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ADMINISTRATION

NOTE NO. 17

REPORT OF AVIATION MEDICAL MEETING
KANSAS CITY, MISSOURI

January 24-25, 1939

Air Transport Section

May, 1939

R E P O R T
of
AVIATION MEDICAL MEETING

Kansas City, Missouri
January 24 - 25, 1939

The Medical Science Station, of the Air Transport Section, was established in 1938 for the purpose of making a direct laboratory approach to the solution of human element problems in civil aviation. By providing facilities for clinical studies of the many physiological problems of pilots, and by the delegation of a portion of the research work to institutions capable of conducting specialized studies, the Civil Aeronautics Authority has instituted a far reaching program of activity. It is the earnest desire of the Authority to correlate all available information on the physiological effects of flying and to utilize every possible facility for the early elimination of undesirable factors affecting the safe performance of flying personnel.

In April, 1938, the Bureau of Air Commerce Report No. 10 entitled, "Analysis of the Aviation Medical Situation and Recommendations for a Bureau Program", specifically recommended the appointment of a small active advisory committee of medical specialists to meet at frequent intervals to assist the Bureau of Air Commerce in analyzing problems and in making suggestions for their solution.

It was believed that close cooperation of all interested in such a coordinated program would prevent duplication of effort and more readily accomplish the desired results.

The functions of such a committee would include:

(1) Evaluating the results of research studies completed under direction of and in collaboration with the Medical Science Station of the Civil Aeronautics Authority; (2) Recommending new studies and their adaptation to clinical usage, and (3) Furnishing information on specific needs and activities in the field of aviation medical research.

As a preliminary step in this direction, a conference of leaders in the field of aviation medicine was called by the Administrator of the Civil Aeronautics Authority and held at the Medical Science Station in Kansas City, Missouri, on January 24 and 25, 1939.

Attending the meeting at Kansas City were:

Colonel A. D. Tuttle, Medical Director, United Air Lines

Dr. Hodges McKnight, Medical Director, American Air Lines

Comdr. J. C. Adams, M. C. U.S.N. - Chief Aviation Medical Section,
Bureau of Medicine and Surgery, U.S. Navy

Captain Harry G. Armstrong, M.C. U.S.A. - Chief, Physiological
Laboratory, Air Corps, U. S. Army

Major A. A. James, C.R.A.M.C. - Chief, Aviation Medical Section,
Canadian R.A.F.

Dr. W. Randolph Lovelace, Mayo Foundation

Dr. John W. Thompson, Harvard Fatigue Laboratory

Dr. Eldridge Adams, Chief, Medical Section, C. A. A.

Mr. R. W. Knight, Chief, Air Transport Section, C.A.A.

Dr. Wade Hampton Miller, Aviation Medical Specialist, C.A.A.

FORMATION OF THE COMMITTEE

In accordance with the recommendations contained in the Bureau of Air Commerce Report No. 10, a provisional Advisory Committee for Aviation Medical Research was formed, comprising those in attendance at this meeting, as listed above. The C. A. A. Aviation Medical Specialist was elected Chairman. After a full discussion of its proposed organization, functions, and scope of activities, this Committee made the following recommendations to the Civil Aeronautics Authority:

- (1) That the Administrator of the Civil Aeronautics Authority be requested to inform the heads of the various agencies represented by those in attendance at this meeting of his desire for the participation of such agencies as members of this group, and if agreeable, for their confirmation of those elected to the Committee, the Committee to become a permanent one, and those members so confirmed to be appointed by the Administrator to serve for a period of at least one year.
- (2) That the Chairman of this Committee make plans for a meeting of this body at stated intervals, preferably bi-annually.
- (3) That the function of this Committee be to aid in coordinating research activities under C. A. A. guidance and to serve as a national committee in matters pertaining to aviation medical investigation.

- (4) That the C.A.A. Aviation Medical Specialist, through his activity in the direction of research for the Authority, serve as a clearing house for research procedures that are projected.
- (5) That the Committee evaluate results and make recommendations for the adaptation of research methods to practical clinical application.
- (6) That the C.A.A. Medical Science Station serve as a centralized agency for disseminating a bibliography and abstracts of the literature covering researches in aviation medicine and other pertinent subjects in specialized fields.

DISCUSSIONS

No prepared papers were presented; proceedings were informal, and the Committee meeting was resolved into a round table discussion.

The subjects discussed were:

- (1) Progress made in control of passenger discomfort on scheduled air carriers.
- (2) The need for graphic objective measurements of psychic and emotional factors in the selection of airmen.
- (3) The necessity of better means of estimating pilot fatigue.
- (4) Remedial measures for relief of flight fatigue and suggestions for eradication of certain known causes.
- (5) Advisability of utilizing present information relative to physiological and chronological age of the individual.

- (6) Desirability of obtaining better objective procedures to adjudge emotional stability, incipient emotional breakdown, and ability to withstand fatigue and stress of flying.
- (7) Use of the electroencephalograph in the detection of incipient epilepsy.
- (8) Necessity for practical application of known physiological data in making recommendations for regulations governing the use of auxiliary oxygen for flight crews and passengers at present authorized flight levels.
- (9) Further projection of physiological studies dealing with the effects of failure of supercharged cabins in aircraft operating at higher flight levels.
- (10) Desirability of obtaining clinical data on pilots to formulate recommendations for more practical physical requirements for certification or qualification of airmen.
- (11) Necessity of prolonging useful flying life of trained pilot personnel by improving maintenance and by the examination for and eradication of detrimental factors in their vocation.

Those in attendance expressed a desire to cooperate fully in providing the C.A.A. Medical Science Station with statistical information and detailed findings incident to the separate activities of the agencies represented. They also stated a willingness to carry out procedures devised by the Medical Science Station in connection with their own organization's activities, so that the C.A.A. may obtain additional data. Offers of assistance in the projection of new studies to be assigned to research institutes were made.

GENERAL

The principal interest of the civilian flight surgeon lies in the promotion of safety through the better selection and maintenance of physical fitness of flight crews, and in the eradication of discomforts and altitude dangers to passengers carried by scheduled air carriers. A comprehensive study and analysis has been made by the Medical Director of United Air Lines Transport Corporation, concerning the incidence and possible remedies for passenger discomforts occurring aloft. This has been broken down categorically into the classification of (1) those discomforts occurring as a result of air sickness and oxygen want, (2) those discomforts affecting the ear which are attributable to pressure changes of ascents and descents, (3) nervousness or apprehension, including post-alcoholism, and (4) miscellaneous, such as minor accidents aboard the plane, etc.

It is planned to continue these investigations on other air carriers as well. Statistical findings will be furnished the C. A. A. Medical Science Station for analysis.

With regard to new examining procedures, the commercial flight surgeon is interested in securing graphic objective means to detect incipient emotional breakdown, emotional instability, incipient epilepsy, and a correlation of the physiological with the chronological age of the pilot group.

The military services are primarily desirous of developing an improved selection examination along the lines of objective tests of the emotional reflexes of prospective pilots in military aviation.

They are concerned with pilot comfort and fatigue and with the effects of higher altitudes and centrifugal, centripetal, gravitational, and directional forces. Both groups desire to cooperate and collaborate in this program under C.A.A. direction.

The trend at this time in aviation medicine is to endeavor to supplement rather than replace present psychological methods and psychometric measurements, and approbation has been expressed of the Authority's approach to the problem along physiological lines as a means of determining mental states.

The allied research agencies are willing to continue present and additional research in collaboration with, and under the direction of the Authority. The Harvard Fatigue Laboratory contemplates studies of oxygen transference in relation to inter-cranial pressure, and further physiological studies. The Mayo Foundation will carry on its work in association with the C. A. A., and proposes active participation in a program of practical application in the administration of auxiliary oxygen, the study of cerebation under reduced oxygen, and the use of helium-oxygen mixtures to combat the effects of ear distress.

A transcript of the complete discussion at the meeting is available upon request.

CONCLUSIONS

The conclusions of the Air Transport Section, made as a result of the discussions at the meeting are as follows:

- (1) There is a willingness on the part of all in attendance to cooperate in the formulation of a plan for coordinated study.

- (2) Adequate funds and personnel are essential to the successful prosecution of this effort.
- (3) Progress has been made by the Civil Aeronautics Authority, through its Medical Science Station and research agencies, in the development of an objective method for selection of airmen.
- (4) An Advisory Committee for Aviation Medical Research is essential for assistance to the Civil Aeronautics Authority in the proper projection and evaluation of research studies.

RECOMMENDATIONS

It is recommended by the Air Transport Section that the Authority:

- (1) Continue to provide for this work in close liaison with the civil, military, and research groups represented at the meeting.
- (2) Confirm the appointment of the Committee set forth in this report as the Advisory Committee for Aviation Medical Research.
- (3) Continue researches in the present direction.