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# ADVISORY COMMITTEE ON THE LANGLEY AERODYNAMICAL LABORATORY



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# ADVISORY COMMITTEE ON THE LANGLEY AERODYNAMICAL LABORATORY

### OFFICIAL STATUS

*Authorization.*—On May 1, 1913, the Regents of the Smithsonian Institution, approving a general scheme submitted by Secretary Walcott, authorized the Secretary, with the approval of the Executive Committee, to reopen the Langley Aerodynamical Laboratory; to appoint an Advisory Committee; to add, as means are provided, other laboratories and agencies; to group them into a bureau organization; and to secure the cooperation with them of the Government and other agencies.

*Functions.*—The Committee is to advise as to the organization and work of the Langley Aerodynamical Laboratory and of the bureau organization when adopted, and the coordination of their activities with the kindred labors of other establishments, Governmental and private; it is to plan for such theoretical and experimental investigations, tests and reports, as may serve to increase the safety and effectiveness of aerial locomotion for the purposes of commerce, national defense, and the welfare of man. But neither the Committee nor the Smithsonian Institution will promote patented devices, furnish capital to inventors, or manufacture commercially, or give regular courses of instruction for aeronautical pilots or engineers.

The organization, under regulations to be established and fees to be fixed by the Secretary, approved by the Smithsonian Executive Committee, may exercise its functions for the military and civil departments of the Government of the United States, and also for any individual, firm, association, or corporation within the United States; provided, however, that such department, individual, firm, association, or corporation shall defray the cost of all material used and of all services of persons employed in the exercise of such functions.

With the approval of the Secretary of the Institution, the Committee is to collect aeronautical information, such part of the same as may be valuable to the Government, or the public, to be issued in bulletins and other publications.

*Membership and Privileges.*—The Advisory Committee is to be composed of the Director of the Langley Aerodynamical Laboratory, when appointed, and one member to be designated by the Secretary of War, one by the Secretary of the Navy, one by the Secretary of Agriculture, and one by the Secretary of Commerce, together with such other persons, to be designated by the Secretary of the Smithsonian Institution, as may be acquainted with the needs of aeronautics, the total membership of such Committee not to exceed fourteen.

The members of the Advisory Committee, as such, are to serve without compensation, but will have refunded the necessary expenses incurred by them in going to Washington to attend the meetings of the Committee and returning therefrom, and while attending the meetings.

*Approval of the President.*—On May 9, 1913, the President of the United States, by request of the Secretary of the Smithsonian Institution, approved the designation of representatives of the above-named Departments to serve on the Advisory Committee.

## ORGANIZATION

*Officers.*—The Advisory Committee, as constituted at its organization meeting, convened by Secretary Walcott at the Smithsonian Institution, May 23, 1913, comprises a Chairman, a Recorder, and twelve additional members, all of whom are to serve for one year. The officers are to be elected annually on or about May 6, and the members for the ensuing year are to be appointed prior to the date of such election.

The Chairman has general supervision of the work of the Advisory Committee, presides at its meetings, receives the reports of the Subcommittees, and makes an annual report to the Secretary of the Smithsonian Institution. Said report must include an account of the work done for any Department of the Government, individual, firm, association, or corporation, and the amounts paid by them to defray the cost of material and services, as hereinbefore mentioned.

The Recorder keeps the minutes of the meetings of the Committee, and assists the Chairman in conducting correspondence and preparing reports pertaining to the business of the Committee.

*Subcommittees.*—The Chairman, with the approval of the Advisory Committee, may appoint standing and special Subcommittees to perform such functions as may be assigned to them.

The standing Subcommittees may have assigned to them investigations and tests of a permanent character, which they may prosecute

from year to year, and on which they are to make quarterly reports to the Chairman followed by an annual report. Each Subcommittee comprises a Chairman who must be a member of the Advisory Committee, and others, chosen by him from that Committee or elsewhere.

### AGENCIES, RESOURCES, AND FACILITIES

*Smithsonian Institution.*—The Advisory Committee has been provided by the Smithsonian Institution with suitable office headquarters, an administrative and accounting system, library and publication facilities, lecture and assembly rooms, and museum space for aeronautic models. The Langley Aerodynamical Laboratory has an income provided for it not to exceed ten thousand dollars the first year (of which five thousand dollars has been allotted), and five thousand annually for five years.

*U. S. Bureau of Standards.*—For the exact determination of aerophysical constants, the calibration of instruments, the testing of aeronautic engines, propellers and materials of construction, the Committee has the cooperation of the U. S. Bureau of Standards, from which the Secretary of Commerce has designated one representative.

This Bureau has a complete equipment for studying the mechanics of materials and structural forms used in air-craft; for standardizing the physical instruments—thermometers, barographs, pressure gauges, etc.—used in air navigation; and for testing the power, efficiency, etc., of aeronautical motors in a current of air representing the natural conditions of flight.

In these general branches the technical staff of the Bureau is prepared to undertake such theoretical and experimental investigations as may come before the Advisory Committee on behalf of either the Government or private individuals or organizations.

*U. S. Weather Bureau.*—For studies of and reports on every phase of aeronautic meteorology, besides the usual forecasting, the Committee has the cooperation of the U. S. Weather Bureau, from which the Secretary of Agriculture has designated one representative.

This Bureau has an extensive library of works on or allied to aeronautics, an instrument division for every type of apparatus for studying the state of the atmosphere, a whirling table of thirty foot radius for standardizing anemometers, a complete kite equipment with power reel, and a sounding balloon equipment with electrolytic hydrogen plant, all of which are available for scientific investigations. For special forecasts, anticipating field tests or cross country voyages, the general service of the Bureau may be called upon.

*War and Navy Departments.*—These Departments, while especially interested in aeronautics for national defense, can be of service in advancing the general science. Each has an aeronautical library; each has an official representative in foreign countries who reports periodically on every important phase of the art, whether civil or military; each has an assignment of officers who design, test, and operate air craft, and who determine largely the scope and character of their development; each has its aeronautic station equipped with machines in actual service throughout the year. Besides various aviation establishments, the War Department has a balloon plant at Fort Myer, Va., and at Omaha, Neb.; the Navy has its marine Model Basin, useful for special experiments in aeronautics, its extensive shops at the Washington Navy Yard, available for the alteration or repair of air craft, or the manufacture of improved military types, and at Fort Myer, three lofty open-work steel towers suitable for studies in meteorology or aerodynamics in the natural wind. Furthermore, the Navy Department has detailed an officer for special research in aeronautics at one of the principal Engineering Schools.

Because of their fundamental interest in aeronautics, each of these Departments has two representatives on the Advisory Committee, and each will be able to place at the service of the Committee one or more skilled aviators and aeroplanes for systematic experimentation.

### PRESENT NEEDS

In presenting the needs of the organization, it is well to remark that the Smithsonian Institution possesses the unique character of being a private organization having Governmental functions and prerogatives. It can receive appropriations directly from Congress; it can be the recipient or the custodian of private funds for the increase and diffusion of knowledge; it can deposit such private funds with the United States Treasury, or place them otherwise, as may be required by the donor. Likewise, it can be the recipient or custodian of material objects representing any province of nature, or any branch of human knowledge or art. This unique character allows the public to anticipate or supplement the cooperation of Congress in promoting the aerodromical (aeronautical) work of the Institution.

*Endowment Funds.*—Persons approving the purpose of the organization and desiring its continuity and permanence can not do better than to provide for it a steady income, either for general or for specific use. Individual endowment funds bearing the name of the giver or other person, and presented to the Smithsonian Institution,

or placed in its custody at the disposal of the Committee, may be recommended; also collective funds bearing the name of a society, organization, or section of the country, whether in the interest of scientific progress or of national defense.

*Temporary Funds.*—For the prompt achievement of definite results, funds may well be offered for immediate application, both of principal and interest; as, for example, for the erection of laboratories or other buildings; for the purchase of experimental air craft, or apparatus, instruments, etc.

Most needed is an expansion of the Langley Aerodynamical Laboratory providing a large and a small wind tunnel, ampler shops, and instrument and model rooms. Adjacent to this, or forming a part of it, may well be the headquarters of the Committee, with the collections of aeronautic publications and exhibits, and with designing rooms where plans for air craft may be matured by fabricators in consultation with the technical staff. This new building, if placed on the Smithsonian grounds, should be of good architecture and cost not less than \$100,000.

Of immediate importance is an air-craft field laboratory, adjacent to ample flying space of land and water, and adapted to assembling, adjusting and repairing several full scale land and water aeroplanes; and subjecting them to indoor tests and measurements, as of stress, strain, factor of safety, center of gravity, moment of inertia, working condition, etc. One such plant suitably located would serve all Governmental and civilian requirements for the present. A suitable site is the public land in Potomac Park in the vicinity of the Smithsonian Institution. Here might be held air-craft competitions under the auspices of the Government.

*Prizes and Awards.*—As a stimulus to the highest aeronautic achievement, or as an honorable recognition thereof, suitable prizes or awards might advantageously be offered. Provision should be made for liberal cash prizes for competitive tests of motors, propellers, etc., in a purely scientific way not trenching upon the province of aero clubs.

*Fellowships.*—For the prosecution of special aeronautic investigations in cooperation with the advisory Committee, educational institutions and scientific or engineering organizations should be provided with research fellowships whose incumbents may have the counsel of the Committee and the advantage of its equipments.

Until adequate appropriations have been made by the Government, the activities of the organization and Committee will have to be sustained largely by private resources.