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Trip Report - South America, Interests of Flight Medicine

The intent of this effort was to exchange current information and ideas on this new field of medicine in which our country is the recognized leader. I gave lectures on Aerospace Medicine, participated in question and answer sessions and visited various aviation medicine facilities. The most fruitful of these sessions were in Peru, Argentina and Brazil where much of mutual value was exchanged. I left a collection of reprints at each installation for translation into Spanish (list attached). There was a great desire to obtain current aerospace medical publications in all countries.

The following comments are those of importance to the flight medicine area in each country visited.

Panama

An excellent briefing was given by the staff of the 5700th Dispensary and all aspects of medical operation in that area were covered. From a personal viewpoint it was gratifying to see some of the areas of progress since I left my assignment in Panama. It was also disappointing to see the effect of some of the reduction in mission of the aeromedical activity. Captain Matejka seems to have enjoyed his job and is very well liked on the base. The reduction of the Air Rescue Mission to a locally assigned helicopter and the removal of the T-33 aircraft have markedly reduced areas of interest to aerospace medicine. In spite of this Captain Matejka is applying for a residency in Aviation Medicine. A great deal of discussion centered around the need for a military hospital in the Panama area. Utilization of this hospital which was started in my assignment due to the passage of a Bill in Congress has shown little progress for the better during the intervening years. A staff study concerning this is now in this Headquarters for study. Utilization of the Fort Clayton Hospital would seem most logical and worked very well previously. The medical care of USAF Mission personnel has been placed on a much more regular and routine basis than during my years in Panama. A regular schedule has been set up and a medical team visits the missions as per this schedule. The only difficulty here seems to be that all of the medical officers time is taken up in medical care of the American personnel. No time is left for meeting, advising or discussing with local medical personnel. I would strongly advise the inclusion of an Aerospace Medical Advisor (Flight Surgeon) for each of these trips with no job other than contacting the local surgeon general and his staff to render what ever assistance he could in the brief period of his stay. This should become a definite part of the medical mission of CAIRC.

The local altitude chamber (six men) has been modified somewhat and modernized by the addition of a new pump. The PTO is intelligent, well informed and effective, but as always this unit is undermanned from the

technician point of view. This has advantages in that even the personnel assigned cannot be kept busy on a full time basis. The number of personnel trained is just not large enough to justify full time operation and assignment. The importance of this unit to the Latin American group, however, cannot be overestimated and for this reason it should be maintained and local arrangements should be made to assure that the physiological training personnel are utilized at other duties when they are not fully occupied with physiological training. Future plans for this unit are discussed in the summary. Several courses for medical technicians, flight surgeons assistants, etc., were initiated in Latin American schools in 1955. It was noted on this visit that all of these courses have been dropped, principally because of the lack of enrollment. It is difficult indeed to procure enlisted men for training outside the local country. This bestows a prestige which is hardly compatible with the enlisted man status in most Latin American countries. A very favorable exchange rate and the pay during such training is also not consistent with the status of the enlisted man. This is a problem requiring further investigation and negotiation if we are to be of assistance in the education area. General Niess appointed me as project officer for a medical meeting to be held at Panama in December 1961. This meeting is to utilize the facilities of the Latin American school and the activities in that area are to be coordinated by Colonel Tom Crystal, Commandant. It is General Niess' desire that papers be requested from each of the Latin American countries and then suitable papers be added from the United States. There is much work to do preparing for this meeting including the obtaining of funds.

I was asked to discuss the current status of the USAF "Man in Space" effort at a base and command officers call. I gave a one hour lecture which was very well received and a number of questions were discussed following the lecture.

Peru

It was good to see many old friends again in the Peruvian Air Forces medical service. Our visit to Peru was very well organized and General Souza and his staff were most grateful for our visit and our assistance. They had prepared a typewritten set of questions which they wished to discuss at a general meeting and had appended to this a list of equipment which they felt was necessary for the persuance of their medical mission. Some of the aeromedical equipment which they desired included a six man altitude chamber, vision test apparatus (orthorater), audiometers, litter supports and tie down straps for aeromedical evacuation, electroencephalograph and medical equipment for emergency treatment during aeromedical evacuation.

Their altitude chamber had been requested through the MAAG and a preliminary request to the Caribbean Command and was turned down at that level. This correspondence is presently in this Headquarters for review and I have advised that this chamber is necessary for the conduct of a very excellent research mission by the Peruvian Air Force even though Dr. Hurtado now has two altitude chambers in Peru. One of these is located in Morococha, the other in Lima but neither is available for the use of the Peruvian Air Force. Further, these chambers maybe removed as the contract is being terminated. As will be noted they are doing some excellent EEG research and thus the chamber and the EEG are badly needed for the continuance of this project. In the training area they are desirous of obtaining both primary and advanced courses in aviation medicine for two of their medical officers. Several medical problems were discussed at a conference of our group and a large number of the Peruvian Air Force Medical Service. Questions discussed involved electroencephalograms, visual acuity standards, hemoglobinopathies and various aviation medicine administrative problems. They also requested a lecture on air aeromedical evacuation and the latest advances in aerospace medicine and on the hemoglobinopathies in flying personnel. I discussed these three topics in an hour and a half lecture.

Dr. Boncalari, Major, has been conducting an interesting EEG study. This has involved routine EEG's on all applicants for flying training. These have been carried on since 1957 and include metrazol activation studies. There are presently rejecting individuals with so called positive records even though they realize that they may be turning down some normal individuals. They have found 21 per cent positive records in applicants and 6.9 per cent officers. Dr. Boncalari is also associated with a newly formed Brain Institute. Dr. Cassessus also of this institute, has been working for a number of years on the cocoa leaf. The Incas used this leaf to great advantage in their warriors and messengers and it is still chewed very widely by the Andean Indians. He has found that it is not addicting if taken orally, whereas it is markedly so if injected. The drug is a great reliever of fatigue and this research may be of great interest to us for prolonged space flight.

Chile

The Chilean schedule contained the most organized hospitality I had ever seen. Almost every minute was accounted for and still there was a good deal of time allowed for excellent relaxation in areas such as Las Condes and Vina del Mar. They made every attempt to assign an officer who was our counterpart to spend the entire time of our visit with us. Dr. Frederico Cavl is the Chief of Aviation Medicine in their surgeon general's office. He was my guide and shepard through 2 days and 3 nights in his wonderful country. Dr. Cavl attended the School of Aviation Medicine

at Randolph and also received some proctology training in the United States. He epitomized the basic problem with all military and aviation medicine in Latin America. He has an assignment in the government hospital where he spends roughly a half day. He then works for the Air Force as their Chief of Aviation Medicine for a half day and in the evening he conducts private office hours, makes house calls, hospitals calls, etc. Even his half day Air Force assignment is not full time aviation medicine for he must also do the proctology consults. During our visits he frequently excused himself to run and make a call. He seems very interested in aviation medicine and realizes that he is unable to do the job that should be done. He was very anxious to obtain more current information and was most grateful for the reprints which I gave him. He maintains central records on all flyers in the Chilean Air Force and any medical problem cases that cannot be solved at the local bases are also referred to his central Air Force clinic. There is also a well equipped Air Force hospital in Las Condes which was formally commanded by the present surgeon general Marcial Baeza.

Argentina

We arrived in Argentina on a Sunday afternoon and we were still met very hospitably by the ranking medical personnel. They too divided us into groups and provided our transportation and almost personal guide service during our stay. The next morning some of us visited their Institute of Aviation and Space Medicine in Buenos Aires. Only one of the flight surgeons had been trained in the United States. He had attended the primary course at SAM and had just returned from "Lectures in Aerospace Medicine". The remainder of the staff had been trained in Europe, most at the Italian Institute of Aviation Medicine. They were also quite aware of activities in France and seemed to know all of the current personages in this field in the European area. Commodore Pablo Ruchelli was the director of the Institute of Aviation and Space Medicine. The second in command is a Commandante Filiberto Debarnot. Dr. Debarnot seems very well grounded in the field and could certainly be classified as a fire-ball. We discussed the organization of the medical and aeromedical services and found that the medical department is under a non-medical head as appears to be true in some other Latin American countries. The civil aviation responsibility is also given to the military by law. They conduct a course of training in aviation medicine of about 8 months duration. Unfortunately their research center is about 30 miles from Buenos Aires and we were unable to visit it. We did see the plans for the new institute which will be located at one of the airports in Buenos Aires. It will have an examination, teaching and research center all combined in one building. It will also have altitude chambers and a centrifuge. The staff was quite interested in American publications and again were grateful for the few which we left. They also gave us some very excellent publications including their Armed Forces Medical Journal of which Dr. Ruchelli is the editor and Dr. Debarnot his assistant. The military hospital is a large modern building with modern equipment. It is located in a poor part of town however. We toured the

hospital facilities and then I gave a lecture on recent advances on aerospace medicine to the staff and guests. This lecture was covered by television and the press. The current medical director is basically an endocrinologist and has been doing some research work concerning 17 keto steroids and stress. The principal stress used was isolation but they have also been compounding stresses. This work was not very new or revolutionary but was well done and showed as would be expected that isolation can be a stress. It was interesting that several comments were made concerning a lack of space medicine activity in Argentina. It was frequently commented that they had a passenger for space vehicles, however, in that they had monkeys in their zoo. Nothing was hinted of any rocket activity during our visit, however, 24 hours after our departure we read in the paper of a rocket having been fired in Argentina. They may have been just unwilling to discuss this with us prior to the actual accomplishment or it may be that the medical people have no contact with this activity in Argentina.

Uruguay

On the evening of our arrival in Montevideo the air attache gave a cocktail party with some rather excellent results, and I do not mean in the spirit sense. The guest list included many local physicians as well as the military and was an excellent opportunity for mixing and discussion, one of the best in our entire tour. Colonel Sureda is the current Air Force Surgeon General and he was trained in the United States, having attended the School of Aviation Medicine. He is the only flight surgeon in the Uruguayan Air Force which has only four physicians in its total structure. He is on loan from the Army. Colonel Saez who is the chief of staff of the Uruguayan Air Force is markedly interested in aerospace medicine and physiology and discussed the topic quite intelligently. He is most anxious that all his personnel be well aware of the problems involved. There is a 16 man altitude chamber available in Uruguay which was purchased by the government immediately following World War II. I examined this chamber in detail in 1954 and advised the Uruguayans of the equipment that would be required to make it operational. At that time it was out in the open and the only thing that has been done in the intervening 7 years is that it has been placed in a building. There is really very little need for an altitude chamber in the Uruguayan Air Force, however, it seems a shame to have this valuable piece of equipment wasting away. I met a civilian physician named Caldeyro who is conducting some very excellent research in the Hospital de Clinicas. Dr. Caldeyro is an internationally known researcher and has an international staff working with him at the present time including a physician from New York University Medical School. His research centers around the determination of the effectiveness of labor by some rather unique means. He places polyethylene catheters directly through the abdominal wall into the amniotic cavity and

thus measures uterine contractions. He also places catheters in the breast and measures contractions of mammary tissue. He had previously placed needles in the fetus for obtaining a fetal electrocardiogram but has since been successful in obtaining the fetal electrocardiogram by placing electrodes on the mothers abdomen. He is able to successfully damp out the maternal electrocardiogram. He has a very excellent PO2 electrode that can measure fetal oxygen levels. He is most interested in the effects of minimal hypoxia and this is an area in which we are vitally interested. To further his research in this area he is also interested in the fact that there is an altitude chamber available and this may add some emphasis as well as a reason for making the Uruguyan chamber operational.

Brazil

We first visited Sao Paulo. One of our first stops was at the cancer institute. This is a very modern facility doing excellent work. The only thing of direct flight medicine interest here was the press conference. One of the local reporters had some good searching questions to ask concerning the effects of jet flight on stewardesses and crew particularly in regard to their menstrual periods, emotional response, etc. At this conference also a Mr. Ove Schirra sought me out in the hope of discussing cooperation in aeromedical research. He is a German who was at Penemunde during World War II with Von Braun and is now associated with a new organization the Santos Dumont Aviation Medicine Laboratory in Sao Paulo. This laboratory seems to be very well established and equipped and they are currently doing research for the civilian airlines in Brazil. They are desirous of obtaining research to do for other agencies and most anxious to secure United States support. Mr. Schirra will visit us in the near future to discuss this activity. We also visited the University Hospital which has one of the most active tropical disease wards in the world. We were privileged to see four adult tetanus cases in one room and numerous of cases of blastomycosis and other tropical diseases. There is an excellent tropical disease museum which has just been completed and a series of laboratories which are not yet complete. A course is run once yearly and this would seem to be an excellent location for training in tropical medicine. We flew by helicopter from this hospital to the Air Force training base on the edge of Sao Paulo. There is a rescue squadron utilizing SA-16's also assigned at this base and two flight surgeons are detailed to the squadron. Their equipment and emergency procedures seemed excellent and they are kept quite busy with this activity. Our tour through this small base hospital and flight surgeons office and the medical facility in the rescue squadron was conducted by the base commander, who seemed thoroughly familiar with all the activity and personnel and would be the answer to any US flight surgeon's dream. In Rio de Janeiro we visited the military hospital and found that most of the medical officers on the staff as in all Latin America are specialists of one sort or another. The majority are also flight surgeons for they are required to take a course in aviation medicine. None of them, however, have ever served as squadron or base flight

surgeons and have merely continued to practice their particular specialty. The hospital seemed well equipped and the doctors were most cordial. Several of them had had training in the United States. I visited the physical examination center which is located at the Air Ministry in Rio. This is commanded by Brigadier General Orioaldo Lima. General Lima outlined the function of the center and then had his staff take us on a very detailed tour of the various sections. All initial physical examinations are done at this center for both military and civilian. Here too the military is responsible for all civilian aviation medicine. Annual physicals are performed at local bases and copies of the examinations are sent to this center so that a central medical record is maintained for all personnel. They have an excellent archive of records going back in many cases for 30 years. There are some 5,000 current records on file with a large number of retired records available. The records were examined and while they are not presently carded they offer an excellent source for research on such things as aging and diseases of flying personnel. General Lima is quite concerned with the apparent lower standard for civil airmen than for Air Force particularly when they are going to fly the jets. He intends to discuss this problem at the ICAO Meeting in April at Montreal. All problem medical cases that require consultation are also seen at this examination center. They do electrocardiograms at age 35 and do routine electroencephalograms including hyperventilation records and do metronal activation if indicated. They have an excellent neuropsychiatric and psychology section. They do audiograms routinely only every 5 years but on jet pilots they do audiograms every 4 months. They apparently have no program for audiograms on ground crew.

They also conduct a course in aviation medicine and a physiological training course. Their flight surgeons wear special wings.

Summary

The following general conclusions regarding the status and needs of aerospace medicine apply generally to all the countries visited.

1. Many of the countries requested assignment of a flight surgeon as an advisor on their problems. In the past we have had flight surgeons assigned to Peru, Ecuador and Paraguay. In addition, Colonel Roadman served as combination Air Attache and Flight Surgeon Advisor in Argentina. Our experience has been that flight surgeons so assigned are used as general practitioners by all Americans in the area and little time is left for the primary mission of advising. Thus, it would be more advantageous to provide a traveling advisor at stated intervals and accomplish the same mission. In most instances full time advisors are not needed as the Air Forces are small, but Argentina and Brazil might be considered for some exchange program. Any officer assigned to either program must receive language training and be motivated toward the importance of the job. Lack of both is evident in some Latin American military assignments.

2. Aerospace Medicine does not hold the same place in Latin America that it does in the United States. Unfortunately most all the physicians holding commissions in Latin American Air Force Medical Services work only part time -- usually a half day -- for the Air Force and carry on a private practice the remainder of the time. In addition in some countries (Chile for example) they also work part time at a hospital appointment for the government operated medical care program. The prime reason for this is the low salary of military physicians and the necessity of several jobs to maintain an adequate standard of living. This system has stifled any real progress in military medicine as we know it and also in aerospace medicine. While most Latin American physicians are "specialists" of some degree, there is no specialists in aerospace medicine for they could not make a civilian living in Latin America. The civilian air line aviation medicine support is done by the Air Forces as the Air Force and civilian aviation are under the Bureau of Aeronautics in most countries. There is no tie of the Latin American flight surgeon to the mission of his Air Forces, in fact the flight surgeon as we know him doesn't exist. There is a need for a few full time aerospace medicine people in these countries and our efforts should be thus directed.

3. Facilities and equipment: Most of the military medical facilities seen were hospitals either Army (used by Air Force) or Air Force operated. There was no separation of flying personnel seen and they all had large dependent loads. Small flight surgeon offices were present in all areas and central examination centers for flying personnel existed in some instances. In Argentina there is a research institute which is part of the School of Aviation and Space Medicine but it is separate from the teaching and administration by about 30 miles. We could not visit this facility. A new combined facility is in the plans stage.

Several countries requested altitude chambers and these are truly a research and examination tool of the flight surgeon. They are also a prestige item and their procurement through MAP should be investigated. We should explore setting up our medical training center at Ramsey AFB, Puerto Rico. The hospital could be used here. The Latin Americans would not feel out of place and some enlisted technicians could be trained here. A 16 man chamber could be installed and then the Panama unit could be dropped. Enlisted training is a whole new area in Latin America. Enlisted men are much below the US level and are not used effectively. Attitude must be changed before such training will be of local value. The present physiological training facility at Albrook should be maintained for a tie to Latin America even though it is realized that the physiological training unit and technicians will not be kept busy in training full time. Their utilization should be worked out on a local basis with the CAIRC Surgeon.

4. Research: Little research of aeromedical importance was noted. This is due to a lack of research support in the military and the part time activities of military physicians. Most research being done could be considered "basic" in nature and is discussed by Dr. Savely.

In Peru an Air Force physician has been studying EEG's on flying applicants and following their performance. This is a good study and will be of value to us also. Dr. Hurtado, high altitude research, has been supported for years by SAM and the contract expires in April 61 and will not be renewed. He has applied to FAA and NIH for support but will need interim support to avoid losing personnel. This facility and team should be maintained and efforts to provide this support will be made. A physician at the Brain Institute is investigating the properties of cocaine as a fatigue relieving drug and this may have some interesting outcomes for us.

In Brazil the collection of some 5,000 aircrew medical histories spanning 30 years is a valuable archive of information on aging and other medical problems in flying personnel.

In Uruguay an OB-GYN MD is investigating labor and foetal hypoxia by some unique methods which may have very direct application to our minimal hypoxia problem.

Funding of medical research in Latin America should be limited to small amounts in order that we will not find ourselves as the sole supporters of a particular research facility. The minimal support is very valuable and also serves as a prestige factor assisting in the obtaining of local funds.

There is great aerospace medical potential in many of these countries if it were allowed to develop. The presently existing system is not conducive to the full development of this potential.

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