Preface

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Dear reader,

This issue of *Aerotecnica Missili and Spazio (ATMS)* is published in the same period of the year, when the “Associazione Italiana Di Aerotecnica” or “AIDA”, i.e., the Italian association of technical aeronautics (which will then be changed into AIDAA-Italian Association of Aeronautics and Astronautics), was founded in Rome in 1920, exactly one century ago; in that day, “*L’Aerotecnica*” (which later changed into ATMS) became the official scientific journal of the Association.

This preface aims at summarizing the political and scientific reasons leading to the foundation of the Association. The founders of AIDA were a group of officials of the Army and scientists at the end of the First World War who realized that air civil transport would be fundamental in the future. We also want to recall this event and to express a deep gratitude toward these wise and prophetic men.

1 Why Found an Association of Aeronautics in 1920

On June 29, 1920, Italians involved in aeronautics received a letter from Gen. Mario Moris, Prof. Luigi Palazzo, and Prof. Sen. Vito Volterra; the letter, written in a very elegant Italian, can be summarized as follows.

The end of the First World War led to a deep crisis in aeronautics in Italy and more generally in Europe; study, research, and financial support in Aeronautics were reduced or completely stopped, and examples of individuals involved in the progress of flying machines notwithstanding. Many brilliant scientist and engineers who supported the war effort were compelled to renounce their experience and skill. In spite of that, the times were very favorable for scientific research and study—the ingredients of any progress in civil

aviation. Civil aviation from a commercial viewpoint does not exist yet in the world. It is time to create a solid aeronautical program, including the organization of an air network and, first of all, a program of scientific and technical research activities on aircraft engineering. The main challenges of our time, once the war is over, are to overcome the difficulties connected to the transition from the war economy to the new condition of mankind, founded on science and technology in peace time to create a civil aviation. Thus, the problem in front of us, the foundation of civil aviation, is not only a financial or an industrial or an organizational question but, primarily, a new technical and scientific challenge. Now that we are coming out from the hasty application of aviation to war and facing the difficulties connected to the new conditions of peace, never as in the present do we need to found a new aeronautics based on science and technology, which will shape any progress of mankind in the future. We wish to share in Italy and abroad the scientific results of our aeronautical researchers and have access to the results obtained in other countries. To do this, we ask the aeronautical scientists to found a scientific society to carry on the progress of aeronautics by means of meetings, conferences, and discussions. In Italy, many aeronautical societies are active presently; they promote professional activities, aerial sports, etc., but no one promotes the interest of science and technology in aeronautics. We invite you to be present at the first meeting next Friday July, 2nd 1920, at Aero Club of Rome, via del Tritone 183, Rome.

Gen. Mario Moris

Prof. Luigi Palazzo

Prof. Sen. Vito Volterra.

2 The Founding of AIDA

On June, 2nd, 1920, a group of people from Army, Academia, and Industry met together at the Aero Club in Rome following the letter of June 29th. Prof. Vito Volterra proposed Gen. Moris to be the president of the meeting. Gen.

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Moris accepted and gave a lecture on the state of aeronautics and the proposals for overcoming the present crisis. A brief summary of the lecture is given in the following. Everyone involved in aeronautics is invited to forget any possible mutual competition in view of the future of aeronautics. The present situation has been negative since 1917, when the government of aeronautics was divided into the Civil and Military Ministries, and in the former, technical experts were replaced by politicians. Recently, a first positive step has been the unification of civil and military aeronautics under the same Ministry. The solution is correct, because the future of civil and military aeronautics is strictly connected. Before this unification, the general directorate of civil aviation was created on the assumption that civil aviation (i.e., the system of commercial air traffic) was already active and needed only to be managed. This was absolutely wrong, because civil aviation does not exist, not only in Italy but elsewhere in the world, as well, and hence, it must be planned. We have some preliminary examples on how to prepare civil aviation: to organize a solid program of studies on civil aircraft in peace time and to face all the questions relevant to its safety and economy of flight. The different experiments of air civil service existing already in Europe could be studied by public and private entities but managed by private companies; a first example of air service in the world is the London–Paris route. This service is just an experiment, because its commercial and financial success is not assured yet. Airplanes have not yet been accepted and, consequently, the investments in air service companies are inadequate (the same occurred for the railways, at the beginning of rail transport). We are confident that, at the end, people will need the new means of transportation, but, in the meantime, we must gain the favor of people by improving the airplane, which, up to now, has been a military aircraft adapted in some way to civil transportation. To do this, we need to found modern aeronautics on science and technology; we must promote research activities in Italy and share them abroad; we must propose interesting challenges to the research community; we must promote competitions on new aircraft and engines; we must propose awards and be at the disposal of the aeronautical community. This is the scope of our Association.

After these declarations, Col. Verduzio made a preliminary list of the main problems to be faced as soon as possible: aeronautical constructions, mechanics of flight, engines, propellers, technology, instruments, meteorology, and organization.

July 12, 1920 is the official date of the foundation of AIDA—the Italian Association of Aerotecnica: on this date, the Statute of the Association was approved, the Presidential Council was elected, and Gen. Moris was hailed as the President of AIDA. The Statute of AIDA includes the foundation of Aerotecnica, the journal of the Association. The president gave a detailed overview of problems and perspectives of

aviation all over the world and, more in detail in Europe in 1920. This very interesting analysis from the historical viewpoint is briefly summarized in the following.

3 The State of Aeronautics in 1920–21 (Notes from the AIDA Meeting, July 12, 1920)

The technical progress of aircraft during the war led to a huge increment of flying speed (from 150 to 250 km/h), maximum height (from 4000 to 8000 m), maneuverability, affordability, etc. of military aircraft; any activity had been stopped at the end of the war; the aircraft for civil aviation was an open challenge.

In Italy, the Minister of War, Mr. Bonomi, has created an advisory committee to study the new organization of aeronautics, starting from the unification of war and civil aviation inside the Ministry of War, but where civil aviation is at the same level as the military one. Civil aviation must become a private system, even though supported at the beginning by the Italian government (by allowing the use of airfields, schools, services, and also by financial support, to start private initiatives); the public support will be gradually reduced and, finally, stopped when civil aviation will become autonomous. This political solution was accepted by the Assembly of AIDA, in the light of the Italian experience, as well as the international one, at the beginning of the 20 s. The present crisis of Italian aviation is similar to the crisis in all the countries after the First World War. As an example, on April 28, 1920, Sir Brankel at a conference on the commercial aspects of civil aviation at the Aeronautical Society in London concluded that the level of British aviation is very low, ignored by public opinion and by the government, as well. Aviation was in a similar bad condition even in 1913, when the Royal Flying Corps adopted the motto: “per ardua ad aspera” and, indeed, aviation flew very high during the following 4 years. The end of the war produced a new stagnation, but, more recently there is new interest in civil aviation in the UK, as we will see later on.

The same situation occurred in Italy and in France. In 1910, Italy produced 3 airplanes, 13 engines, and 2 pilots, but, in 1918, the airplanes were 6500, the engines 14,800, and the pilots 2500. The situation was similar in France and somewhat better in the UK.

In the USA, aviation was ignored before the war and, as in Europe, it became very important at the end of it. Now, after the armistice, the interest in aviation is very weak, as the risk of investment in air transportation is believed to be high. Indeed, there is no technical risk in the case of airships, but airships are produced in Europe and not in the USA. In France, the journal “La Vie Aérienne” reports a comparison of French aviation with that in the rest of Europe and in the USA. In

general, the crisis after the war was present everywhere and the difficulties of finding financing to develop civil aviation is well known. However, in France, starting in 1920, the Government financed the development of civil aviation (following the example of the government of the UK) owing to the financial difficulties resulting from the low number of passengers. The route London–Paris is not yet profitable, even though it could be very lucrative with enough passengers. However, attitudes towards aviation are insufficient and, hence, the beginning of civil aviation must be supported by the Government in Europe and all over the world.

Somebody in the UK suggested a new approach to financing civil aviation. Instead of directly financing the industry (as in France), he suggested financing large provisions of military aircraft in such a way as to maintain the aeronautical industry, to support the formation of a technical staff, and to have their air force ready in case of a new war. This solution could be adopted to guarantee the complete economic self-sufficiency of the companies. An interesting debate has been published recently in France about the comparison of the means of transportation, starting from the assumption that air transportation is convenient when it allows one to save time. The average cruise speed of civil aircraft in 1920 is about 130 km/h and, consequently, air transportation is not convenient in comparison to the train for all of France, where the longest airline (Paris–Strasbourg) is only 1000 km long. Thus, the aircraft industry needs to receive public funds to survive. Indeed, in this year (1920), France is the first country to give resources to the airline companies. A similar political approach is to be adopted in the UK; the airline companies will receive financial support to face these two problems: air navigation in bad weather conditions and indifferent public opinion towards air transportation. There is an interesting debate about the second problem. As mentioned before, the chief of military aviation of the UK proposes to sustain the production of civil aircraft by supporting the industries involved through a large supply of military aircraft. Together with aircraft, the public financial support must provide airports, airfields, subsidiary services, etc.

One common error is to assume that air transportation will have a future in the countries with insufficient maritime or rail lines (the so-called “colonial aeronautics”). As a matter of fact, air transportation could be successful where saving time is important and hence even in the countries where rail and maritime lines are present. The only condition is to save time with respect to rail and ships. It follows clearly that the present average cruise speed of civil aircraft (about 130 km/h) is insufficient for the national air transportation in the European countries. The situation is different when dealing with international transportation. For example, an airline Paris–Berlin could allow us to save 8 h over 16 h by train and 18 h over 45 h between Paris and St. Petersburg. Similar conclusions are valid as far as the post service. Internal

flights in France will have a future only in the case of leisure and sport. This conclusion is from 100 pioneers of aviation in a meeting in London.

A significant improvement of flight safety is foreseen from acrobatic flight competitions. Progress of civil aviation will occur only after technical improvements are obtained, before introducing new aircraft into service. After the war, on the contrary, there was a tendency to modify military aircraft to introduce the civil air service, with the result of a diffuse skepticism about the safety of this service. The French airfields are full of military aircraft resulting from the Treaty of Versailles. The Secretary of State, during a banquet at the Aeroclub of France last month, said that the Peace Treaty sections concerning aviation had given great help to Germany, because it allowed them to get rid of old military aircraft unusable by French aviation but with a high cost for French finance. The same concept was expressed by the same Secretary of State and published in German journals.

In Germany, the organization of civil aviation has been studied deeply, but, presently (1920), the activities are suspended due to the lack of petrol and to the political conditions of the country. There are 25 airline companies about to start, but only two of them are active, though in a minor way. The German companies are very active in civil air transportation and, also, in organizing the same companies in their introduction of aircraft, properly designed for commercial service. Many engineers are working on this. It is remarkable that prof. Junkers invests the profits of his company (metallic tools) into study and training on these aircraft. The managers of German aeronautics invest considerably on the safety of flight. The German government, as a result of a proposal by the German Scientific Society on Aeronautics, has announced a prize of 40.000 marks to the best aircraft design concerning safety, to avoid possible accidents in aviation, and a prize of 10,000 marks to a paper gathering all the publications concerning the safety tools in aviation.

AIDA aims to inform people about the problems of aeronautics for civil applications; the Association will be organized into different branches: Aerodynamics, terrestrial aviation, maritime aviation, airships, materials, engines, legislation, psychophysiology, aerial navigation, and information.

4 Aerotecnica

Aerotecnica, the journal of AIDA, was founded in 1920. From the foundation act of AIDA, we read “the council... has decided that the publications will start this year and proceeds without interruptions,... under the name Aerotecnica, journal of Italian Association of Aerotecnica...”

The association was composed of 109 individual members, nine public and private companies from Italy and six corresponding members from USA. Among the individual associates, it is noteworthy to remember, among others: Gianni Caproni, Mario Castoldi, Arturo Crocco, Tullio Levi Civita, Guglielmo Marconi, Umberto Nobile, Modesto Panetti, Enrico Pistolesi, Manlio Stiavelli, and Vito Volterra.

Aerotecnica was founded in 1920 as the official organ of Italian Association of Aeronautics (AIDA); the journal was directed by Prof. Raffaele Giacomelli (1920–1923), Prof. Enrico Pistolesi (1924–1967), and Prof. Cesare Cremona (1968–1969). The journal became Aerotecnica Missili e Spazio (Aerotecnics, Missiles and Space) after the merger with “Missili” (Missiles), 1959–1964 and “Missili e Spazio”

(Missiles and Space), 1965–1969. Starting from 1971, Aerotecnica M&S was directed by Prof. Luigi Napolitano, Prof. Vittorio Giavotto, Prof. Luigi Morino, Prof. Ernesto Valle-rani, Prof. Paolo Gaudenzi, and starting from 2014, by the author of this presentation.

I wish to express my gratitude to the directors of the journal since its foundation, one century ago.

Prof. Aldo Frediani.
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