proportion and quality of this loan to be indicated by a regulating international organ.

(9) Constant efficient intervention of the military surgeons of neutral countries in the management and assistance of war prisoners.

#### INTERNATIONAL OFFICE OF MEDICO-MILITARY DOCUMENTATION

In order to be enabled to fulfill the various missions entrusted to it, the Permanent Committee of the International Congress of Military Medicine and Pharmacy has organized an International Office of Medico-Military Documentation. The purpose of this Office is to centralize and keep up as complete and detailed a documentation as possible, on questions concerning the organization and the functioning, in peace time as well as during war, of all the Sanitary Services (land, sea and air). The documents of the Office are permanently at the disposal of the participating nations.



The documents destined for the Office are derived from:

(1) The adherent Governments, which forward to it:

(a) All official documents pertaining to the Sanitary Service and to which the interested Governments attach no confidential character (regulations, dispatches, ministerial instructions, manuals, nomenclatures, descriptions of various materials, and so forth);

(b) All official medico-military periodicals;

(c) In original or abstract form, the publications appearing in their respective countries, concerning medico-military questions, either books or pamphlets or articles in periodicals other than the official medico-military ones;

(2) The Office itself (purchase of books, subscriptions);

(3) Other organs not directly connected with the Governments.

The documents collected by the Office are preserved and classified, the system of which is communicated to the participating nations.

The International Office of Medico-Military Documentation:

(a) Establishes a permanent bibliographic index;

(b) Publishes periodically in the *Bulletin International*, in the languages admitted by this Bulletin, a bibliographic index normally comprising an abstract of all the documents received;

(c) Organizes every year, alternately in Liege and at the meeting place of the International Congress of Military Medicine and Pharmacy, a session of medico-military conferences;

(d) Furnishes on their request to the adherent Governments and eventually to qualified persons, all the information in its possession, on a given question;

(e) Authorizes consultation, in the Office, on the documents with duly accredited persons. The adherent Governments will indicate to the Permanent Committee the organs or persons qualified by them to enter into communication with this Office.

The Permanent Committee of the International Congresses of Military Medicine and Pharmacy is the directing Committee of the International Office of Medico-Military Documentation. For this purpose, it has at its disposal a personnel, offices, material and credits; it determines the executive details of the service and supervises its activity.

#### INTERNATIONAL OFFICE OF MEDICO-MILITARY DOCUMENTATION

THIRD MEETING—JUNE 6-8, 1933

After the meetings of the Seventh International Congress of Military Medicine and Pharmacy, delegates from twenty-seven nations went by special train to Granada where the Third Session of the International Office of Medico-Military Documentation was held.



The meetings were opened in the Auditorium of the University. The Mayor of Granada, the Rector of the University who is also Dean of the Medical Faculty, and various civilian and military leaders were present.

The following articles were presented and carefully discussed:

*"Medico-Surgical Selection in the Functioning of the Medical Service in the Field."* By Medical Colonel Schickelé (France).

*"The Evolution of War Surgery."* By Medical Inspector General Butoianu (Roumania).

*"Medical Inspection of the Classes Before and After Their Military Service."* By Medical Commandant Don Ricardo Murillo Ubeda (Spain).

*"Professional Selection in the Army; Psycho-technical Recruitment."* By Medical Captain Enrique Blasco Salas (Spain).

*"Chemistry in the Service of Hygiene in the French Navy."* By Pharmacist-Chemist 1. Class, Saint-Sernin (France).

*"Modern Military Medicine and its Relations with Modern Warfare, Especially from the Viewpoint of Aviation."* By Lieutenant-Commander Julius Neuberger (United States).

*"Cysticercosis as the Cause of Epilepsy in Soldiers."* By Medical Colonel Huszega (Poland).

*"Military Medicine in the Service of the Mobilized Nation."* By Medical Captain Reynders (Belgium).

*"Actino-therapy, Ultra-violet Rays and War Surgery."* By Medical Lieutenant Juan Ortega Lechega (Spain).

*"The Rôle of the Military Pharmacist in the Army and the Organization of this Service."* By Pharmacist-Major Rafael Roldan y Guerrero (Spain).

*"Lesions of the Meninges."* By Medical Captain Glorieux (Belgium).

*"National and International Organization of the Civilian Protection Against Chemical Warfare."* By Medical Captain Cambresier (Belgium).

In view of the considerable dangers to which the conditions of future wars will expose the civilian population, the International Office of Medico-Military Documentation expressed the following desire:

That the Governments and competent international Assemblies proceed to study this important question, for the purpose of limiting the eventual disasters which may follow and of organizing in peace time an efficient collaboration between the medico-military services and the different aid organizations, in order to insure, under the best possible



conditions, the indispensable assistance to be rendered to the civilian victims of future wars.

The purport of the various documents has been transmitted through the Permanent Committee to the different Governments.

SECOND INTERNATIONAL CONGRESS OF SANITARY AVIATION  
MADRID, JUNE 1-4, 1933

Some of the delegates to the International Congress of Military Medicine and Pharmacy attended the meetings of the Second International Congress of Sanitary Aviation. These sessions, as well as the visit to the Aerodrome were most illuminating. Ambulance planes from many countries were assembled, from as far away as Poland. The



Meeting of the Second International Congress of Sanitary Aviation  
free interchange of ideas and comparing of experiences of the different Sanitary Aeroplane Services, were most helpful. Great advance has been made along this line by France and Poland. The passage of several thousand sick and wounded from North Africa into France, and many into Spain, without accident within the last few years, demonstrates the utility of this transport. The equipment allows of control of hemorrhage, setting of compound fractures, and care of septic wounds. Apparatus has been installed in many of the planes for applying heat to the patient in case of shock, and furnishing hot drinks.

It was of particular interest to the writer to find that the U. S.



Navy Stokes's stretcher has been modified and improved not only for use by the Fire Departments of various cities in France, but has been installed in many aeroplanes, and was even observed on mule-back transportation in North Africa. The attention of General Rouvillois of the Val de Grâce was focussed on this stretcher at the showing of the moving picture reel demonstrating some of the work of the U. S. Naval Medical Corps at the first Congress in Brussels in 1921. At the request of the French Government, one of these stretchers was sent to France, and is now part of the permanent exhibit at the Val de Grâce, in the transport collection. It is of interest for visiting military surgeons in France to see this Museum. The development of military surgery is shown back to the days of Ambroise Paré and, particularly, of Larrey who served under Napoleon I. Many stretchers are in the collection; the second from the last is our Navy's standard Stokes' stretcher and the last, to date, is France's modification of it.



At the Hotel Ritz, temporary home of the Embassy of the United States of America. After bestowing the Cross and Honorary Membership of the Association of Military Surgeons of the United States on General José Gonzalez Granda, Inspector of Military Sanitation of the Spanish Army, by the Ambassador from the United States, Claude G. Bowers. In the group are also the Embassy staff, the staff of General Gonzalez Granda, Assistant Secretary of State of Spain, the Commissariat General of the Congress, Colonel Augustin Van Baumberghen, and the delegates from the United States of America.



This illustration demonstrates the spirit and workings of the Congress. Each nation seeks to show the best it has developed in order to help the others progressively to march forward.

#### HONORS TO GENERAL GRANDA

At the Hotel Ritz in Madrid, the temporary quarters of the American Embassy while the permanent home was being renovated, the Ambassador from the United States of America, Claude G. Bowers, bestowed upon General Gonzalez Granda, President of the Seventh Congress, Inspector of Military Sanitation of the Spanish Army, the Cross of, and Honorary Membership in, the Association of Military Surgeons of the United States, in accordance with the unanimous vote of this Association at its Chicago meeting. This was the first official act of Ambassador Bowers after he had been received by the President of the Spanish Republic and had presented his credentials. Present at the ceremony were the Embassy staff, the staff of General Granda, the Assistant Secretary of State of Spain, the Commissary General of the Congress Colonel Augustin Van Baumberghen, and the delegates from the United States of America.

#### INTERNATIONAL EXHIBITION OF HYGIENE IN THE PARK OF THE RETIRO—MADRID

The Seventh International Congress of Military Medicine and Pharmacy was enriched by an *International Exhibition of Hygiene*, which, in consideration of the modern requirements of trade, was given the character of a Fair, similar to the Fairs of Lyons, Leipsic and Milan. It was laid out in three essential parts:

- (1) The medical service in the field.
- (2) Materiel and instruments.
- (3) Medicinal agents and chemical products.

In the first part was shown the development of the service from the firing line to the field hospital, following the wounded soldier through all his vicissitudes, from the moment when he was wounded until he was definitely settled in the hospital. The medical stations duplicated the service rendered in each and comprised the following demonstrations:

*Firing Line.*—Trench models. Fight in the open field. Treatment with the individual dressings package and composition of the emergency knapsack.

*Aid Station.*—Refuge shelters for the wounded. Regimental medical material.



*Hospital Station.*—Treatment departments; classification, transportation, and hospitalization of the wounded and sick on the battle field.

*Evacuation.*—Transportation of the wounded by human carriers, on stretchers, in carriages, trains, aeroplanes and hospital ships.

*Field Hospital.*—Equipped with all the necessary components for the discharge of its manifold obligations. The surgical wards and specialized wards were provided with the most improved equipment, and in the medical wards was the entire outfit required for modern medical service. The military pharmacy was admirably equipped and stocked.

In addition to the integral constituents of the mentioned posts, further stations were installed in the surroundings, in the open air or in tents, directly related to each of the formations, from the aggressive viewpoint (weapons, powder, etc.) as well as the therapeutic viewpoint (emergency packs, improvised transportation apparatus, etc.). The remainder, indispensable for medical activities, was distributed in the Exhibition palaces situated in the park grounds.

For the systematic classification of the exhibited articles, the following groups were arranged:

Group (1) Historical-artistic-pedagogical.

Group (2) Medical.

Group (3) Pharmaceutic-chemical.

Group (4) Dental.

Group (5) Veterinary.

Group (6) Red Cross.

Group (7) Medical aviation.

Group (8) Intendency (Administration).

#### *First Group. Sections*

(1) Historical records.

(2) Medicine in Art.

(3) Artistic Advertisements.

(4) Medical, pharmaceutic, dental, and veterinary instruction in all nations. University towns. Teaching material.

(5) Schools of Hygiene and Sanitary Services.

(6) Press and publications of all branches of the Medical Sciences.

#### *Second Group*

(1) Microbiology. Parasitology. Epidemiology. Statistics. Sera and Vaccines.

(2) Materiel and treatment. Instruments and surgical furniture.

(3) Medical Physics. Radiography. Cinematography.



- (4) Means of transportation of the wounded. Standardization.
- (5) Temporary lodgings. Refuges. Tents and Sheds.
- (6) Quarters and Hospitalization. Systems of construction, heating and refrigeration, ventilation and illumination. Sanitary engineering. Construction materials.
- (7) Disinfection and sanitation. Removal of filth. Destruction of offal.
- (8) Potable Waters. Conduction, analysis and purification.
- (9) Cheap Housing in cities.
- (10) General Hygiene. Its applications to the Military Service, the Naval and Aerial Service. Industrial Hygiene.
- (11) Alimentation. Preserves. Foods and Beverages.
- (12) Clothing. Headgear. Footgear. Outfits.
- (13) Abnormal cases. Mutilated and Cripples. Education and re-education. Prosthesis.
- (14) Chemical warfare and Bacteriological Warfare.
- (15) Social Medicine. Consultaries, Dispensaries and Sanatoria.
- (16) Legal Medicine. Inhumations and exhumations. Preservation and transportation of cadavers.

*Third Group*

- (1) Toxicology.
- (2) Analysis.
- (3) Medicinal agents.
- (4) Chemical products.
- (5) Drugs and Perfumes.
- (6) Mineral-medicinal waters.
- (7) Pharmaceutic utensils.
- (8) Various Industries.

*Fourth Group*

Dentistry. Its procedures and its technique.

*Fifth Group*

Veterinary Medicine. Application of its teachings to animals and to man.

*Sixth Group*

Organization of the Red Cross services, in peace time as well as in the field.

*Seventh Group*

Medical Aviation. Apparatus constructed for the transportation of



the wounded and means for utilizing commercial aeroplanes for this purpose.

### *Eighth Group*

Intendency (Administration). Demonstration of its services, in peace time as well as in the field.

### CONFERENCES AND PRACTICAL DEMONSTRATIONS

The exhibited material was not meant to constitute a purely passive exposition. During the entire time of the Exhibition, there were conferences, to which were invited specialists of renown in each subject, followed by practical demonstrations.

A conference hall formed an annex to the exhibition, with projections, regional refreshment rooms and other conveniences. Another very great attraction of this exhibition was represented by *Historical Dioramas*, showing the comparative evolution of the warfare system and the medical service, from before the Christian era through the centuries and up to the twentieth century with its new weapons of the aeroplane, the submarine and war gases.

### MEDICAL DAYS IN BRUSSELS

The Annual Congress known as "Journées Médicales de Bruxelles" was held in Brussels, Belgium, from June 24-28, 1933, under the Presidency of Professor Valère Coeq. In accordance with official directions, the member of the Permanent Committee from the United States of the International Congress of Military Medicine and Pharmacy, attended the meetings at the Palais des Académies.

Two full days were given over to the question of syphilis, which was gone into most exhaustively. The balance of the time was fully taken up by papers on divers subjects, demonstrations, operative cases, conferences, and visits to the various exhibits. Many countries, including the United States, were represented in the exhibits of medical and surgical material. Rather interesting as a side light of the importance of these Congresses, is the fact that industrial exhibitors paid sufficiently large sums for space, practically to cover the entire expense of the Congress.

Leaders in diplomatic and professional life vied with one another in extending official and personal hospitality, so that no stone was left unturned to make the delegates' attendance at the meetings most profitable and worth while.



Certain of the delegates availed themselves of the excursion that had been planned by the Committee in Brussels, to Ostend, where they visited the Palais des Thermes, the extremely large, up-to-date bath establishment, and the surrounding country. The King and Queen of the Belgians received the guests at the Palais des Thermes, inspected the plant, and chatted most informally and pleasantly with the delegates. In the evening a sumptuous banquet was tendered to the visitors by the City of Ostend.

### MISCELLANEOUS—THE MADRID CONGRESS

On the last night of the Congress an official banquet was tendered to six hundred of the delegates by the Minister of Foreign Affairs of the Republic of Spain, at the Palace Hotel. The hall was magnificently decorated with a profusion of flowers, plants and flags of all the represented nations. In replying to a short farewell address by the President of the Congress, the Secretary of the Permanent Committee spoke for all the delegates in his message of gratification at the great success of the meetings and deep appreciation of all that was done for those who attended the sessions.

A number of receptions were held in honor of the delegates—one by the President of the Spanish Republic. The Entertainment Committee saw to it that the hours not taken up by the actual work of the Congress were pleasantly utilized. Visits were made to various institutions and hospitals in Madrid, and there were excursions by special trains to the historic city of Toledo, to Segovia, Aranjuez, and the Escorial, where the medico-military establishments were inspected.

Many professional courtesies were extended, for example, the author held a clinic at the large, up-to-date, Red Cross Hospital in Madrid, on the service of Professor Luque.

In order to complete the work of the Madrid Congress and in connection with arrangements for the coming meetings at Bucharest, various members of the Permanent Committee visited a number of countries—the American member going to seven, and, in addition, visiting the Bureau of the International Committee at Liege.

Those delegates who attended the Third Session of the International Office of Medico Military Documentation in Granada, had an opportunity to take a most colorful and fascinating voyage after the meetings, to Cordoba, Seville, Algeciras, Ceuta, North Africa, Tetuan, Xauen, Rift, Gibraltar, Cadiz, Alicante, Elche, Barcelona. The contrast between old and modern Spain as observed on this trip was most striking.



It is impossible to express to any one individual or group of individuals appreciation for all that was done to make the Seventh International Congress of Military Medicine and Pharmacy the memorable one that it was. However, special mention must be made of Col. Augustin Van Baumberghen who, from the very inception of these Congresses has been a most active and efficient member of the Permanent Committee. It was largely through his efforts that the Congress at Madrid was such a success. The entire Local Committee had a most difficult task, and exerted itself to the utmost so that there would be perfection throughout. The proverbial Spanish hospitality, kindness and gracious willingness to serve the guests within the borders of the land, were extended to every delegate by all with whom we came in touch, and helped lighten the strenuous hours of work.

The Seventh Congress is a thing of the past but the results of the scientific sessions will be of distinct value in the coming years in the event of future combat and during the days of peace. The cementing of friendships among the medico-military leaders of the countries of the world will be an added factor toward a sympathetic and understanding appreciation of the viewpoints of peoples of different nationalities, and thus, it may be, we have taken a step further along a path leading toward the day when all nations will be at peace with one another.

### MONACO CONVENTION

**T**HE report of Col. Louet, delegate from Monaco, to his sovereign, Prince Louis II, on the Madrid Congress, awakened in the latter a lively interest in the work that has been done and is being planned. Of particular appeal were the three points that had been mapped out for study in connection with possible future war:

1. The creation of medical districts
2. Ratification of the Geneva Convention
3. Protection of the civilian population

In order to lead to a realization of these projects, the Prince invited the members of the Permanent Committee and a number of leaders in international law to a week's conference at his Palace in Monaco, in February 1934.

A study commission was formed of those present, having as their objective to lessen the horrors of war. Not limiting itself, like the Geneva Convention, to the protection and care of the wounded and sick troops in battle, and enlarging the principles of The Hague Conference which formulated means of protection of non-combatants, the



commission at Monaco studied practically the problem under the following headings:

1. The creation of medical towns and districts
2. Assistance to non-belligerents
3. Protection of prisoners of war
4. Protection of civilian population
5. Decrees.

The result of the week's efforts is embraced in the tentative plan herewith outlined.

### *Medical Towns and Districts*

*Article 1.*—Protection is guaranteed to medical towns of belligerents under the following conditions:

*Article 2.*—The town must be reserved for the particular needs of the medical services to the exclusion of all military use. The exclusion does not include

- a. the use in transit of roads of communication and transport by military convoys;
- b. the presence of natives of the town on leave;
- c. the necessities provided by Article 7 of the Geneva Convention;
- d. The activity of industrial establishments other than those constituting important, well-known centers engaged in the manufacture of arms, munitions, and equipment of a military character.

*Article 3.*—The town must be made known during peace, or at the commencement or during the course of hostilities. This notification will be made

- a. during peace, through diplomatic communication to all the governments;
- b. at the commencement, and during the course of hostilities, through the medium of protective powers;
- c. or better, both during peace and war, through an international organ (to be defined).

*Article 4.*—The selection of the town can, within a reasonable time, be duly protested. The verification of the grounds for this protest will be given upon request in a reasonable time during peace, and promptly in time of war

- a. during peace, by the Permanent Court of International Justice;
- b. during war, by a committee designated at the beginning of hostilities, by non-belligerent powers who signed the convention; or better
- c. in both cases by the aforementioned international organ.

*Article 5.*—The town is obliged to receive during war, a Control



Commission, whose members are appointed by one of the aforementioned authorities, and agreed upon by the interested governments. It acts under the supervision of the protecting power or, better of the abovementioned international organ.

*Article 6.*—The Control Commission of non-belligerents is not to interfere in the exercise of territorial sovereignty; on the other hand, the local authorities must afford every facility to the Commission for the accomplishment of its mission.

*Article 7.*—The procedure employed to distinguish the medical towns is also applied to their discontinuance. In case of enemy occupation, the distinction is maintained except on notification to the contrary.

*Article 8.*—The guarantees accorded to the medical towns may be extended to localities in which will be grouped mobile or stationary medical formations, operating in close connection with the front lines, under the following conditions:

a. Not to receive in its interior and in a surrounding zone of 500 meters any military formation other than those pertaining to the medical service, according to the conditions provided by Article 8 of the Geneva Convention.

b. To place the insignia of the Red Cross at the limits of these localities; this will take the place of notification and be in plain view of the enemy, and subject to his contesting its lawfulness by means of common law (parliamentary, radio-telephone, rapid message).

c. Unless otherwise decided, supervision will be carried out according to Article 30 of the Geneva Convention. Nevertheless, it is recommended to utilize to all possible extent, the good offices of the organ of control composed of non-belligerents.

*Article 9.*—None of the preceding points may be interpreted in any sense as restrictive of the rights acquired by Humanity in all other Conventions.

#### *Protection of Prisoners of War*

Medical attention will be given to prisoners of war under all circumstances. They will be assured, at least, of a medical personnel chosen according to the nationality of the prisoners, or lacking that, of a medical personnel from non-belligerent states and approved by the interested protective powers.

It is recommended to the belligerents mutually to authorize specially arranged means to affect the medical personnel of the enemy in the camps.

By application of Article 9 of the Geneva Convention, the medical



personnel thus affected will not be treated as prisoners of war.

The doctors assigned to the treatment of war prisoners will be obliged to participate in the supervising of hygienic measures provided in Articles 13, 14, and 15 of the Geneva Convention.

*Medical Assistance by Non-Belligerents*

*Article 1.*—Medical assistance on the part of a government to any one of the belligerents does not break neutrality.

*Article 2.*—This assistance permits the intervention

a. by a recognized aid society, with the previous consent of its government, and the authorization of the belligerent itself.

b. by the military medical service.

*Article 3.*—Each belligerent determines the employment of the medical assistance thus placed at its disposal.

*Article 4.*—Each belligerent who accepts assistance is obliged, before its employment, to notify the enemy of its acceptance.

*Article 5.*—The medical assistance will comprise personnel, material, complete medical formations.

*Article 6.*—The personnel, material, and medical formations thus put at the disposal of the belligerents are governed by the stipulations of the Geneva Convention, consisting, if such should be the case, of the particular agreements existing between the interested states.

*Article 7.*—The belligerents may, however, at any time, renounce the advantage of this help. A state can withdraw the benefit of its assistance to a belligerent only on serious grounds, with appeal to the judgment of the Permanent Court of International Justice.

*Article 8.*—In such a case, all means must be taken so that the withdrawal of assistance is not prejudicial to the treatment of the sick and wounded.

*Article 9.*—The desire is expressed that it be looked into if, in a subsequent state of international relations, an interstate organ of non-belligerents cannot be formed to serve during the war, at the disposition of which will be directly placed medico-military contingents and voluntary help freely furnished by the states.

*Protection of the Civilian Population*

*Article 1.*—The civilian population must be left out of all forms of hostility. Where a form of warfare is banned between the combatants, its employment is more serious, calling for a re-enforcement of the rules.

*Article 2.*—By the civilian population is meant all people not enrolled in the military forces.



*Article 3.*—In case of invasion or occupation, the civilian population must be respected in its religious creed, its patriotic loyalty, its physical integrity, and moral dignity. It must be indemnified for requisitions necessary for the subsistence of the army, according to the quality of the goods. It must be permitted to be loyal to the local authority, that is to say to the rules invoked by public order. The army of occupation can apprehend any of the civilian population who fails in his duties.

A Special Chamber of the Permanent Court of International Justice is created to judge all disputes which may arise in this regard and in all others, between the army of occupation and those living in the occupied territory.

The procedure will be taken through the medium of the respective protecting powers in the interest of the belligerents.

*Article 4.*—Can be considered the object of an act of war:

a. All military formations other than those pertaining to the medical service.

b. Any agent of combat and recruiting direct for the armies.

c. Any industrial establishment for the manufacture of arms, munitions, and equipment of a military nature.

d. All lines of communication or transport used for military purposes beyond the limit of the medical and safety towns.

The civilian population is not in any sense a military objective.

In the conglomeration where there are military objectives, the methods of attack of those situated in the immediate proximity of the population must be of such a choice that their effects will not extend beyond a radius of 500 meters, calculated from the outside limits of these objectives.

*Article 5.*—Fortified cities are subject to all methods of lawful warfare. The belligerents must strive not to harm, in these cities, buildings serving for religious purposes, charity, science, or having an historic or artistic character. These buildings must be made conspicuously apparent so that they may be plainly seen by the enemy.

The belligerents must respect the resolution of the Geneva Convention of July 27, 1929, with regard to the amelioration of the conditions of the sick and wounded of the military forces; according to the present convention these resolutions are extended to include the civilian population.

*Article 6.*—Unfortified towns, in which there are no military objectives, may be transformed into safety towns—

The safety towns will profit by the rules of the medical towns, submitting to the same formalities of notification and supervision.



*Article 7.*—The preceding provisions apply to seaport towns.

*Article 8.*—The foresight and carrying out of defensive measures for the civilian population against war risks are not a violation of the present agreement.

*Article 9.*—The carrying out of this agreement is placed under the protection of an international organ (eventually the Council of the League of Nations, or in a later period of international relations, the Committee of non-belligerents, with eventual appeal to the Permanent Court of International Justice).

*Article 10.*—The preceding provisions are the expression of the human conscience.

### *Decrees*

*Article 1.*—In case of violation of the rules concerning the protection of the rights of humanity in time of war by one of the belligerents, the other may ask that this violation be so declared by a non-belligerent organ.

*Article 2.*—Every belligerent state must help this organ in the country where it exercises its authority.

*Article 3.*—This organ is composed of

a. in the front zone, an investigation commission, consisting of three members, two of which represent protective powers, and the third of which is elected with the consent of the other two;

b. in the medical and safety towns, a supervising commission composed as above;

c. in other cases, a central committee residing in the capital of each belligerent state, composed as above.

In each case one of the members of the Commission is obliged to be a military surgeon, when the question of violation concerns the sick and wounded.

*Article 4.*—The Commission of Control thus constituted must immediately proceed to a thorough inquiry and write a prompt report. It must transmit the report to the clerk of the Permanent Court of International Justice. Through the Clerk of the Court it is sent to all States, without exception.

The apprising of the legal consequences becomes the duty of the Permanent Court of International Justice.

*Article 5.*—When, after a first confirmation of a grave attack on the rights of Humanity, notably with regard to the medical and safety towns, the attack is made a second, and a third time, the victim of these repeated violations is released from its obligations in the same measure that his enemy is released from his.



Non-belligerents are, in such a case, justified in withdrawing medical assistance from the author of the violations.

*Article 6.*—A state, after taking the first legal steps may, as a last resort rely on the judgment of the Permanent Court of International Justice.

*Article 7.*—In case of attack on the life of the injured, the sick, or the civilian population, it is the duty of each State to lay the matter before the Permanent Court of International Justice.

*Additional Article.*—The assembly expresses the wish that it may carry out the Resolution of the Committee charged with the preparation of the preceding projects for the Statutes of the Permanent Court of International Justice (1920), tending to an organization of international jurisdiction, having the power to repress war crimes.

#### FOURTH SESSION OF THE INTERNATIONAL OFFICE OF MEDICO-MILITARY DOCUMENTATION

Liège—June 27-30, 1934

Three hundred and fifty delegates from thirty nations met in Liège in June, 1934. In addition universities and law faculties sent representatives in international law to join with the military surgeons to discuss the outline formulated in Monaco. Brilliant addresses were delivered and articles of a medico-military nature were read. The complete text of the Monaco Convention was presented to the assembly.

A law section was added to the International Congress during these meetings, to examine the Monaco project, particularly with reference to its relationship to the pact of the League of Nations and the Kellogg-Briand Pact. It was decided that there is complete compatibility between the provisions of the Monaco Convention and each of the other two.

#### *Permanent Committee*

Meetings of the Permanent Committee were held at Liège and the report of the Secretary was submitted:

1. The "wishes" expressed at Madrid, the result of military-medico-legal collaboration, have been sent to the various governments. The Monaco Convention is based on these "wishes."

2. The Permanent Committee was officially represented at the meeting of the Commission on the Standardization of Medical Material in October, 1933. This Commission requested the Permanent Committee to make a report giving the exact medical material necessary for a



naval corps landing alone in a country deprived of all resources. In compliance with this request, different countries were appealed to and the result communicated to the Commission.

3. A confusion exists in many countries with regard to the Office of Documentation. This Office is not an independent organ, but is one of the branches of the Congress under the Permanent Committee.

Very cordial telegrams were exchanged between the Permanent Committee and the Prince of Monaco during the meeting of the Permanent Committee.

A permanent Medico-Legal Commission was created and installed.

Colonel Voncken, Secretary of the Permanent Committee, was designated to represent this Committee at the International Red Cross Conference in Tokio.

It will be proposed to the general assembly at the Eighth International Congress of Military Medicine and Pharmacy meeting in Bucharest in September, 1935, that the name of the Congress be changed to "The International Assembly of the Medical Services of the Armies."

#### OFFICERS AND MEMBERS OF PERMANENT MEDICO-LEGAL COMMISSION

*President:*—General Castillo Najera, Mexican Ambassador at Paris and Vienna; delegate to the Council of the League of Nations.

*Vice-Presidents:*—(Jurist) Professor A. de La Pradelle; (physician) Lieutenant Colonel Jules Voncken, Secretary-General of the Permanent Committee.

*Secretary General:*—Dr. F. Louet, Physician to and delegate from the Prince of Monaco.

*Members:*—(Jurists)— Mr. Ernest Mahaim, Professor at the University of Liège; Mr. James Brown Scott, Secretary Carnegie Foundation for International Peace; Mr. Alfred Verdross, Professor at the University of Vienna; (Medical)—Colonel Benson, of Great Britain; Colonel de Bernardinis of Italy; Colonel Schickelé of France.





## ALPHABETICAL LIST OF CONTRIBUTORS

- Casariago, Carlos Sáez y Fernández—Army Pharmacist. (Spain)  
 Dawson, A.—Lieutenant Colonel, Royal Army Medical Corps. (Great Britain)  
 Deleito, Federico Gonzalez—Medical Lieutenant Colonel. (Spain)  
 Dudley, Sheldon F.—Surgeon Captain, O.B.E., Royal Navy. (Great Britain)  
 Espina, Emilio Fernandez—Pharmacist Commandant of the Navy. (Spain)  
 Falero, Rafael Martinez—Medical Commandant of the Navy. (Spain)  
 Fernandez, Primero Juan Casas—Pharmacist. (Spain)  
 Fito, Federico Abeilhe y Rodriguez—Lieutenant-Colonel de Intendencia. (Spain)  
 Garcia, Medina—Veterinary Sub-Inspector. (Spain)  
 Hernandez, Sanchez—Veterinary Sub-Inspector. (Spain)  
 Hidalgo, Emilio Salazar—Pharmacist Sub-Inspector. (Spain)  
 Irigoyen, Campoy—Major Pharmacist. (Spain)  
 Jimenez, Madrugá—Medical Captain. (Spain)  
 Kitano, Masaji—Major, Medical Corps. Imperial Japanese Army. (Japan)  
 Leguna Carmelo Muela—Director of the Sanitary Brigade of Valdepeñas. (Spain)  
 Laita, Rafael Abengoichea—Medical Commandant of the Navy. (Spain)  
 Leman—Medical Lieutenant-Colonel. (Belgium)  
 Lopez, Huertas—Veterinary Sub-Inspector. (Spain)  
 Lopez, Nazario Diaz—Pharmacist (Santander). (Spain)  
 Martin, Arroyo—Veterinary Surgeon. (Spain)  
 Martinez, José Potous—Medical Colonel. (Spain)  
 Martos, Paulino Fernandez—Director of the Academy of Military Hygiene. (Spain)  
 Menguijon, Herrero—Medical Commandant. (Spain)  
 Munoz-Torrero, Primero Pedro Calvo—Pharmacist. (Spain)  
 Nordlander, Oscar—Medical Lieutenant-Colonel, Chief of the Bureau of the Military Health Service. (Sweden)  
 Perez, Eduardo Robles—Commandante de Intendencia. (Spain)  
 Perez, Leopoldo Lopez—Major Pharmacist (retired) of the Navy—Honorary President of the Lerida Pharmaceutic College. (Spain)  
 Pipaon, Sáenz de—Veterinary Surgeon. (Spain)  
 Rojas, E. Fernández de—Sub-Inspector Pharmacist. (Spain)  
 Rojo, Heliodoro Fernandez—Military Pharmacist, Honorary Member of the Palencia Pharmacists. (Spain)  
 Sanchez, José Bayona—President of the Pharmaceutic College of Cordoba. (Spain)  
 Santos, Martin—Medical Captain. (Spain)  
 Sibila, José Abadal y—Pharmaceutic Sub-Inspector. (Spain)  
 Thomann—Colonel, Pharmacist-in-Chief of the Swiss Army. (Switzerland)  
 Ulla, Gomez—Lieutenant-Colonel. (Spain)  
 Ulzurum, Victor Herrero y Diez de—Medical Lieutenant-Colonel. (Spain)  
 Vara, Cargallo—Veterinary Major. (Spain)  
 Vazquez, Angel—Doctor. (Spain)  
 Vega, Sanchez—Medical Commandant. (Spain)  
 Whittingham, Harold E.—Group Captain, C.B.E., Royal Air Force. (Great Britain)



