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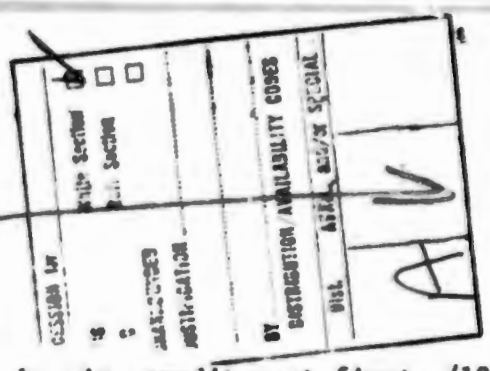
MEDICAL EVACUATION BY AIR

Captain Desplats (MC)



Whenever discussion turns to medical evacuation by air, credit must first /191*
of all be given to the forerunner of medical aviation, Dr. Chassaing, mobilized as Surgeon Lieutenant during the First World War. However, it is worthy of note that, as early as 1870, during the seige of Paris, 160 seriously ill persons were evacuated from the capital by observation balloon. Then, in 1915-1916, a number of pilots were able to evacuate seriously wounded comrades to the zone of interior using their machinegun equipped fighter aircraft. However, by the end of 1917, Dr. Chassaing had set up plans for the first medical aircraft which was a DORAND type reconnaissance type aircraft which had been converted and specially appointed. Unfortunately, he came up against bitter opponents and had only lukewarm support from those on his side. For this reason, this revolutionary means of transport was not used during the war of 1914-1918. It was not until 27 January 1919 in Morocco that the first transport of wounded men by the Chassaing medical aircraft was carried out. The experimental era of medical evacuations by air had begun.

After Chassaing, the pioneers were Epaulard, Surgeon-Major, who effectively utilized medical aircraft (at that time, Breguet aircraft were involved) during the Rif War in Morocco in 1921-1922. Duguet, Surgeon, did the same /192
while in Syria. However, it was Surgeon Colonel Robert Picque, Professor at Val-de-Grâce who, as early as 1923, became the advocate of medical aviation and, furthermore, was killed while on duty on 1 June 1927.

In this way, military operations in Morocco and in the Middle East between the two World Wars demonstrated the usefulness of air transport for evacuating wounded over great distances. Since that time, medical aviation has continued to assert its authority and began its use on a grand scale during the last World War. During the War of Liberation, taking into account the unfortunate experience of 1940, the Medical Service improved evacuation resources and frequently borrowed aircraft for evacuating field hospitals from the front to hospital facilities in the rear areas. The first organized attempts for evacuation from the battlefield to the operating table were made as early as this time.

The experimental stage was passed and we now entered the active organizational phase. In 1945, General Eisenhower could state: "We have air evacuated almost every one of our hospitals at the front, and this method has undoubtedly saved hundreds, even thousands, of lives." We could not get a better testimonial and air evacuations had come of age. Nevertheless, it was during the wars in Indochina and Korea as well as operations for maintaining order in Algeria that air medical evacuations reached their peak of development and their doctrine, worked out as early as 1955 by Dr. Salvagnac, Lieutenant Colonel in the Air Force Medical Corps, was eventually tailored to the requirements of modern warfare and present day medical tactics. In 1958, Colonel Favre (Medical Corps) stated in a report to the Congress of the

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* Numbers in the right margin indicate pagination in the original text.

Society of French Military Medicine: "Air evacuation has become necessary as a requirement of ground deployment to the same extent as the use of antibiotics and resuscitation-transfusion in wartime surgery."

→ TACTICAL DEVELOPMENT ; → /193

Today, we can state that air evacuation has become, owing to progress made in the field of surgery and resuscitation as well as in the aeronautical field in its true sense, an absolutely necessary link in medical tactics and emergency therapeutics. It followed the development of strategy which, from a static war, become transformed into a war of movement. We are the witnesses to the last encouragement which the "movement" factor has given to the general system description of evacuations. It has even modified it for so long as air evacuations were not possible, it was necessary to care for the wounded as close as possible to the battlefield. However, improvements in surgical techniques and transport resources presently allow the casualty to wait for surgery without any major danger and to be evacuated ever more rapidly to farther and farther points. It has also added a new concept to medical tactics by enabling installation of field hospitals as far as possible from the firing line. The surgeon no longer travels to the casualty since the latter now comes to him after having sometimes traveled as much as several hundred kilometers in order to be treated under better conditions.

Owing to this, a distribution in depth of treatment and hospitalization resources at variable distances forming an effective gridding is made possible. This dispersion could be of the utmost value, in particular during a nuclear warfare. Finally, medical evacuation by air helps the Medical Corps to better reach its goal, i.e., the recovery of personnel as a function of its basic motto: "Comfort, care for, save" (soulager, soigner, sauver). It also helps the military commander by swiftly removing seriously wounded personnel representing a burden which could delay an offensive movement or a so-called strategic withdrawal.

Thus, after having gone ahead so slowly, after having aroused so many diverse opinions, transport of casualties by air has spectacularly developed in these last 10 years to such an extent that it is now unthinkable to imagine that a military strategist could be unaware or disregard this valuable means /194
of transport. The Air Force has clearly proven, and particularly in Algeria, that it can carry out this medical mission at any time and under any conditions.

We have therefore been able to progressively define the development of the concept of medical evacuation by air. At the very beginning, it involved the mere collection and rescue of seriously wounded over short distances. It then became a matter of medical convoying over longer stretches. Finally becoming integrated into the henceforth conventional therapeutic chain: collection, resuscitation and conditioning, triage, evacuation, surgical treatment.

It can be separated into three stages:

The primary evacuation or transport of the casualty by helicopter or light aircraft from the front, i.e., from the forward airborne surgical unit (A.C.P. 58, l'antenne chirurgicale parachutiste) to the field hospital now become forward surgical hospital (H.C.A., l'hôpital de campagne devenu hôpital chirurgical avancé). The forward airborne surgical unit, generally dropped with assault wave elements, represents the first Medical Corps component, the advance facility.

Its goal is to ensure processing of urgent casualties during the first 48 hours in the absence of any local support and before any possibility for reinforcement. A half hour after dropping, it is ready to operate and can exist in isolation for 4-5 days. Its mission is to await the setup of a point for triage and evacuation as well as the intervention of helicopters which is not always possible at any hour of the day or night.

Secondary evacuation: from the advanced surgical hospital to hospitals in the zone of interior or a hospital ship. The advanced surgical hospital is the last born of surgical facilities in the forward area. It is a light and mobile field hospital. It represents a complete, coherent and indissoluble system whose dominant activity is the performance of extremely urgent surgical operations (20-30 daily). This advanced surgical hospital has been designed especially for divisional support in the nuclear era.

Tertiary evacuation: the least critical stage which starts the casualty on his way to the specialized processing center or convalescent centers. The completion of this development may be found in the conclusions of the 16th International Congress of Military Medicine and Pharmacy held in 1960 on the subject of air evacuations. /195

The term aeromedical evacuation (évacuation aéro-médicale) should be used with one identical meaning for all countries for the sake of standardization. This allows removal of any misunderstanding involving the word "sanitaire".

First Stage: The evacuation by light aircraft or helicopters from the point at the extreme front to a surgical unit. It is essential that those who are responsible for escorting casualties in the first stage of air evacuation make sure that the latter have been prepared for the trip. This involves checking freedom of the upper respiratory passages, halting of hemorrhages, immobilization of fractures, holding of injured soft parts, stabilization of injuries to the thorax and its content.

Second Stage: The patients will then have to be evacuated from front surgical units to hospitals in the zone of communications. This second airlift will be set up using aircraft of all types on any occasion possible. For the second aeromedical evacuation stage, consideration should be given to the effects of lack of oxygen, reduction of atmospheric pressure and airsickness in calculating the possibility and order of priority of casualties to be evacuated in the light of the characteristics of the transport aircraft available and the flight plan.

We shall therefore from now on use the term aeromedical evacuation and, after having defined its preferred position within the scope of medical tactics as well as military strategy, we are going to try to show the problems which the Medical Corps came up against before obtaining this logistical support which is not only highly valuable but is an effective and beneficial tool. /196

MEDICAL-MILITARY REQUIREMENTS FOR AEROMEDICAL EVACUATIONS

The evacuation of a serious battle casualty or a critically ill patient presents a command like the Medical Corps with problems which are difficult to solve. It is necessary to reconcile humanitarian and sentimental considerations on one hand with strategic concepts on the other. Thus, for example, the concept of urgency can differ from one person to the next. The question arises of knowing whether steps should be taken first of all to save the slightly wounded who alone are capable of being swiftly returned to the command or to save the seriously ill and wounded for whom any delay reflects adversely on the vital prognosis and who represent a severe burden for the command. Now, in the case of these seriously wounded persons, evacuation is imperative since the light medical units alone present at the front can only provide first aid for these seriously wounded and should also be taking care of casualties recoverable on a short-term basis.

The aeromedical evacuation presents problems which are a function, in wartime as well as in peacetime, of the tactical, logistic and medical requirements.

TACTICAL REQUIREMENTS

We have seen that in time of war aeromedical evacuation has been a function of the strategy of that time operating under three controlling concepts: conduct of countersubversion activity, such as was the case during the campaigns in Indochina and Algeria; organization of airborne operations, such as the Suez expedition in 1956 which is the most striking example; adaptation to nuclear risks which has been the chief worry of our leaders whence a very intensive search for mobility of units and their logistic support.

Faced with these tactical requirements, the Medical Corps should accept /197
and comply with the directives from higher command which may or may not supply it with aircraft and crews. The following assumptions are made: the possibility of having available aircraft and crews in sufficient number and to be able to take them from combat missions; the possibility of using landing fields near field medical units, the latter often being located quite far from the line of fire owing to the extreme mobility and fluidity of modern fronts.

The ideal situation would clearly be one in which the Medical Corps had helicopters and aircraft permanently at its disposal. This step will probably be taken one day as is the case for the American Army.

THE LOGISTICAL REQUIREMENTS

Aeromedical evacuations require a considerable logistic support including resources for air with associated infrastructure as well as communications systems.

The air resources should combine the following qualities: speed, safety, comfort, whence the capability for treatment during flight.

Helicopters, whether they are light like the ALOUETTE or the DJINN, medium or heavy like the H19, H34 or H21, so-called "flying bananas", have in principle, an aerodynamic instability in pitch and roll. They are only used during daylight and in good weather since they are not equipped for instrument flight.

At the present time, instrument flight can be carried out with a helicopter under certain conditions: relatively stable and nonicing clouds. The last great step will clearly be taken when an effective solution will be found for the deicing of the blades. It appears that the SUPER-FRELON, a three-turbine helicopter able to transport 30 persons plus the crew and with a speed of 220 km/h, an endurance of five hours and a ceiling of 800 meters, may be the solution of the future.

Helicopters have the great advantage of being able to land on many different kinds of terrain. They are, however, quite vulnerable. The Medical Corps uses them chiefly for operations involving collection, transport with forward airborne surgical unit and primary evacuations. /198

Aircraft have much greater advantages. They are maneuverable, stable and can be used in practically any kind of weather by night or by day. Nevertheless, they require suitable landing fields ranging from 800 to 2000 meters in length and need a setup time varying from 30 to 60 minutes. Liaison aircraft of the BROUSSARD and DASSAULT 315 type are used for primary evacuations. Light and heavy transport aircraft of the DAKOTA, NORD 2501 and BREGUET type have relatively good capabilities for special arrangements and comfort and are used for secondary and tertiary evacuations.

The ideal solution would clearly be to have available specially arranged medical aircraft having embarked all equipment and drugs absolutely necessary for emergency cases, specially designed to remove vibrations, noise and instability of the pitch and roll type causing airsickness. Such aircraft represent the ultimate goal towards which we should strive and to which the casualties have the right. No matter what the cost and the number of difficulties, our wounded should have the benefit of the considerable modern material resources that are offered to the healthy combatant such as members of the striking force, and it would be unjust to refuse this to the wounded combatant.

Resources of air infrastructure are chiefly airports and heliports. Airports are quite numerous in France and only present in a few cases problems involved with equipment, in particular beaconing, radio sets, guidance, etc. The problem of heliports is a greater one. If it is desired to eliminate the random, chaotic highway transport which is subject to the viscissitudes of traffic and its major scourge: traffic jams, each major hospital unit, each civil and military hospital should have its own heliport located within the very confines of its buildings. In this way, it will be possible to make unnecessary those aircraft-ambulance or helicopter-ambulance connections, harmful for the wounded or injured or sick person, leading to many handling operations, changes of apparatus which are quite prejudicial to the state of health of the evacuated person. /199

It is illogical to think that a well-conducted aeromedical evacuation, with treatment in flight, maintenance of the patient in the best hospital conditions should end miserably in an uncomfortable, often rudimentary, ambulance. It appears that man, in spite of his wisdom, comes up against this ridiculous and almost unsurmountable obstacle under present operating conditions.

It is unthinkable that we are still building hospitals, great hospital and university systems which are entirely without helicopters, i.e., consciously doing without this modern medical conquest: aeromedical evacuation and, in particular, its heliborne support.

It is clear that the good performance of an aeromedical evacuation requires considerable and large-scale communications resources (telephonic connections between doctors, air-ground links, etc.) in order to avoid any misunderstanding, any delay in the timetable of this evacuation. All of these logistical problems are a function of the higher command and, in principle, have caused no serious disturbance at all in the operation of the Medical Corps.

MEDICAL REQUIREMENTS

Within the spirit of the Medical Corps of the Armed Forces, aeromedical evacuation, to be valid, should satisfy a number of requirements in order to justify the very definition of the latter; i.e., an aeromedical evacuation is the absolutely necessary therapeutic link between triage and surgical intervention. It is not just the common transport of human "freight" but a medical escort operating maintaining the wounded or sick person under medical-surgical conditions comparable to hospital conditions.

This requirement assumes medical teams especially trained for medical escort, i.e., having extensive experience both in the aeronautical as well as the medical field. These teams, trained along the same lines, have an /200
indispensable unity of doctrine. This requires that qualified medical and orderly personnel have a solid understanding of matters relating to resuscitation-transfusion, emergency surgery. This has already been emphasized by Dr. Salvagnac at the conclusion of his report concerning air evacuations in Indochina. Thus, as early as 1959, the Medical Corps has sought to form well-trained medical teams, experienced in the practice of resuscitation and escort and keeping up to date with the development of surgical techniques.

The adaptation of escort techniques to flight is likewise absolutely necessary since it is still possible to obtain medical aircraft with a pressurized cabin in which most of the detrimental factors of flight have been reduced, if not eliminated. For this reason, the concept of conditioning before the flight has become necessary. It is useless to review the detrimental factors of flight connected with altitude (reduction of atmospheric pressure, cooling of the air, drop in water vapor tension) and connected with the motion of the aircraft (vibrations, noises, airsickness) which cause some degree of fatigue and nervous irritation in the case of patients who have become delicate.

These disadvantages are now considerably reduced by the continuously more comfortable aircraft now used for transporting the injured and sick (reduction in the intensity of vibrations, adjustable heating systems) as well as by studying the flight plan in detail with the aircraft commander since the flight plan allows meteorological precipitations and accidented terrain to be avoided. (In principle, furthermore, the altitude of 2000 meters generally used during evacuations causes few reactions in an evacuated patient. In addition, between the medical team and the aircraft crew, there should exist a mutual understanding allowing, during the flight, to modify the flight plan so as to avoid all turbulence or as a function of the behavior of the evacuated patient.) The preparation of the patient before the flight has also helped considerably. This conditioning, an actual medical-psychological preparation for flight, has practically allowed the elimination of contraindications for air transport, with the assistance, of course, of modern therapeutic acquisitions (disorientation and antishock measures, use of antibiotics, development of techniques for anesthesia-resuscitation).

At the present time, any patient perfectly prepared for flight, and medically monitored during this flight, can make use of the airway no matter what may be the status requiring his evacuation. It is therefore necessary to especially emphasize the great importance of an adequate preparation before flight. This allows, if necessary, stopping hemorrhages, reestablishing freedom of the upper respiratory passages, immobilizing fractures, reducing suffering, taking measures against evident shock of avoiding appearance of shock in the ensuing hours, psychologically preparing the future evacuee by explaining to him, if he is conscious, what is expected during the flight and, at the same time, giving him drugs to alleviate airsickness. /201

In this way, depending on the status of the patient, the different types of treatments practiced such as injection of barbiturates, opiates, sedatives, installation of a venous profusion, oxygenotherapy, tracheotomy, aspiration, respiratory resuscitation, the most varied and most complicated of medications can be undertaken from the very beginning. The surgeon and the doctor are sure that their treatment, set up on an emergency basis, no matter what it may be, will be continued during the flight.

In practice, furthermore, except for emergency and specialized cases, preflight treatment reduces considerably the requirement for treatment during flight. In the greatest number of cases, the treatment specified before embarking merely continues while the patient is onboard.

Nevertheless, we should not fail to mention the difficult task given to escort personnel by continuous treatments while in flight such as intravenous profusions, operation of a respirator, monitoring of a severely burned patient, patient suffering from anuresis or cranial fracture. This conditioning does not delay the start of the aeromedical evacuation but takes place during the lapse of time necessary for getting ready the medical aircraft and the escort team. The latter requires on the average one hour and sometimes more. Hence, the evacuating surgeon or doctor can, without haste, begin therapy. His act will perhaps save the injured or sick person and will ensure him an excellent aeromedical evacuation, stage preceding the surgical operation. The future and prognosis of the evacuee will be completely a function of this conditioning. It is not enough on an emergency basis to "save a life or a limb"; it /202

should also be thought of helping recovery of the casualty as quickly as possible, at the same time avoiding complications or serious aftereffects.

During the flight, the harmful effects of flight can be attenuated by constantly seeking to provide comfort for the evacuee by using mattresses and cushions made of foam rubber, back rests, blankets, heat blankets and water bottles, thermos bottles with hot and cold liquids, depending on the season, antinoise earcups, finally, anything which could improve the "nursing" care of the patient.

Insofar as concerns the formation of escort supply kits, the Medical Corps has used its experience and gradually finalized preparation of complete escort kits including the instrumentation and drugs absolutely necessary for the start and continuance of therapy. These escorts' kits satisfy not only the most varied medical requirements but also aeronautical requirements, i.e., relatively reduced weight and volume. Well designed, they completely satisfy the needs of escort doctors and can be very easily modified.

MEDICAL-ADMINISTRATIVE PREPARATION

An aeromedical evacuation requires, in addition to the medical preparation in its true sense, an organized system of indispensable acts in order to ensure its successful development whence the urgent need for a specialized organization called "Transit Center for Air Medical Evacuation". This transit center should be a genuine miniature hospital located near an airfield and a transport squadron. It should be sufficiently far from the combat area but easily accessible by ground and by air and effectively protected in case of nuclear attack. During combat, it could be divided into a number of self-contained transit sections which would be mobile and airborne, moving swiftly to any point in the operational area whatsoever. These sections would include one or more specialized teams depending on the scope of combat and the number /203
of casualties to be evacuated. They would be placed at the disposal of different headquarters and transport squadrons, taking advantage in this way of the disposition provided by our comrades of the ground forces. These sections would have a triple goal, i.e., triage and emergency care for the wounded, loading them aboard and finally escorting them to the first medical facility.

The role of the transit center is very important. It centralizes requests for evacuation and has available a number of specialized teams which have been trained and broken in to aeromedical discipline. They are capable of carrying out triage, emergency care, resuscitation and evacuation of wounded within the shortest possible time. These teams include, in addition to experienced doctors and orderlies, stretcher bearer orderlies who can load and unload aircraft in a minimum of time.

The center has, in addition, all administrative mechanisms for carrying the wounded and sick on a subsistence basis, maintaining the medical kits for escort used for inflight care, setting up the different medical files, mission directives, aircraft manifests, i.e., the categorization of the wounded into sitting or lying, serious or benign.

A transit center of this kind existed in Algeria. It was based on Alger-Maison Blanche and was the turntable for all evacuations carried out in the

five-year period from 1957 to 1962. During this time, close to 80,000 wounded or sick were evacuated through the good offices of the Air Force, owing to a remarkable symbiosis between the Medical Corps of the three branches of the Armed Forces.

Heading this transit center, managing and operational organization, should be an experienced doctor having operational responsibility for all medical evacuations. He is "the coordinating or controlling doctor". This doctor plays the role of "dispatcher" coordinating the efforts of each operation.

His functions require him to: /204

Issue a technical opinion on the advisability of the mission;

Designate the most suitable doctor for carrying out the mission and selecting the appropriate equipment;

Ensure telephone communications with the command or doctor requesting the evacuation. This doctor can supply a maximum of absolutely necessary medical data for evaluating the mission and ensuring a proper escort with the appropriate equipment (for example, a device for assisting respiration);

Propose to the evacuating doctor, depending on the status of the patient, a flight conditioning (antiairsickness medication, preventive tracheotomy, installation of a tracheal or laryngeal cannula, a catheter for intravenous profusion, a drip feeding, a urethal probe, an oxygenal therapy, a trocar for exsufflation in order to reduce a pneumothorax, etc.);

Establish direct contact, first of all with the controller of regional or local transport resources and subsequently with the receiving facility. The controlling doctor makes sure that the receiving hospital is aware of the arrival of the one or more patients. He informs it of the treatments in process in order to avoid any interruption in the therapy and further specifies the time of arrival;

Sets up the different aircraft-ambulance or aircraft-helicopter connections at embarkation or at debarkation in order to avoid any injurious delay;

Remains in communication with the escort doctor, either to give him directives during the mission, or to be kept informed of any change occurring during the flight such as worsening of the status of the patients, diverting of the aircraft owing to poor atmospheric conditions, modification of flight plan.

In time of war, the control doctor will be in close communication with the different headquarters, with units at the front and in the rear, with the doctors of transit sections scattered about consonant with the changing tactical needs. He will represent the connecting link between the Air Forces and the other branches of the Armed Forces (Army, Navy).

THE PRESENT DOCTRINE; and /205

As a result of lessons learned in Indochina, Korea and especially in Algeria, a doctrine of aeromedical evacuations has been fully worked out. At this stage, it would merely require some slight changes as a function of the gradual development of military strategy and more particularly involving nuclear conflict which would make necessary massive evacuations.

This doctrine, as we have seen, is based on a number of major points. The aeromedical evacuation is a therapeutic link between triage and the surgical or specialized medical operation. All resuscitation should be begun starting with the stage of the forward airborne surgical unit, first medical facility at the front, and will be continued during flight. The control doctor has full power of decision in the matter of performance and progress of the mission. The escort doctor is the only one qualified, during flight, to make any medical-aeronautical decision modifying the flight plan or the performance of the mission.

This doctrine exists and operates perfectly but we can, nevertheless, do even more to improve it.

Thus, progress in the future could involve:

The installation by the Medical Corps of a permanent center for aeromedical evacuations, a miniature hospital having a perfected resuscitation service, specialized teams and medical-administrative support. As we have seen, this air medical transit center, called the CTSA (centre de transit sanitaire aérien) existed in Algeria. In 1962, it was deactivated. In time of peace, one center alone would be enough. At the present time, the base at Salon forms an embryonic evacuation center as do likewise the bases at Villacoublay and Solenzara located in Corsica. However, the resources are too dispersed and uncoordinated. This was probably to avoid too great a dependency on a single air facility and certainly to deal with the vulnerabilities of each individual one.

The only valid and effective solution is the creation of a medical evacuation center which is self-contained or dependent on a medical service of an air base located near a transport squadron and in the vicinity of hospital facilities. The creation of this center would avoid the setting /206
up every weekend of four or five aeromedical alert teams and even more on national territory as is the case at the present time. It would be, in addition, the first genesis of air medical transit and could be in operation as early as the start of hostilities with the addition at this time of air medical transit sections staffed by reserve personnel.

Placing cargo aircraft at the disposal of the Medical Corps truly satisfying the requirements in all respects for medical aircraft. At the present time, it must be admitted that this medical aircraft concept is a myth. The practical application of the Geneva Conventions of 12 August 1949 is quite difficult since these conventions lack realism and only propose inoperable, complicated and clumsy procedures for utopian results. They are inapplicable during a generalized conflict, even by humanitarian belligerents.

These Geneva Conventions should therefore be revised and made effective by attempting to obtain, for transport of casualties, medical aircraft placed at the disposal of the International Red Cross by the various belligerents. These aircraft would be of the same type, easily identifiable and exclusively reserved for air medical evacuations. These aircraft would circulate in neutralized air corridors and use airfields which would be called "free" or "open" airfields. It is clear that the maintenance of such a fleet of aircraft would be expensive but would count for very little in present-day war budgets. It is at this cost that we can discuss aeromedical evacuations during a conflict. In all other cases, and this is standard practice among all States, even the most civilized ones, the transport of wounded is nothing more than a "human cargo" transport. The transport is certainly improved by the presence of personnel and equipment of the Medical Corps but in unprotected aircraft which form veritable targets made available to antiaircraft fire, rockets or other destructive devices.

It would also be difficult to obtain neutralized air corridors for it is well known that confidence between belligerents is not prevalent and it will be impossible to differentiate on radar screens any Red Cross aircraft from any other aircraft. Nevertheless, we believe that, during a nuclear war, it will be much easier to neutralize such and such a combat zone and that the belligerents will be obligated to conclude a truce in order to be able to evacuate contaminated radioactive areas. It could very well be imagined that /207
the collection and triage of the wounded and survivors, if any, will be accomplished between the first and second nuclear exchange if the latter is still necessary to obtain a victory pursuant to the emptiness and folly of man.

It would be pretentious and vain to believe that the Air Force could alone solve the problem of evacuations, especially during nuclear conflict. For this, it would be necessary for it to be able to collect a considerable potential together at a single point on the front and this would be almost impossible. All evacuation resources will have to be placed in motion whence the requirement for smooth working cooperation between the different armed branches and their aeromedical evacuation services whence the requirement for an air transit center coordinating all energies and resources.

Nevertheless, the aeromedical evacuation will have a preponderant role for it will be able to rapidly clear the combat area of the most serious casualties and, by the same stroke, avoid the congestion and blockage of hospital facilities at the front. Air evacuation is therefore a marvelous resource available to the higher command as a tactical resource also constituting a valuable psychological factor. The combatant will have the certainty of being able to take advantage, in the shortest possible time, of all the resources of the Medical Corps of the Armed Forces. The air evacuation provides him with hope for an additional opportunity for survival.

In this way, we have seen that aeromedical evacuation has become integrated into medical tactics, modifying it, giving it a new and dynamic shape, allowing it to trace the development of military strategy and become adapted to the new requirements of the latter. It represents one of the main trumps of the Medical Corps of the Armed Forces. This corps should, in the future,

with the assistance of the higher command, seek to develop it to the maximum in order to procure from it a greater and greater effectiveness. It is within this scope that we recommend the revision of the Geneva Conventions. However, we believe that we must not deceive ourselves. Air evacuation on a grand scale will only be possible as a function of air supremacy which, unfortunately, it should be confessed, is much more reliable than the Red Cross. /208

In conclusion, we are going to examine what capabilities are available for transporting sick and wounded by air in civilian practice.

THE "EVASAN" IN CIVIL PRACTICE

The experience acquired by military doctors is now available to their civilian colleagues. It is clear that the same problems are faced by all doctors whether they are in uniform or not. Modern life traumatizes just as much as a battle and emergency surgery copes with the damages done by motorized human flocks on the move. France has a sufficient but underdeveloped infrastructure which could not deal with, tomorrow, the requirements of a nuclear conflict. The specialized centers are few in number and movements of seriously sick or wounded are necessary. This is particularly true in the case of patients suffering from respiratory difficulties, burns, skull fractures and anuria. Aeromedical evacuation has therefore become a current civilian practice. This naturally calls upon existing resources which have demonstrated their dynamic qualities and effectiveness, i.e., those of the Air Force.

Nevertheless, this solution can only be a temporary one. The Air Force should first of all carry out its tactical missions, both in peacetime as well as in wartime. It should not be distracted from it.

Civilians should therefore address this problem and create their own infrastructure with military resources only becoming involved in the case of great cataclysms such as earthquakes, for example, as was the case with Agadir and Skoplje. Some kind of civilian organization should coordinate all present private efforts along these lines such as they exist in the Paris Region. The teams from Dr. Cara of the Necker Hospital blanket an area of 200 km around Paris. A forward surgical unit is located at Salon and in many other regions. The resources are still too scattered, the methods differing and occasionally with a poorly defined goal. How many evacuations have been performed unnecessarily, in haste and without plan becoming transformed into a purposeless transport and not into an evacuation. How much money is often wasted and time lost! /209

Civilian doctors should be indoctrinated, become acquainted with capabilities offered and, however, also assume their responsibilities. An air mission is not without danger. No one has the right to use a medical team and possibly send it to its death without grave and serious reasons. A diagnosis can be made in time before the appearance of complications which are sometimes fatal. For this reason, a flight preconditioning is absolutely necessary. Each administrative mechanism should feel itself involved and not lose interest in the mission as soon as it has begun.

To request an evacuation is to start a therapeutic action and not merely a means of becoming relieved of responsibility for a burdensome patient whose diagnosis was often made. This is neither a mere means of easy locomotion nor a transfer of responsibility.

At the present time, it is quite easy to request an aeromedical mission (Evasan).* In order to do this, the requesting doctor makes application to the regional representative of Public Health who forwards the request to the Prefecture and to the Regional Directorate of the Air Health Service. Why this routing? To the Prefecture because the latter is involved in payment for the transport and should know under whose jurisdiction (social security, agricultural insurance, SNCF (National Railroad), cooperatives, etc.) to the Directorate of the Air Health Service because the latter is the only agency empowered to initiate an air mission at the higher command. Before requesting such a mission, the treating doctor should have confirmation of the agreement of the receiving hospital. It has happened that, upon completion of an evacuation, it was quite difficult to have the patient admitted into the clinic in question because the latter had not been informed and categorically refused to accept the patient owing to questions of assumption of responsibility or lack of room.

All this can be avoided in the future provided the treating doctors agree to adhere to one mode of procedure and automatically telephone the representative of Public Health or, if the latter is not available, the Regional Directorate of the nearest health service where there is practically always a staff on duty. It is important to communicate with doctors or their representatives who will understand the request and will be able to interpret it and set into motion the medical-aeronautical procedure. /210

This is the way it is today! It is simple.

What should we have in the future? First of all, we should build up the equipment of secondary and second category hospitals by adding services for neurosurgery and resuscitation-anesthesia. This would avoid shifting equipment and a loss of money. The infrastructure of civilian airfields (beaconing, radio equipment, etc.) should be built up. Tourist aircraft should be made over into medical aircraft which is possible when designers prearrange their aircraft for quick transformation into medical aircraft. Specialized civilian teams should be created following the example of the teams of Dr. Cara of the National Assistance Board (Assistance Publique) of Paris. A national and international medical code should be promoted which would be the handbook of all escort doctors. Questions of payment should be regulated. It appears that social security could take over early responsibility for all expenses and then later passing responsibility to the authority having jurisdiction for the patient. Finally, the government should produce a code which would officially organize evacuations by air. At the present time, we find the Prefects who are trying to obtain on a regional basis agreements with the State Police (gendarmerie), the Armed Forces and Public Health. All this is based on friendships or sympathetic relationships, private initiatives but not on legal codes. It should be possible, at a government level, to have a

* [Trans. Note] Evasan, probably Evacuation Sanitaire, Medical Evacuation

coordinating committee meet in order to examine procedures carefully, making codes, planning and deciding.

Our country should have the medical infrastructure of a developed country conscious of its duties and responsibilities.