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# BIBLIOGRAPHY OF AERONAUTICS,

1922



NATIONAL ADVISORY COMMITTEE FOR AERONAUTICS



WASHINGTON  
GOVERNMENT PRINTING OFFICE  
1925

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## **BIBLIOGRAPHY OF AERONAUTICS**

**1922**

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**By PAUL BROCKETT**  
Smithsonian Institution

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## ABBREVIATIONS.

Aer. Eng. Suppl. The Aeroplane.....	The Aeroplane- . . . Aeronautical Engineering Supplement to The Aeroplane, London.
Aeron. Journ.....	Aeronautical Journal, London.
Amer. Mach.....	American Machinist, New York.
Amer. Gas Eng. Journ.....	American Gas Engineering Journal, New York.
Aut. Eng.....	Automotive Engineering, New York.
Aut. Flugv.....	Automobil-Motorad und Flugverkehr, Berlin.
Ann. Soc. Met. France.....	Annuaire, Société Météorologique de France, Paris.
Automobile-Automotive Ind.....	The Automobile and Automotive Industries, New York.
Aviat. Aer. Eng.....	Aviation and Aeronautical Engineering, New York.
Bull. Aero-Club Suisse.....	The Bulletin, Aero Club Suisse, Berne.
Bull. Exper. Depart. Airplane Eng. Div..	The Bulletin of the Experimental Department, Airplane Engineering Division, U. S. A., Dayton, Ohio.
Bull. Soc. Enc. Ind. Nat.....	Bulletin de la Société d'Encouragement pour l'Industrie Nationale, Paris.
Conq. l'Air.....	<i>See</i> La Conq. l'Air.
Deutsche Luftf. Zeitschr.....	Deutsche Luftfahrer Zeitschrift, Berlin.
Electr. Railw. Journ.....	Electric Railway Journal, New York.
Journ. Amer. Soc. Mech. Eng.....	Journal of the American Society of Mechanical Engineers, New York.
Journ. Amer. Water Works Ass'n.....	Journal of the American Water Works Association, Baltimore.
Journ. Inst. Electrical Engineers.....	Journal of the Institute of Electrical Engineers, New York.
Journ. Frankl. Inst.....	Journal of the Franklin Institute, Philadelphia.
Journ. Mil. Serv. Inst.....	Journal of the Military Service Institution, Governors Island, New York.
Journ. Soc. Automotive Engineers.....	Journal of the Society of Automotive Engineers, New York.
Journ. United States Art.....	Journal of the United States Artillery; Fortress Monroe, Va.
La Conq. l'Air.....	La Conquête de l'Air, Brussels.
Pop. Mech.....	Popular Mechanics, Chicago.
Pop. Sci. Monthly.....	Popular Science Monthly, New York.
Proc. Amer. Inst. Electr. Eng.....	Proceedings of the American Society of Electrical Engineers, New York.
Quart. Journ. Roy. Met. Soc.....	Quarterly Journal of the Royal Meteorological Society, London.

Rend. Istituto Sper. Aer.	Rendiconti dell'Istituto Sperimentale Aeronautico, Roma.
Rév. Gén. Scien.	Révue Générale Scientifique, Paris.
Riv. Ital. Aeron.	Rivista Italiana Aeronautica.
Scient. Amer.	Scientific American, New York.
Scient. Amer. Suppl.	Scientific American Supplement, New York.
Techn. Berichte.	Technische Berichte, Charlottenburg.
Tech. Rept. Advis. Com. Aeronautics.	Technical Report of the Advisory Com mittee on Aeronautics, London.
Zeitschr. Flugt. Motorluftsch.	Zeitschrift für Flugtechnik und Motor- luftschifffahrt, Berlin.
Zeit. Österr. Ing. Arch. Ver.	Wien.

## INTRODUCTION.

This work covers the literature published from January 1 to December 31, 1922, and continues the work of the Smithsonian Institution issued as volume 55 of the Smithsonian Miscellaneous Collections, which covered the material published prior to June 30, 1909, and the work of the National Advisory Committee for Aeronautics as published in the Bibliography of Aeronautics for the years 1909 to 1916, 1917 to 1919, and 1920 to 1921.

As in the Smithsonian volume and in the Bibliography of Aeronautics for the years 1909 to 1916, 1917 to 1919, and 1920 to 1921, citations of the publications of all nations have been included in the languages in which these publications originally appeared. The arrangement is in dictionary form with author and subject entry, and one alphabetical arrangement. Detail in the matter of subject reference has been omitted on account of the cost of presentation, but an attempt has been made to give sufficient cross reference for research in special lines.

The National Advisory Committee for Aeronautics will next present a bibliography for the year 1923, and it is the committee's intention to publish a Bibliography of Aeronautics annually thereafter.

December 12, 1924.

JOSEPH S. AMES,  
*Chairman, Executive Committee,*  
*National Advisory Committee for Aeronautics.*

## BIBLIOGRAPHY OF AERONAUTICS

1922.

By PAUL BROCKETT.

### A.

“A. G. A.” The “A. G. A.” automatic wind indicator and ground sign.  
Flight, Vol. 14, No. 18 (May 11, 1922), London, p. 270, ill.

ACAMPORA, LUIGI. Le prove di rottura degli apparacchi.  
Ala d’Italia, Anno 1, Num. 1 (luglio 1922), Milano, pp. 9-10.

ACCELEROMETERS. See National Advisory Committee for Aeronautics Technical Notes No. 112. The N. A. C. A. three-component accelerometer.

ACCIDENTS. The accident of the *Miss Miami*.  
Aviation, Vol. 12, No. 14 (Apr. 3, 1922), New York, p. 391.

- Accidents.  
The Ace, Vol. 3, No. 7 (July 1922), Los Angeles, p. 7.
- Aeronautical accidents.  
Engineer, Vol. 133, No. 3462 (May 5, 1922), London, p. 485.
- The Channel accident.  
Aeroplane, Vol. 22, No. 23 (June 7, 1922), London, p. 403.
- The death of Sir Ross Smith and Lieutenant Bennett. Sad fatality on the eve of great flight.  
Flight, Vol. 14, No. 16 (Apr. 20, 1922), London, p. 232.
- The investigation of accidents.  
Aer. Eng. Suppl. The Aeroplane, Vol. 23, No. 2 (July 12, 1922), London, p. 24.
- On air-line accidents.  
Aeroplane, Vol. 22, No. 18 (May 3, 1922), London, pp. 310-311.
- On the air-line collision.  
Aeroplane, Vol. 22, No. 15 (Apr. 12, 1922), London, pp. 258-259.
- Peril of ignoring ignorance.  
Literary Digest, Vol. 72, No. 2 (Jan. 14, 1922), New York, pp. 56-57.
- Statistics compiled from reports on crashes in the U. S. Army Air Service during the calendar years 1918-1921, inclusive, and results of physical examinations for flying during the calendar years 1920 and 1921.  
Air Service Information Circular, Vol. 4, No. 340 (May 1, 1922), Washington, D. C., pp. 22.
- The story of the Spad crash.  
Aer. Eng. Suppl. The Aeroplane, Vol. 22, No. 26 (June 28, 1922), London, p. 468.
- See Butman, Carl H.: Eliminating fires in airplanes. Special study of the subject by the Air Service shows considerable progress made in past year.
- See Carpenter, F. A.: Aeronautic accidents of two years compared.

ACETYL cellulose solutions. See Aeronautical Research Committee, Report No. 758.

**AERIAL Derby.** The Aerial Derby.

Engineer, Vol. 134, No. 3476 (Aug. 11, 1922), London, p. 139.

**— Nine machines competed for the British aerial derby.**

Aeronautical Digest, Vol. 1, No. 7 (Oct. 1922), New York, p. 154.

**AERIAL SURVEYS.** Aerial survey.

Aer. Eng. Suppl. The Aeroplane, Vol. 23, No. 14 (Oct. 4, 1922), London, p. 274.

**— The Pioneer Co.**

The Ace, Vol. 4, No. 2 (Sept. 1922), Los Angeles, p. 13, ill.

**AERIAL transport.** Development in aerial transport.

Engineer, Vol. 133, No. 3464 (May 19, 1922), London, p. 549.

**AERO Ae 10.** A Czechoslovak commercial aeroplane.

Aer. Eng. Suppl. The Aeroplane, Vol. 23, No. 6 (Aug. 9, 1922), London, pp. 106, ill., diagr.

**AÉRO-CLUB de France.** See Aimé, Emmanuel: La grand prix de l'Aéro-Club.**AERO Club of America.** Aero Club closes New York quarters. Proposes to reorganize on national lines in September.

Aviation, Vol. 12, No. 16 (Apr. 17, 1922), New York, p. 449.

**— Committees of the Aero Club of America.**

Aviation, Vol. 12, No. 4 (Jan. 23, 1922), New York, p. 107.

**— The 14th Aero Club of America banquet.**

Aviation, Vol. 12, No. 3 (Jan. 16, 1922), New York, pp. 66-69.

**AERODROMES.** Un gran aeródromo.

Iberica, nr. 439 (5 Agosto 1922), Tortosa, pp. 84-85.

**AERODYNAMICAL laboratories.** See Goettingen: The Goettingen aerodynamical laboratory.**AERODYNAMICAL laboratories.** See Katzmayr, R., and L. Kirste: Das aeromechanische Laboratorium der technischen Hochschule in Wien.

— See Warner, Edward P.: The aerodynamical laboratory of the M. I. T. Recent additions to two new wind tunnels greatly increase operating capacity of America's oldest research establishment.

**AERODYNAMICS.** Aerodynamische Verfeinerung der Flugzeuge.

Motorwagen, 25. Jahrg., Heft 27 (30. Sept. 1922), Berlin, pp. 525-527.

**— Verslagen en verhandelingen van den rijks studiedienst voor de luchtvaart.**

Rept. No. 1, Aeronautical Inst. of the Netherlands Government, pp. 186, ill.

**— Windmessungen auf der Wasserkuppe (Rhön).**

Flugsport, 14. Jahrg., Nr. 14 (26. Juli 1922), Frankfurt, pp. 223-225.

**— See Alayrac: Mouvement du centre de gravité d'un solide dans un milieu résistant. Vol de l'avion à commandes bloquées.****— See Bréguet, Louis: Aerodynamical efficiency and the reduction of air transport costs.****— See Bryan, G. H.: The canonical forms of the equations of motion in still and gusty air.****— See Göttingen: The Göttingen aerodynamical laboratory.****— See Hoff, Wilhelm: Die Festigkeit deutscher Flugzeuge.****— See Joel, Kurt: Die aerodynamische Versuchsanstalt.****— See Katzmayr, Richard: Standardization and aerodynamics.****— See Knight, William: Standardization and aerodynamics.**

**AERODYNAMICS.** *See* National Advisory Committee for Aeronautics: Report No. 139. Influence of model surface and air flow texture on resistance of aerodynamic bodies. By A. F. Zahm.

- *See* National Advisory Committee for Aeronautics: Technical Notes Nos. 104, 105, and 106. Notes on aerodynamic forces.
- *See* Roy, Maurice: *Aérodynamique. Remarques sur la théorie de Joukowski.*
- *See* Toussaint: *Application de la théorie des tourbillons à l'aérodynamique des ailes sustentatrices.*
- *See* Verudzio, R.: Standardization and aerodynamics.
- *See* Zahm, Albert Francis: Standardization and aerodynamics.

**AEROFOILS.** Report on wind tunnel tests on aerofoils: Dayton-Wright Nos. *TT-1* and *TT-2*, Dayton-Wright Nos. 5 and 6, and Gottingen No. 387.

Air Service Information Circular, Vol. 4, No. 328 (Mar. 15, 1922), Washington, D. C., 24 pp., ill.

- *See* National Advisory Committee for Aeronautics: Pressure distribution over thick aerofoils—model tests.
- *See* National Advisory Committee for Aeronautics: Report No. 152. The aerodynamic properties of thick aerofoils, II.
- *See* National Advisory Committee for Aeronautics: Technical Notes No. 77. A preliminary investigation of a new method for testing aerofoils in free flight.
- *See* National Advisory Committee for Aeronautics: Technical notes No. 79. Effect of aerofoil aspect ratio on the slope of the lift curve.
- *See* Wings.

**AEROMARINE airways.** Aeromarine airways statistics.

Aviation, Vol. 12, No. 17 (Apr. 24, 1922), New York, p. 485, ill.

**AEROMARINE engine.** Aeromarine engine passes 300-hour Navy test.

Aviation, Vol. 13, No. 6 (Aug. 7, 1922), New York, pp. 153-155, ill.

**AERONAUTICAL Chamber of Commerce.** Aero Chamber of Commerce elects officers. Aviation, Vol. 13, No. 11 (Sept. 11, 1922), New York, pp. 314-315, ill.

- The Aeronautical Chamber of Commerce activities. Aeronautical Digest, Vol. 1, No. 9 (Dec. 1922), New York, pp. 248-250.
- Aeronautical Chamber of Commerce election. Body representing manufacturing, engineering, operating, and accessory interest elects its board of governors. Aviation, Vol. 12, No. 10 (Mar. 6, 1922), New York, pp. 283-284.
- Aeronautical Chamber of Commerce. National body comprising over 100 charter or founder members embraces entire industry. Aviation, Vol. 12, No. 1 (Jan. 2, 1922), New York, pp. 6-7.
- Aeronautical Chamber of Commerce outlines future plans. Aerial Age, Vol. 15, No. 1 (Mar. 13, 1922), New York, p. 10. Aircraft Yearbook, Vol. 4, 1922. New York, Aeronautical Chamber of Commerce, 1922, pp. 250.
- Annual meeting of Aero C. of C. Membership has almost doubled in the last six months. Varied work of the chamber. Aviation, Vol. 13, No. 4 (July 24, 1922), New York, pp. 96-100.
- Annual meeting of the Aeronautical Chamber of Commerce. Aerial Age, Vol. 15, No. 17 (Aug. 1922), New York, pp. 400-401, 412.
- Facts about flying from the Aeronautical Chamber of Commerce of America. Aeronautical Digest, Vol. 1, No. 7 (Oct. 1922), New York, pp. 168-169.

AERONAUTICAL Chamber of Commerce. Plans of the Aeronautical Chamber of Commerce.

Aerial Age, Vol. 15, No. 1 (Mar. 13, 1922), New York, p. 3.

— See Aircraft Yearbook.

AERONAUTICAL engineers. What is an aeronautical engineer?

Aviation, Vol. 13, No. 19 (Nov. 6, 1922), New York, p. 627.

AERONAUTICAL Research Committee. The Aeronautical Research Committee.

Aer. Eng. Suppl. The Aeroplane, Vol. 23, No. 6 (Aug. 9, 1922), London, pp. 103-104.

— Internal Combustion Engine Subcommittee. Report No. 19: Relationship between air temperature and the power of a petrol engine.

London, H. M. Stationery Office, 1922.

— Report of the Aeronautical Research Committee for the year 1921-22.

Flight, Vol. 14, No. 30 (July 27, 1922), London, pp. 423-424.

— Reports and memoranda. No. 246: Experiments on model airships. No. 661: Consideration of airscrew theory in the light of data derived from an experimental investigation of the distribution of pressure over the entire surface of an airscrew blade, and also over aerofoils of appropriate shapes. No. 689: Canonical forms of the equations of motion of an aeroplane in still and gusty air. No. 752: Some applications of the Vortex theory of aerofoils. No. 767: Calculation of the characteristics of tapered wings. No. 776: Load factors for commercial heavier-than-air craft.

London, H. M. Stationery Office, 1922.

— Reports and memoranda. No. 541: Stability and resistance experiments on a model of Vicker's rigid airship *R. 80*. No. 769: The calculation of stresses in a redundant structure by the method of comparison of deflections, with examples of its application to aeroplane design. No. 773: Lateral control at large angles of incidence: Yawing and rolling moments due to aileron movement on a complete model of *SE 5a*. No. 779: Experiments on a model of rigid airship *R 32*, together with a comparison with the results of full-scale turning trials and a consideration of the stability of the ship. No. 780: Aerodynamic pressure on an airship hull in curvilinear flight. No. 781: The motion of airships under certain imposed movements of the rudders. No. 782: Equilibrium of *R 38* in circling flight. No. 784: Seaplane: Taking off and alighting. No. 785: Experiments with model flying boat hulls and seaplane floats. No. 786: An aerodynamic theory of the air screw. No. 787: Lateral control of Bristol fighter at low speeds: Measurement of rolling and yawing moments of model wings due to rolling. No. 788: Theoretical streamlines round a Joukowsky aerofoil. No. 789: Preliminary report on the properties of commercially pure nickel as a standard material for fatigue investigations. No. 790: On the determination of the stresses in braced frameworks: Part 1. The effect of a shear upon a framework of uniform rectangular cross-section. No. 791: On the determination of the stresses in braced frameworks: Part 2. The effect of axial loading, torsion, flexure, and shear upon a braced tube of any uniform cross-section.

London, H. M. Stationery Office, 1922.

— Reports and memoranda. No. 586: Report on various airscrews. No. 717: Lateral control at low speeds. No. 723: Aerofoil theory. No. 728: Investigations of the aerodynamic properties of wing ailerons. Part 4. Effect of yaw on the balance of ailerons of the "Horn" type. No. 741: Graphical method for the determination of the bending moments and deflections in an aeroplane spar; No. 744: Theory of initial motions and its application to the aeroplane. No. 748: Acceleration derivatives. No. 751: Stability of airships. No. 756: Tail loads in recovering from a vertical dive at terminal velocity. No. 757: Effect of rate of

loading on the apparent strength of cotton balloon fabric. No. 758: Viscosity of acetyl cellulose solutions. Vibrations of rat wires. No. 760: Force of an aileron balanced by the "backward hinge" method. No. 762: Lift and drag of *BE 2e* with R. A. F. 14 wings. Lift and drag of *BE 2e* with R. A. F. 19 wings. No. 765: Rotational inflow factor in propeller theory. No. 766: Free transverse vibrations of airscrew blades. No. 768: Steady adiabatic flow of a gas. No. 770: Drag curve of R. A. F. 14 *BE 2e* wings. No. 771: Experiments with a modified thrust-meter. No. 775: Accident to H. M. airship *R 38*. No. 777: Directional hot-wire anemometer.

London, H. M. Stationery Office, 1922.

**AERONAUTICAL Research Committee.** Reports and memoranda. No. 675: Experiments on rigid airship *R 29*.

London, H. M. Stationery Office, 1922.

— Reports and memoranda. No. 692: French and Italian aeronautical practice with particular regard to airships. No. 761: Experimental determination of tail-plane characteristics.

London, H. M. Stationery Office, 1922.

— Reports and memoranda. No. 749: The equilibrium of airships in curvilinear flight.

London, H. M. Stationery Office, 1922.

— Reports and memoranda, No. 795 (F. 1). The prevention of fire in single-engined aeroplanes. Report of the fire prevention subcommittee. January, 1922.

London, H. M. Stationery Office, 1922, pp. 10, ill.

D. 1 Special Technical Questions, 86 (T. 1671).

— Reports and memoranda. No. 815 (Ae 66). Measurements of normal force and pitching moment on rigid airship *R 33*. By R. A. Frazer, B. A., B. Sc., and H. Bateman, B. Sc., A. C. G. I., D. I. C., April, 1922.

London, H. M. Stationery Office, 1922, pp. 19, ill., diagrs., tables.

A. 4, e. Full-scale work airships, 45 (T. 1707).

#### AERONAUTICS.

Scient. Amer., Vol. 126 (Jan. 1922), New York, pp. 20-21.

— Aeronautics in 1921.

Engineer, Vol. 113 (Jan. 6, 1922), London, pp. 18-21, ill.

#### AEROPLANES. An all-steel success.

Aeroplane, Vol. 23, No. 13 (Sept. 27, 1922), London, pp. 244, 254.

— The low-power aeroplane.

Aer. Eng. Suppl. The Aeroplane, Vol. 23, No. 23 (Dec. 6, 1922), London, pp. 435-438.

— The versatile aeroplane.

Aerial Age, Vol. 15, No. 10 (May 15, 1922), New York, p. 227.

#### AFRICA. The African cruise of Zeppelin *L-59*.

Aeronautical Digest, Vol. 1, No. 6 (Sept. 1922), New York, p. 86.

— Air services in northern Africa.

Engineer, Vol. 134, No. 3471 (July 7, 1922), London, p. 19.

— The organization of the South African Airways Co. (Inc.).

Aeronautical Digest, Vol. 1, No. 9 (Dec. 1922), New York, p. 291.

#### AGRICULTURE. Spraying trees from the air.

Scient. Amer., Vol. 126 (May 1922), New York, p. 333, ill.

AHLBORN, Fr. Der segelnde Flug nach vogelart: Drei Entgegnungen, I. Entgegnung. Luftweg, Nr. 2 (26. Jan. 1922), Berlin, pp. 13-14, diagr.

AILERONS. See Aeronautical Research Committee. Report No. 728.

- AIMÉ, EMMANUEL.** Aviatrice contemporaine. Louise Faure-Favier.  
L'Aérophile, 30e année, Nos. 15-16 (1er-15 août 1922), Paris, pp. 225-226, port.
- Le concours de vol à voile d'Itford. Maneyrol gagne le prix du Daily Mail sur appareil L. Peyret.  
L'Aérophile, 30e année, Nos. 21-22 (1er-15 nov. 1922), Paris, pp. 322-323, ill.
- Deux aviateurs à la tête de l'aviation française. Pierre-Étienne Flandin, président de l'Aéro-Club de France; Laurent Eynac, Sous-Secrétaire d'Etat à l'Aéronautique.  
L'Aérophile, 30e année, Nos. 3-4 (1er-15 fév. 1922), Paris, p. 45.
- La fête du 1,000e pilote du centre d'Orly. Le vol vertical du Lieutenant Thoret.  
L'Aérophile, 30e année Nos. 13-14 (1er-15 juil. 1922), Paris, pp. 201-203, ill.
- Le grand prix de l'Aéro-Club.  
L'Aérophile, 30e année, Nos. 11-12 (1er-15 juin 1922), Paris, pp. 183-185, ill.
- Le XIe grand prix de l'Aéro-Club. 14 mai 1922.  
L'Aérophile, 30e année, Nos. 9-10 (1er-15 mai 1922), Paris, pp. 141-145, ill.
- AIR Board, Canada.** See Canada: Canadian technical memoranda. Technical branch of Canadian Air Board issues memoranda covering many questions arising in aircraft maintenance.
- See Canada: Summary of Canadian aviation certificates and licenses issued canceled, renewed, and still in force issued Dec. 31, 1921, by the Air Board Ottawa, Canada.
- AIR chiefs.** New foreign air chiefs.  
Aviation, Vol. 13, No. 25 (Dec. 18, 1922) New York, p. 804.
- AIR conference.** Air conference—Great Britain.  
Aeronautical Digest, Vol. 1, No. 4, 1922, New York, pp. 13-14.
- Air conference reflections.  
Engineer, Vol. 133, No. 3451 (Feb. 17, 1922), London, p. 186.
- No. 1.  
Engineer, Vol. 133, No. 3450 (Feb. 10, 1922), London, p. 150, 151.
- Technical affairs at the air conference.  
Aer. Eng. Suppl. The Aeroplane, Vol. 22, Nos. 7-9 (Feb. 15, 22, Mar. 1, 1922), London, pp. 119-120; 135-136; 155-158.
- On the air conference.  
Aeroplane, Vol. 22, Nos. 7-8 (Feb. 15-22, 1922), London, pp. 113-116; 129-132.
- AIR Council.** The reconstitution of the Air Council.  
Aeroplane, Vol. 23, No. 5 (Aug. 2, 1922), London, p. 84.
- AIR estimates.** See Royal Air Force: The air estimates.
- AIR flow.** See National Advisory Committee for Aeronautics: Report No. 139. Influence of model surface and air flow texture on resistance of aerodynamic bodies. By A. F. Zahm.
- AIR force.** The logic of a separate air force.  
Aviation, Vol. 13, No. 11 (Sept. 11, 1922), New York, p. 319.
- AIR Ministry.** Civil Aviation Advisory Board.  
Nature, Vol. 109, No. 2723 (Mar. 9, 1922), London, p. 316.
- On the new Air Ministry.  
Aeroplane, Vol. 23, No. 19 (Nov. 8, 1922), London, pp. 357-358.
- AIR routes.** First of the road markers for aviators.  
Illustrated World, Vol. 37 (Mar. 1922), Chicago, p. 79, ill.
- See Warner, Edward P.: The choice of air routes.

**AIR Service.** Air intermediate depot.

Aviation, Vol. 12, No. 12 (Mar. 20, 1922), New York, p. 343.

— Air Service develops airway program. Establishment of new transcontinental airways planned for service flying and civil aviation.

Aviation, Vol. 13, No. 5 (July 31, 1922), New York, pp. 127.

— Air Service plans flying aircraft carriers. Plans provide for the experimental use of airships for carrying, launching, and picking up airplanes.

Aviation, Vol. 12, No. 14 (Apr. 3, 1922), New York, p. 392.

— Air Service to sell standard J1's.

Aviation, Vol. 12, No. 15 (Apr. 10, 1922), New York, p. 423.

— New distribution of Air Service troops.

Aviation, Vol. 13, No. 14 (Oct. 2, 1922), New York, p. 422.

— Reorganization of the office of the Chief of Air Service. New organization plane provides for five divisions: Personnel, Information, Training and War Plans, Supply, and Engineering.

Aviation, Vol. 12, No. 2 (Jan. 9, 1922), New York, p. 42.

— *See* Army War College: The Signal Corps and Air Service.

**AIR sleds.** New Andries air sled.

Aviation, Vol. 12, No. 20 (May 15, 1922), New York, p. 574, ill.

**AIR temperature.** *See* Gibson, A. H.: The relationship between air temperature and the power of a petrol engine.

**AIR transport.** *See* Searle, Frank: The requirements and difficulties of air transport.

**AIR velocity.** *See* Toyotaro Suhara: A new velocity calculator.

**AIR yachts.** Practical uses of an air yacht.

Aviation, Vol. 13, No. 3 (July 17, 1922), New York, p. 73, ill.

**AIRCRAFT.** The silencing of aircraft.

Aerial Age, Vol. 15, No. 20 (Nov. 1922), New York, pp. 546-547.

**AIRCRAFT Disposal Co.** An aircraft disposal conversion.

Flight, Vol. 14, No. 4 (Jan. 26, 1922), London, p. 51, ill.

**AIRCRAFT speed instruments.** *See* National Advisory Committee for Aeronautics: Report No. 127. Aeronautic instruments. Section III: Aircraft speed instruments.

**AIRCRAFT yearbook.** Aircraft yearbook, Vol. 4, 1922.

New York, Aeronautical Chamber of Commerce of America, 1922, pp. 250.

**AIRPLANE.** Flying automobile is folding-wing biplane.

Popular Mechanics, Vol. 37 (Feb. 1922), Chicago, pp. 164-165, ill.

— The life of some airplanes.

Aviation, Vol. 12, No. 23 (June 5, 1922), New York, p. 666.

— The sport airplanes.

Aviation, Vol. 12, No. 17 (Apr. 24, 1922), New York, p. 475.

**AIRPLANE carriers.** Largest cruising airdrome.

Scientific American, Vol. 127 (Dec. 1922), New York, p. 373.

— Floating homes for naval planes.

Literary Digest, Vol. 72 (Feb. 18, 1922), New York, pp. 25-26, ill.

— Legislation to convert battleships to airplane carriers.

American Machinist, Vol. 56 (Apr. 20, 1922), New York, p. 612c.

— The uses of airplane carriers. Naval air operations demand that airplanes be put into the air in any kind of weather.

Aviation, Vol. 12, No. 17 (Apr. 24, 1922), New York, p. 481.

AIR ports. The organization of air ports. Information Division, Air Service, issues revised specifications and rules for ground organization.

Aviation, Vol. 12, No. 23 (June 5, 1922), New York, pp. 660-662, ill.

AIRSCREWS. *See* Propellers.

AIRSHIPS. The airship of the future.

Aviation, Vol. 12, No. 22 (May 29, 1922), New York, p. 627.

— Airships as airplane carriers.

Aviation, Vol. 12, No. 20 (May 15, 1922), New York, p. 563.

— The airship's last chance.

Aer. Eng. Suppl. The Aeroplane, Vol. 22, No. 15 (Apr. 12, 1922), London, p. 268.

— Compartmented airships.

Aviation, Vol. 13, No. 6 (Aug. 7, 1922), New York, p. 147.

— First semirigid airship in America.

Aeronautical Digest, Vol. 1, No. 7 (Oct. 1922), New York, p. 145.

— Inflammability of airships.

Aviation, Vol. 12, No. 11 (Mar. 13, 1922), New York, p. 307.

— A new airship design.

Aviation, Vol. 12, No. 15 (Apr. 10, 1922), New York, p. 419.

— On airship developments.

Aeroplane, Vol. 23, No. 19 (Nov. 8, 1922), London, p. 358.

— Sale of imperial airships.

Engineer, Vol. 33, No. 3454 (Mar. 10, 1922), London, p. 267.

— Should our airships be limited in size? Why the Council of Ambassadors refused America's claim for a new Zeppelin of 100,000 cubic meters.

Aviation, Vol. 12, No. 13 (Mar. 27, 1922), New York, p. 368.

— Speed trials of airships.

Aviation, Vol. 12, No. 12 (Mar. 20, 1922), New York, p. 339.

— Vacuum hulled airship.

The Ace, Vol. 3, No. 4 (Apr. 1922), Los Angeles, p. 14.

Aeronautical Digest, Vol. 1, No. 4, 1922, New York, p. 18.

— *See* Aeronautical Research Committee. Reports Nos. 541, 749, 779, 780, 781, 782.

— *See* Currenium: A new gas for airships.

— *See* Fulton, Garland: Rigid airships.

— *See* Goodyear: The new Goodyear military airship.

— *See* Hovgaard, William: The longitudinal strength of rigid airships.

— *See* National Advisory Committee for Aeronautics: Technical Notes No. 89. The choice of the speed of an airship.

— *See* National Advisory Committee for Aeronautics: Technical Notes No. 111. Stresses produced on an airship flying through gusty air.

— *See* Nobile, Umberto: Semirigid versus rigid airships.

— *See* Pennoyer, R. G.: Rigid airships in the United States Navy.

— *See* PL 27: The 18-ton Parseval semirigid airship PL 27. A German experiment of promise.

— *See* Rith: The Rith semirigid dirigible.

— *See* Scott, G. H.: Airships.

— *See* Scott, G. H.: The present state of airship development.

- AIRWAYS.** Regulating the world's airways.  
Aviation, Vol. 13, No. 1 (July 3, 1922), New York, p. 7.
- See White-Smith, Henry: The development of commercial airways.
- ALASKA.** See Streett, St. C.: First Alaskan air expedition.
- ALAYRAC.** Etude théorique du vol sans moteur dans un vent variable horizontal.  
Aéronautique, 4me année, No. 34 (Mars 1922), Paris, pp. 75-78.
- Mouvement du centre de gravité d'un solide dans un milieu résistant. Vol de l'avion à commandes bloquées.  
L'Aérophile, 30e année, Nos. 1-2 (1er-15 janv. 1922), Paris, pp. 9-11, diagr.
- ALBATROS.** The Albatros commercial monoplane, type L 57. 275-horsepower Rolls-Royce "Falcon" engine.  
Flight, Vol. 14, No. 41 (Oct. 12, 1922), London, p. 587, ill.
- Le nouvel avion allemand commercial Albatros, type L-57.  
L'Aérophile, 30e année, Nos. 19-20 (1er-15 oct. 1922), Paris, p. 316, ill.
- See Otto, R.: Het nieuwe Albatross.
- ALER, J.** De veiligheid in de aviatiëk.  
Vliegveld, 6de Jaarg., No. 12 (Dec. 1922), Amsterdam, pp. 293-299.
- ALEXANDER, R.** Die Haftung für Schäden nach dem neuen Luftverkehrsgesetz.  
Autom. Flugv., Nr. 11, 1922, Berlin, pp. 348-349; Nr. 12, pp. 381-382.
- ALLARD, E.** L'avion colonial.  
Aéronautique, 4me année, No. 35 (avril 1922), Paris, pp. 105-108, ill.
- L'effort technique belge en aviation.  
Aéronautique, 4me année, No. 37 (juin 1922), Paris, pp. 174-176, ill.
- ALLEN, EDMUND T.** Three European gliding meets. What we can learn from the principal competitions held during the summer.  
Aviation, Vol. 13, No. 22 (Nov. 27, 1922), New York, pp. 712-714, ill.
- ALLEN, J. W.** Report on test of Bijur ignition end starter for airplane engines.  
Air Service Information Circular, Vol. 4, No. 357 (July 15, 1922), Washington, D. C., pp. 12, ill.
- ALLIED and associated powers.** Convention for the regulation of aerial navigation.  
Paris, October 13, 1919.  
London, H. M. Stationery Office, 1922, pp. 110, maps, diagrs. Great Britain, Foreign Office Treaty series, 1922, No. 2. Parliament. Papers by command. Cmd. 1609.
- ALTIMETERS.** New type of altimeter.  
Aviation, Vol. 13, No. 23 (Dec. 4, 1922), New York, p. 744.
- ALTITUDE.** See National Advisory Committee for Aeronautics Technical Notes No. 108. The use of multiplied pressures for automatic altitude adjustments.  
— See Reyneker, F. H.: Vliegen op groote hoogten.
- ALTITUDE instruments.** See National Advisory Committee for Aeronautics. Report No. 126. Aeronautic instruments. Section II: Altitude instruments in four parts.
- ALUMINIUM.** Preisausschreiben für ein Aluminiumlot.  
Zeitschr. Flugt. Motorl., 13. Jahrg., 1. hft. (14. Jan. 1922), München, pp. 9-10.
- AMBULANCES.** The ambulance airplane.  
Aviation, Vol. 12, No. 10 (Mar. 6, 1922), New York, p. 290.
- AMES, JOSEPH S.** Aeronautic research.  
Journ. Franklin Inst., Vol. 193, No. 1 (Jan. 1922), Philadelphia, pp. 15-28, ill.
- AMET, J.** See Gambier, P.; and J. Amet: Cours pratique d'aviation.

- AMORADHAT, Prince. Aviation in Siam.  
Aeronautical Digest, Vol. 1, No. 9 (Dec. 1922), New York, pp. 242-245, ill.
- AMUNDSEN, ROALD. Amundsen to fly over North Pole.  
Aeronautical Digest, Vol. 1, No. 5 (Aug. 1922), New York, pp. 6-7, ill.
- Amundsen's aeroplanes.  
Aerial Age, Vol. 15, No. 7 (Apr. 24, 1922), New York, p. 147.
- Amundsen's airplane.  
The Ace, Vol. 3, No. 7 (July 1922), Los Angeles, p. 16.
- Amundsen's polar air fleet.  
Aviation, Vol. 12, No. 16 (Apr. 17, 1922), New York, p. 456, ill.
- Amundsen's polar expedition includes Curtiss plane.  
U. S. Air Service, Vol. 7, No. 5 (June 1922), Washington, D. C., p. 14.
- Capt. Roald Amundsen's North Pole expedition.  
The Ace, Vol. 3, No. 6 (June 1922), Los Angeles, p. 12.
- Curtiss Oriole for Capt. Roald Amundsen's North Pole expedition.  
Aerial Age, Vol. 15, No. 13 (June 5, 1922), New York, p. 293.
- ANCHOR. Portable steel mast as hitching post for airships.  
Pop. Sci. Monthly, Vol. 100, No. 4 (April 1922), New York, p. 22, ill.
- ANDRIES. See Air sleds: New Andries air sled.
- ANEMOMETERS. See Aeronautical Research Committee. Report No. 777.
- ANGLE, GLENN D. Airplane engine encyclopedia.  
Dayton, Ohio, The Otterbein Press, 1922, pp. 547, ill.
- ANGLES of incidence. See Aeronautical Research Committee. Report No. 773.
- ANGULAR velocities. See National Advisory Committee for Aeronautics. Report No. 155: A study of airplane maneuvers, with special reference to angular velocities
- ANNET-BADEL. La responsabilité des compagnies de transports aériens.  
L'Aérophile, 30e année, Nos. 9-10 (1er-15 mai 1922), Paris, pp. 146-147.
- ANSALDO. L'Ansaldi riconferma il valore dell' industria italiana.  
Ala d'Italia, Anno 1, Num. 4 (ott. 1922), Milano, pp. 89-91, ill.
- ANTIAIRCRAFT. Antiaircraft defense.  
Fort Monroe, Va., Coast Artillery Journal, 1922, pp. 196, ill.
- APPROPRIATIONS. Air appropriations for fiscal year 1923-24; \$29,311,450 asked for Army, Navy, and air mail.  
Aviation, Vol. 13, No. 25 (Dec. 18, 1922), New York, p. 807.
- ARCTIC. The Arctic air route.  
Aeronautical Digest, Vol. 1, No. 6 (Sept. 1922), New York, pp. 58-59, map.
- A flight to the Arctic.  
Aviation, Vol. 13, No. 23 (Dec. 4, 1922), New York, p. 744, diagr.
- ARGENTINA. Organization of aerial mails in Argentine.  
Aerial Age, Vol. 15, No. 20 (Nov. 1922), New York, p. 560.
- ARLINGTON. Wind indicator at Arlington.  
Aviation, Vol. 13, No. 6 (Aug. 7, 1922), New York, p. 163.
- ARMORED airplanes. See Military airplanes; Armored fighting airplanes.
- ARMSTRONG-SIDDELEY. The Armstrong-Siddeley "Jaguar" radial aero engine. An interesting air-cooled engine of 350 horsepower.  
Flight, Vol. 14, No. 29 (July 20, 1922), London, pp. 407-410, ill.

- ARMY** Air Service. Back pay for Army Air Service cadets. Decision rendered by United States Court of Claims favors claim for recovery of back pay and flying increase.  
 Aviation, Vol. 12, No. 15 (Apr. 10, 1922), New York, p. 421.
- Disposal of surplus equipment.  
 Aviation, Vol. 12, No. 21 (May 22, 1922), New York, p. 605.
- ARMY** War College. The Signal Corps and Air Service. A study of their expansion in the United States 1917-18. Prepared in the historical section, Army War College.  
 Monograph No. 16, July 1922, Washington, 1922, pp. 128.
- ARNOLD**, H. H. Air Service in combat in conjunction with other arms.  
 Aerial Age, Vol. 15, No. 14 (June 12, 1922), New York, pp. 323-325.
- ARNOUX**. L'avion sans queue.  
 L'Aérophile, 30e année, Nos. 7-8 (1er-15 avril 1922), Paris, p. 98, ill.
- ASPECT** ratio. See National Advisory Committee for Aeronautics. Technical Notes No. 79: Effect of aerofoil aspect ratio on the slope of the lift curve.
- ASTON**, G. Air forces and British Empire defense.  
 Outlook, Vol. 131 (June 14, 1922), New York, p. 305.
- ATMOSPHERE**. See National Advisory Committee for Aeronautics. Report No. 147. Standard atmosphere.
- See National Advisory Committee for Aeronautics. Technical Notes No. 99: Notes on the standard atmosphere.
- AUJAMES**, P. Some principles governing the establishment of meteorological stations along air routes.  
 Aerial Ago, Vol. 15, No. 8 (May 1, 1922), New York, pp. 175-176.
- “**AUSTERLITZ**.” The Loening model 23 “Flying Yacht.”  
 Aer. Eng., Suppl. The Aeroplane, Vol. 22, No. 2 (Jan. 11, 1922), London, p. 30, ill.
- AUSTRALIA**. The Australian air mail service.  
 Aviation, Vol. 12, No. 6 (Feb. 6, 1922), New York, p. 159.
- Aviation in Australia.  
 Flight, Vol. 14, No. 23 (June 8, 1922), London, p. 327.
- Civil air mail services in Australia. Australian Government accepts tenders of private enterprises for the operation of three air mail routes totaling 2,255 miles.  
 Aviation, Vol. 12, No. 6 (Feb. 6, 1922), New York, p. 168.
- The first Australian-built aeroplane.  
 Aer. Eng. Suppl. The Aeroplane, Vol. 23, No. 20 (Nov. 15, 1922), London, p. 334.
- See Macleod, Thomas: Major Thomas Macleod, a commissioner of the World's Board of Aeronautical Commissioners for Australia.
- See Timber: Australian timbers for aircraft.
- AVELINE**. The Aveline automatic pilot.  
 Aer. Eng. Suppl. The Aeroplane, Vol. 23, No. 7 (Aug. 16, 1922), London, pp. 127-130, ill. diagr.
- The new Aveline automatic pilot.  
 Flight, Vol. 14, No. 32 (Aug. 10, 1922), London, p. 456, ill.
- AVIATION**. The encouragement of aviation.  
 Aviation, Vol. 12, No. 25 (June 19, 1922), New York, p. 715.
- Flying halfway round the world.  
 Literary Digest, Vol. 73, No. 4 (Apr. 22, 1922), New York, pp. 66-71, ill., map.



- BACON, DAVID L. Langley Field wind tunnel apparatus: Part I, Regulators for speed of wind tunnel drive motor. Part II, A vernier manometer with adjustable sensitivity.  
 National Advisory Committee for Aeronautics, Technical Notes No. 81, Jan. 1922 (mimeograph), Washington, pp. 9, ill.
- Langley Field wind tunnel motor regulator. N. A. C. A. develops motor regulator which practically solves problem of constant propeller speed in wind tunnel.  
 Aviation, Vol. 12, No. 8 (Feb. 20, 1922), New York, pp. 226-227, diagr.
- The "Universal propeller."  
 Aerial Age, Vol. 15, No. 7 (Apr. 24, 1922), New York, pp. 152-153, diagr.
- Vernier manometer with adjustable sensitivity.  
 Aviation, Vol. 12, No. 6 (Feb. 6, 1922), New York, p. 171, diagr.
- See National Advisory Committee for Aeronautics. Technical Notes No. 110: The effect on rudder control of slip stream body and ground interference.
- See Norton, Frederick Harwood, and D. L. Bacon: The aerodynamic properties of thick aerofoils, II.
- See Norton, Frederick Harwood, and D. L. Bacon: Pressure distribution over thick aerofoils-model tests.
- BADEN-BADEN. See Wenk, F.: Neuere flugzeuge der segelflugzeugewerke G. m. b. H. Baden-Baden.
- BADER, H. Grundlagen der flugtechnik.
- BAEUMKER, A. Die flugstreitkräfte der grossmächte in vier bildern.  
 Zeitschr. Flugt. Motorl., 13. Jahrg., 16. hft. (31. Aug. 1922), München, pp. 225-227.
- Luftfahrerkarten.  
 Zeitschr. Flugt. Meterl., 13. Jahrg., 11. hft. (15. Juni 1922), Berlin, pp. 166-168.
- BAGLEY, JAMES WARREN. Concerning aerial photographic mapping.  
 Geographical Review, Vol. 12 (Oct. 1922), New York, pp. 628-635.
- Experimental mapping with aerial photographs in the Army.  
 U. S. Air Service, Vol. 7, No. 4 (May 1922), Washington, D. C., pp. 24-25.
- BAGNALL-WILD, R. K. Engine installation.  
 Aer. Eng. Suppl. The Aeroplane, Vol. 22, No. 4 (Jan. 25, 1922), London, pp. 63-64.  
 Aeronautical Journal, Vol. 26, No. 136 (Apr. 1922), London, pp. 121-136, diagr.  
 Flight, Vol. 14, No. 4 (Jan. 26, 1922), London, pp. 56-57.
- Installatie van vliegtuigmotoren.  
 Vliegveld, 6de Jaarg., 1922, Amsterdam, pp. 137-138, 154-155.
- Progress of aeronautical research.  
 Aerial Age, Vol. 15 (Apr. 3-10, 1922), New York, pp. 78-79; 103-104.  
 Engineer, Vol. 133 (Feb. 10, 1922), London, pp. 161-162.  
 Engineering, Vol. 113 (Feb. 17, 1922), London, pp. 214-216; 187-189.  
 Soc. Auto. Engrs. Journ., Vol. 11 (Feb. 17, 1922), New York, pp. 187-189.
- Progress of British aeronautical research.  
 Journ. Sec. Aut. Eng., Vol. 11, No. 1 (July 1922), New York, pp. 33-34.
- The progress of research.  
 Aerial Age, Vol. 15, Nos. 4-5 (Apr. 3-10, 1922), New York, pp. 78-79; 103-104.  
 Engineer, Vol. 133, No. 3450 (Feb. 10, 1922), London, pp. 161-162.  
 Flight, Vol. 14, No. 8 (Feb. 23, 1922), London, pp. 122-124.
- BAIRSTO, G. E. On the synchronism of the spark of a magneto as affected by the method of coupling.  
 Aeronautical Research Committee Report 1. C. E. No. 21, London, 1922.
- BAIRSTOW, LEONARD. Dr. Bairstow on the work of Langley.  
 Aer. Eng. Suppl. The Aeroplane, Vol. 23, No. 16 (Oct. 18, 1922), London, p. 307.
- The work of S. P. Langley.  
 Aeron. Journ., Vol. 126, No. 143 (Nov. 1922), London, pp. 420-434, diagrs.

- BAKER, A. J. Selection of machine tools.  
Journ. Soc. Aut. Eng., Vol. II, No. 6 (Dec. 1922), New York, pp. 520-528.
- BAKER, HOBART AMORY HARE. A Hobart Baker memorial.  
Aviation, Vol. 12, No. 15 (Apr. 10, 1922), New York, p. 430, ill.
- Memorial at Princeton for Hobart A. Baker. Former member of Lafayette Escadrille and commander of 141st Aero Squadron to have skating rink erected in his honor.  
U. S. Air Service, Vol. 7, No. 1 (Feb. 1922), Washington, D. C., pp. 28-29, ill.
- BALABAU, KARL. Ein Beitrag zur Entwicklungsgeschichte des Hubschraubers.  
Zeitschr. Flugt. Motorl., 13. Jahrg., 21. hft. (15. Nov. 1922), Berlin, pp. 299-303; 22. hft. (30. Nov.), pp. 309-314, ill.
- Zur Stabilitätsfrage des Hubschraubers.  
Zeitschr. Flugt. Motorl., 13. Jahrg., 15. hft. (14. Aug. 1922), Berlin, p. 223.
- BALDWIN, T. A. The Air Service balloon observers' school.  
U. S. Air Service, Vol. 7, No. 8 (Sept. 1922), Washington, D. C., pp. 26-28.
- BALLAST. Ballast and loose articles in aircraft.  
Aviation, Vol. 12, No. 10 (Mar. 6, 1922), New York, p. 284.
- BALLOON fabrics. See Aeronautical Research Committee. Report No. 757.
- BALLOON records.  
Aviation, Vol. 12, No. 11 (Mar. 13, 1922), New York, p. 307.
- BALLOONS. Beating lightning at its own favorite game.  
Scient. Amer., Vol. 127 (Nov. 1922), New York, p. 329.
- Getting the range with kite balloons.  
Illustrated World, Vol. 36 (Dec. 1921), Chicago, p. 555, ill.
- International balloon race ends in doubt.  
Pop. Mech., Vol. 38 (Oct. 1922), Chicago, p. 516, ill.
- Record in balloon construction.  
Scient. Amer., Vol. 127 (Oct. 1922), New York, p. 266, ill.
- See Niedner, J.: Die wichtigsten Prüfmethoden, ballonstoffe auf Gasdurchlässigkeit zu untersuchen.
- BALTIMORE. Baltimore flying meet  
Aerial Age, Vol. 15, No. 11 (May 22, 1922), New York, p. 251.
- Fourth exhibition of aircraft in Baltimore. American Flying Club of Baltimore to hold interesting exhibition on Decoration Day.  
Aviation, Vol. 12, No. 22 (May 29, 1922), New York, p. 628.
- BAMEL. The further history of the "Bamel."  
Aeroplane, Vol. 23, No. 15 (Oct. 11, 1922), London, p. 288.
- BANE, T. H. Work of McCook Field in 1921. Engineering Division, Army Air Service, developed and tested several new types of airplanes, engines, and equipment.  
Aviation, Vol. 12, No. 2 (Jan. 9, 1922), New York, pp. 41-42.
- BARACCA cup. La coppa Baracca.  
Gazz. Aviaz., 1922, Anno 4, No. 34, Milano, p. 1.
- BARKER, FREDERICK W. Inventor is central figure in aeronautics. Phases of patenting he should know if he would watch his interests.  
U. S. Air Service, Vol. 7, Nos. 1, 2, 4 (Feb., Mar., May 1922), Washington, D. C., pp. 19-21; 17-21; 28-29; 34-35.
- BARLING bomber. The largest American airplane.  
Aviation, Vol. 13, No. 17 (Oct. 23, 1922), New York, p. 562, ill.

- BARLOW, T. M.** Performance testing of aircraft.  
Aeronautical Journal, Vol. 26, No. 137 (May 1922), London, pp. 152-176, ill.
- BARNARD, DANIEL P.** See Wilson, Robert E., and Daniel P. Barnard: The measurement of the property of oiliness.
- See Wilson, Robert E., and Daniel P. Barnard: The mechanism of lubrication.
- BARNHART.** The Barnhart twin 15 "Wampus-Kat."  
Flight, Vol. 14, No. 2 (Jan. 12, 1922), London, pp. 19-21, ill.
- BASCULE.** See Hangars: French Bascule hangar door.
- BASTAMOV, S.** Institut Aérodynamique de Koutchino—Institut de Physique Cosmique de Moscou (1916-1922).  
Bulletin de l'Institut de Physique Cosmique de Moscou, Fasc. 1. (Fasc. 8 de la Série générale: Première Série: Bulletin de l'Institut Aérodynamique de Koutchino, Fasc. 1-5, 6, 7).
- BASTOGI, GINO.** Costantinopoli negli interessi aeronautici italiani.  
Ala d'Italia, Anno 1, Num. 6 (dic. 1922), Milano, pp. 156-157, ill.
- Gli interessi aerei di Genova.  
Gazz. Aviaz., 1922 Anno 4, No. 42, Milano, p. 3.
- Sgonfiamenti e sgonfiature.  
Gazz. Aviaz., 1922, Anno 4, No. 48, Milano, p. 1.
- BATEMAN, H.** The decay of a simple eddy.  
National Advisory Committee for Aeronautics, Report No. 144, May 27, 1922, Washington, Government Printing Office, 1922, p. 7.
- See Frazer, R. A., and H. Bateman: Measurements of normal force and putting moment on rigid airship *R 33*.
- BAUMHAUER, A.** De télémombe van Crocco.  
Vliegveld, 6de Jaarg., No. 4 (Apr. 1922), Amsterdam, p. 79.
- Zweefvluchten in de Rhön.  
Vliegveld, 6de Jaarg., No. 9 (Sept. 1922), Amsterdam, pp. 223-225.
- BAULY, I.** Het nuttig effect der moderne snellopende explosiemotoren.  
Ingenieur, Vol. 37, No. 13 (Apr. 1, 1922), The Hague, pp. 244-257, ill.
- BAUMANN, R.** Die bisherigen Ergebnisse der Holzprüfungen in der Materialprüfungsanstalt an der Technischen Hochschule, Stuttgart.  
Berlin, Julius Springer, 1922, pp. 139, ill.  
Reviewed in: Zeitschr. Flugt. Motorl., 13. Jahrg., 22. Hft. (15. Nov. 1922), München, pp. 315-316.
- BAVISTON, L.** See Galloway, W.: Aeroplane crashes: The "hole in the air," the "spin."
- BAWLY, I.** Beschouwingen over hoogtemotoren.  
Vliegveld, 6de Jaarg., No. 3 (Maart 1922), Amsterdam, pp. 48-51; 73-76.
- De carburateur (systeem "Goddijn").  
Vliegveld, 6de Jaarg., No. 9 (Sept. 1922), Amsterdam, pp. 219-220.
- BEACH, STANLEY YALE.** Americans enter international gliding contest.  
U. S. Air Service, Vol. 7, No. 7 (Aug. 1922), Washington, D. C., p. 29.
- Germany's 1922 soaring flight competition.  
U. S. Air Service, Vol. 7, No. 6 (July 1922), Washington, D. C., p. 11.
- BEACH, WILLIAM J.** How to build a monoplane glider.  
Pop. Sci. Monthly, Vol. 100, No. 4 (Apr. 1922), New York, pp. 75-77, ill.
- BEAR, R. M.** See Zahn, Albert Francis, R. M. Bear, and G. C. Hill: Lift and drag effects of wing-tip rake.

- BEATTY, W. D. Considering the passenger's comfort. Practical suggestions for overcoming noise and vibration and providing heat and ventilation.  
Aviation, Vol. 12, No. 9 (Feb. 27, 1922), New York, pp. 257-258.
- Specialised aircraft.  
Aeronautical Journal, Vol. 26, No. 135 (Mar. 1922), London, pp. 92-107.  
Flight, Vol. 14, No. 2 (Jan. 12, 1922), London, pp. 27-28.
- BECK, VALDEMAR V. Ist eine Vereinfachung im Verwaltungswesen der deutschen Luftverkehrsfirmen möglich?  
Luftweg, Nr. 5 (9. März 1922), Berlin, pp. 49-51, diagrs.
- BECKER, GABRIEL. Vervollkommnung der Kraftfahrzeugmotoren durch Leichtmetallkolben.  
München, R. Oldenbourg, 1922, p. 97, ill.  
Reviewed in: Flugsport, 14. Jahrg., Nr. 7 (29. März 1922), Frankfurt, pp. 118-119. Zeitschr. Flugt. Motorl., 13. Jahrg., 13. Hft. (15. Juli 1922), München, p. 196.
- BELGIUM. The Belgian plan of subsidies for air transport companies.  
Aerial Age, Vol. 15, No. 6 (Apr. 17, 1922), New York, pp. 129-130.
- BELGRADE-LONDON. Belgrade-London in the day.  
Aer. Eng. Suppl. The Aeroplane, Vol. 22, No. 26 (June 28, 1922), London, p. 468.
- BELLANCA. The Bellanca CF five-seater cabin airplane.  
Aviation, Vol. 13, No. 7 (Aug. 14, 1922), New York, pp. 183-185, ill.
- The Bellanca CF five-seater commercial "Sesquiplan."  
Flight, Vol. 14, No. 39 (Sept. 28, 1922), London, pp. 557-558, ill.
- BELLEVILLE, ILL. The Army airship shed at Belleville, Ill. Huge building now under construction to be 923 feet long, 206 feet wide, and 170 feet high.  
Aviation, Vol. 13, No. 13 (Sept. 25, 1922), New York, pp. 383-384, ill.
- BENDEMANN, F. Literarische auskünte und literarische zusammenstellungen.  
Zeitschr. Flugt. Motorl., 13. Jahrg., 11. Hft. (15. Juni 1922), Berlin, pp. 160-161.
- BENNETT. See Accidents: The death of Sir Ross Smith and Lieutenant Bennett.  
Sad fatality on the eve of great flight.
- BENNETT, H. C. Land of the broken pinion.  
Illustrated World, Vol. 33 (Oct. 1922), Chicago, pp. 139-192, ill.
- BENZOL. Sulphur in benzol.  
Journ. Soc. Aut. Eng., Vol. 11, No. 4 (Oct. 1922), New York, p. 358.
- BERGER, E. V. See Cady, H. P., H. M. Elsey, and E. V. Berger: Solubility of helium in water.
- BERGSTROM, FLORENCE O. Santa Maria flies at the Capital.  
U. S. Air Service, Vol. 7, No. 4 (May 1922), Washington, D. C., p. 23, ill.
- BERLIN. A Berlin-Vienna-Rome airship proposal.  
Flight, Vol. 14, No. 28 (July 13, 1922), London, p. 395.
- BERLIN-DRESDEN. Eine Flugzonenkarte mit Orientierungsmassstab für Luftreisende.  
Nachr. Luftf., Jahrg. 3, Nr. 52 (31. Dez. 1922), Berlin, p. 635, diagr.
- BERLINER. The Berliner helicopter.  
Aerial Age, Vol. 15, No. 17 (Aug. 1922), New York, pp. 395-396, ill.  
Aviation, Vol. 12, No. 26 (June 26, 1922), New York, p. 745; Vol. 13, No. 9 (Aug. 28), 1922, p. 256.
- The Berliner helicopter in flight.  
Aviation, Vol. 13, No. 12 (Sept. 18, 1922), New York, p. 356.
- BERLINER, EMIL. See I. T.: L'hélicoptère Berliner.
- "BERLINER TAGEBLATT." Segelflugpreis des "Berliner Tageblatts."  
Luftweg, Hft. 14 (12. Nov. 1922), Berlin, p. 136.  
Zeitschr. Flugt. Motorl., 13. Jahrg., 21. Hft. (15. Nov. 1922), Berlin, p. 298.

- BERNARD-DUBOS.** *See* Renard, Paul: Le prix Bernard-Dubos pour la météorologie appliquée à l'aéronautique.
- BERNUTH, W. S. von.** Carburetor tests results may be far reaching.  
Automotive Manufacturer, Vol. 44, No. 7 (Oct. 1922), New York, pp. 24-25, ill.
- Research on small drilled orifices.  
Automotive Manufacturer, Vol. 44, No. 8 (Nov. 1922), New York, pp. 7-8, ill.
- BERRY, O. C.** More car-miles per gallon of fuel.  
Journ. Soc. Aut. Eng., Vol. 11, No. 2 (Aug. 1922), New York, pp. 181-187.
- BERSON, A.** Kurzer Bericht über die Fertigstellung der neuen Satzung.  
Zeitschr. Flugt. Motorl., 13. Jahrg., 11. Hft. (15. Juni 1922), Berlin, p. 159.
- Kurzer Bericht über die Tätigkeit des Navigierungs-Ausschusses.  
Zeitschr. Flugt. Motorl., 13. Jahrg., 11. Hft. (15. Juni 1922), Berlin, p. 161.
- BERTRAND, J.** Nouveaux matériaux de construction.  
Techn. Afr., 13e année, n. s., No. 7 (15 mai 1922), Paris, pp. 202-208, ill.
- BESANÇON, GEORGES.** L'année aéronautique 1921. Rapport présenté à l'Assemblée Générale de l'Aéro-Club de France le 18 mars 1922 par M. Georges Besançon, Secrétaire Général.  
L'Aérophile, 30e année, Nos. 7-8 (1er-15 avril 1922), Paris, pp. 111-120, ill.
- BETZ, A.** The theory of the screw propeller.  
National Advisory Committee for Aeronautics, Technical Notes No. 83, Feb. 1922 (Mimeograph, Washington, pp. 18, ill.)  
Aerial Age, Vol. 15, No. 5 (Apr. 10, 1922), New York, pp. 105-106.
- Theory of the slotted wing.  
Advisory Committee National for Aeronautics, Technical Notes No. 100, June 1922 (Mimeograph), Washington, p. 13, ill.  
Aerial Age, Vol. 15, No. 16 (June 26, 1922), New York, pp. 366-368.  
Flight, Vol. 14, No. 47 (Nov. 23, 1922), London, pp. 687-690, diagr.
- BIBBINS, J. ROWLAND.** Commercial air transport the next step for American business.  
Aeronautical Digest, Vol. 1, No. 8 (Nov. 1922), New York, pp. 190-192, ill.
- BIBESCO, ELIZABETH (ASQUITH) (Princess Antoine Bibesco).** Balloons.  
New York, George H. Doran Co., 1922, pp. 9-168.
- BIESER, WENDELL PHILLIPS.** Commercial aviation in Latin America.  
Aerial Age, Vol. 15, No. 4 (Apr. 3, 1922), New York, pp. 79-80.  
Bull. Pan. Amer. Union, Vol. 55 (Sept. 1922), Washington, D. C., pp. 241-246.  
U. S. Air Service, Vol. 7, No. 7 (Aug. 1922), Washington, D. C., pp. 11-12.
- BIGGAR, P. E.** The aeroplane engine.  
Eng. Inst. Can. Journ., Vol. 5, No. 1 (Jan. 1922), Montreal, pp. 15-21, ill.
- BIJUR** starter. *See* Allen, J. W.: Report on test of Bijur ignition end starter for airplane engines.
- BILLE.** Avion à surface variable Bille.  
L'Aérophile, 30e année, Nos. 11-12 (1er-15 juin 1922), Paris, pp. 166-168, ill.
- The Bille variable surface aeroplane.  
Aer. Eng. Suppl. The Aeroplane, Vol. 23, No. 20 (Nov. 15, 1922), London, pp. 380-382, diagr.
- BIOGRAPHIES.** Biographic notes of the pilots entered. Detroit meet.  
Aviation, Vol. 13, No. 15 (Oct. 9, 1922), New York, pp. 455-467, ill.
- BIPLANE** folds its wings to speed along highways.  
Popular Science Monthly, Vol. 100, No. 4 (Apr. 1922), New York, p. 88, ill.
- BIRD** flight. *See* Davis, F. F.: Bird flight principles compared to the modern aeroplanes.  
— *See* Hoff, B., and J. C. G. Grase, jr.: Het zweven der vogels.

- BIRD flight. *See* Kuipers, A. R.: *Het zwe ven der vogelsen het undulatie beginsel.*
- *See* Orcy, L. d': *Soaring birdmen: A study of soaring birds and a review of recent glider experiments in Germany.*
- BIRMINGHAM. New flying field at Birmingham, Ala.  
*Aviation*, Vol. 12, No. 11 (Mar. 13, 1922), New York, p. 315.
- BISKRA. The Biskra gliding contest.  
*Aeroplane*, Vol. 23, No. 21 (Nov. 22, 1922), London, p. 396.
- BLACK ARCHIBALD. Airway field system and investment. Discussion of the type and cost of airdomes required on public passenger air transport service.  
*Aviation*, Vol. 12, No. 9 (Feb. 27, 1922), New York, pp. 248-250, ill.
- Eliminating the airline hangar. Reducing investment in buildings and overhead by mooring weather-proof airplanes in the open.  
*Aviation*, Vol. 13, No. 8 (Aug. 21, 1922), New York, pp. 221-224, ill.
- How to lay out and build an airplane landing field.  
*Engineering News-Record*, Vol. 89, No. 13 (Sept. 28, 1922), New York, pp. 504-507, ill.
- Influence of design on cost of operating airplanes.  
*Mechanical Engineering*, Vol. 44, No. 12 (Dec. 1922), New York, pp. 821-825, 849, ill.
- Pulitzer trophy.  
*Scient. Amer.*, Vol. 127 (Dec. 1922), New York, p. 384, ill.
- Some errors in landing field layout. Widely published sketches of assumedly ideal field layouts shown to be faulty.  
*Aviation*, Vol. 12, No. 21 (Nov. 20, 1922), New York, pp. 693-694, diagr.
- BLACKBURN. Blackburn torpedo carriers.  
*Aer. Eng. Suppl. The Aeroplane*, Vol. 23, No. 8 (Aug. 23, 1922), London, pp. 152-153, ill.
- BLAIR, WILLIAM R. Note on the planetary system of circulation.  
*U. S. Air Service*, Vol. 7, No. 4 (May 1922), Washington, D. C., pp. 17-22.
- BLAKE, W. The airways of Europe.  
*Discovery*, Vol. 3, No. 29 (May 1922), London, pp. 122-125, ill., map.
- BLAKE, W. T. Latest application of aerial photography.  
*U. S. Air Service*, Vol. 7, No. 9 (Oct. 1922), Washington, D. C., p. 24.
- Maj. W. T. Blake's flight around the world.  
*Aeronautical Digest*, Vol. 1, No. 5 (Aug. 1922), New York, pp. 3-5, ill.
- Progress of aerial photography.  
*Discovery*, Vol. 3, No. 31 (July 1922), London, pp. 171-174.
- *See* World flight: The flight around the world. Major Blake's and Captain Macmillan's attempt.
- BLAKELY, J. H. The Dugit altimeter and air speed indicator. Instruments based on application of Archimedean spiral give increased precision and a uniform sensitiveness.  
*Aviation*, Vol. 12, No. 13 (Mar. 27, 1922), New York, pp. 371-372, ill.
- BLAKEMORE, T. L., and OLLIE L. LEWIS. Investigation of the aerodynamic properties of stream-line forms with a view of possible improvement in the carrying capacity and speed of airships.  
*U. S. Air Service*, Vol. 7, No. 5 (June 1922), Washington, D. C., pp. 19-23, diagr.
- BLANCHET, GEORGES. Aviateurs contemporains. D. Lawrence Santoni.  
*L'Aérophile*, 30e année, Nos. 23-24 (1er-15 déc. 1922), Paris, pp. 353-354, port.
- Aviateurs contemporains. Fernand Lasne.  
*L'Aérophile*, 30e année, Nos. 19-20 (1er-15 oct. 1922), Paris, p. 289, port.

- BLANCHET, GEORGES.** Aviateurs contemporains. François Denhaut.  
L'Aérophile, 30e année, Nos. 9-10 (1er-15 mai 1922), Paris, pp. 129-130, port.
- Aviateurs contemporains. Fronval.  
L'Aérophile, 30e année, Nos. 7-8 (1er-15 avril 1922), Paris, pp. 97-98, port.
- Aviateurs contemporains. Hanriot Père et Fils.  
L'Aérophile, 30e année, Nos. 5-6 (1er-15 mars 1922), Paris, pp. 65-66, port.
- Aviateurs contemporains. Louis Breguet.  
L'Aérophile, 30e année, Nos. 3-4 (1er-15 fév. 1922), Paris, pp. 33-34, port.
- Aviateurs contemporains. Louis Gaubert.  
L'Aérophile, 30e année, Nos. 11-12 (1er-15 juin 1922), Paris, pp. 161-162, port.
- Aviateurs et aéronautes contemporains. Pierre Debrouette.  
L'Aérophile, 30e année, Nos. 13-14 (1er-15 juil. 1922), Paris, pp. 193-194, port.
- L'inventeur Arthur-William Loth.  
L'Aérophile, 30e année, Nos. 1-2 (1er-15 janv. 1922), Paris, pp. 21-22, port.
- BLANDY, L. F.** Aerial lighthouses.  
Illuminating Engineer, Vol. 15 (Feb.-Mar. 1922), London, pp. 51-56, 88, ill., diagrs.
- The use of light as an aid to aerial navigation.  
Flight, Vol. 14, No. 6 (Feb. 9, 1922), London, pp. 91-92.  
Illuminating Engineer, Vol. 15 (Feb. 1922), London, pp. 42-58, 58-63, ill., diagrs.  
Nature, Vol. 109, No. 2731 (Mar. 2, 1922), London, pp. 286-287.
- BLANK, ARCHIBALD.** Landing field buildings. Types, sizes, and cost of buildings for civil aeroplane landing fields.  
Aerial Age, Vol. 15, No. 19 (Oct. 1922), New York, pp. 494-49, ill., diagr.
- BLEISTEIN, WALTER.** Das amerikanische Luftfahrt-Jahrbuch.  
Zeitschr. Flugt. Motorl., 13. Jahrg., 3. Hft. (15. Feb. 1922), München, pp. 40-42.
- German airship expert arrives.  
Aviation, Vol. 12, No. 5 (Jan. 30, 1922), New York, p. 133.
- Time ripe for commercial airships in United States; airships of the rigid type, properly designed and constructed, safest vehicles known to transportation.  
U. S. Air Service, Vol. 6, No. 6 (Jan. 1922), Washington, D. C., pp. 20-21.
- BLERIOT.** See Ide, John Jay: The Bleriot Spad-45, four-engined airliner. French airplane fitted with four 275-horsepower Hispano's accommodates 17 passengers and crew of 3.
- BLÉRIOT, LOUIS.** Les coefficients de sécurité et l'avenir de l'aviation.  
L'Aérophile, 30e année, Nos. 19-20 (1er-15 oct. 1922), Paris, pp. 305-306.
- See Le Bailly: Coefficients de sécurité et indices d'essais statiques.
- BLYTHE, RICHARD R.** Building our cities in the country.  
Aerial Age, Vol. 15, No. 18 (Sept. 1922), New York, p. 443.
- Conquering desert wastes.  
Aeronautical Digest, Vol. 1, No. 7 (Oct. 1922), New York, p. 126, ill.
- Life insurance and aeronautics.  
Aerial Age, Vol. 15, No. 5 (Apr. 10, 1922), New York, p. 102.  
U. S. Air Service, Vol. 7, No. 7 (Aug. 1922), Washington, D. C., p. 22.
- What commercial aviation needs.  
Aeronautical Digest, Vol. 1, No. 7 (Oct. 1922), New York, p. 166.
- BOEL.** Le mécanisme du vol naturel.  
Reviewed in: Vliegveld, 6de Jaarg., No. 10 (Oct. 1922), Amsterdam, pp. 261-263.
- BOERNER.** Das Weltverkehrs-Luftschiff Boerner.  
Autom. Flugv., 1922, Berlin, pp. 193, 226-229, 257-259, diagrs.

- BOILÈVE. Application de la résistance des matériaux au calcul des avions.  
Paris, Gauthier-Villars et cie., 1921.  
Reviewed in: Vliegveld, 6de Jaarg., No. 1 (Jan. 1922), Amsterdam, p. 19.
- BOMBS. Answer to the aerial bomb.  
Literary Digest, Vol. 72 (Jan. 14, 1922), New York, p. 25, ill.
- Biggest air bomb.  
Literary Digest, Vol. 72 (Jan. 7, 1922), New York, p. 22, ill.
- Bomb dropping.  
Journ. Soc. Aut. Eng., Vol. 10, No. (Jan. 1922), New York, pp. 63-64.
- Effect of bomb attack on warships.  
Engineer, Vol. 133, No. 3155 (Mar. 17, 1922), London, pp. 198, 299, ill.
- A fused shell so sensitive it will explode on contact with the cloth of an airplane wing.  
Aeronautical Digest, Vol. 1, No. 8 (Nov. 1922), New York, p. 210.
- On the bombing tests.  
Aeroplane, Vol. 23, No. 6 (Aug. 9, 1922), London, pp. 97-99.
- BOMBING planes. The latest development in large planes of the bombing type.  
Aeronautical Digest, Vol. 1, No. 9 (Dec. 1922), New York, p. 281.
- De Wibault bommenwerper.  
Vliegveld, 6de Jaarg., No. 4 (April 1922) Amsterdam, p. 77, ill.
- BOOTH, HARRIS. Aeroplane performance calculations.  
London, 1921, Chapman & Hall, Ltd., p. 207, ill.  
Reviewed in Zeitschr. Flugt. Motorl., 13. Jahrg., 1. Hft. (14. Jan. 1922), München, p. 10.
- BOOTHBY, F. L. M. The Boothby gas armored tank.  
Aer. Eng. Suppl. The Aeroplane, Vol. 22, No. 17 (Apr. 26, 1922), London, p. 302, diagr.  
Aerial Age, Vol. 15, No. 12 (May 29, 1922), New York, p. 278.
- Gas armor for aircraft.  
Aeron. Journ., Vol. 26, No. 142 (Oct. 1922), London, pp. 413-416.
- BORDEN, W. A. 4,000-pound demolition bomb; a means for detonating 2,000 pounds of T. N. T. on a selected target.  
Scient. Amer., Vol. 125 (Dec. 1921), New York, pp. 94-95, ill.
- BORTOLOZZO, A. L'idroaviazione civile e l'Italia.  
Gazz. Aviaz., 1922, Anno 4, No. 42, Milano, p. 2; No. 46, p. 1; No. 48, p. 2.
- BOSTON. The Boston air port.  
Aviation, Vol. 13, No. 9 (Aug. 28, 1922), New York, p. 258.
- Boston air port definitely assured. "Governor Cox, of Massachusetts, signs bill providing \$35,000 for air port to be located in Boston Harbor.  
Aviation, Vol. 12, No. 22 (May 29, 1922), New York, pp. 629-630.
- Boston Chamber of Commerce on air laws.  
Aviation, Vol. 12, No. 7 (Feb. 13, 1922), New York, p. 194.
- Boston to have air port.  
Aviation, Vol. 12, No. 9 (Feb. 27, 1922), New York, p. 260.
- See Holcomb, T. G.: Chamber's action assures air port for Boston.
- See Moffat, R. C.: Boston air port.
- BOUCHÉ, HENRI. L'aéronautique française devant le parlement.  
Aéronautique, 4me année, No. 32 (jan. 1922), Paris, pp. 1-3.
- BOULTON. The Boulton and Paul "Bolton" metal bomber. New twin-engined biplane for Royal Air Force.  
Aviation, Vol. 13, No. 25 (Dec. 18, 1922), New York, p. 809, ill.

- BOULTON.** The Boulton and Paul "Bolton" (*P. 15*). Two 450-horsepower Napier "Lion" engines.  
Flight, Vol. 14, No. 46 (Oct. 5, 1922), London, pp. 571-572, ill.
- The Boulton and Paul *P. 9* biplane.  
Flight, Vol. 14, No. 38 (Sept. 21, 1922), London, pp. 541-544, ill., diagr.
- BOYCE, C. W.** Aerial forest fire patrol in Oregon and California.  
Journ. Forestry, Vol. 19, No. — (Nov. 1921), Washington, D. C., pp. 771-775.
- BOYD, T. A.** *See* Midgley, Thomas, jr., and T. A. Boyd: Detonation characteristics of some blended motor fuels.
- BOYKOW, H.** Das Problem der Kompassablenkung durch zusätzliche Beschleunigungsfelder.  
Zeitschr. Flugt. Motorl., 13. Jahrg., 11. Hft. (15. Juni 1922), Berlin, pp. 161-163.
- BOZEC.** Le Bozec aero accessories.  
Flight, Vol. 14, No. 42 (Oct. 19, 1922), London, pp. 616-617, ill.
- BRACE, A. M.** Commercial aviation in France.  
Cur. Hist. Mag., N. Y. Times, Vol. 16 (Apr. 1922), pp. 118-119, map.
- BRADSHAW, GRANVILLE.** Oil cooling.  
Flight, Vol. 14, No. 52 (Dec. 28, 1922), London, pp. 789-790.
- BRAKES.** *See* Farwell, H. G.: European and American automotive brake and clutch practice.
- BRANCKER, WILLIAM.** Air transport.  
Flight, Vol. 14, No. 40 (Oct. 5, 1922), London, pp. 581-583.
- The situation in Great Britain.  
Aeronautical Digest, Vol. 1, No. 9 (Dec. 1922), New York, pp. 252-253.
- BRANDENBURG.** *See* Munk, Max M.: Full scale seaplane coefficients. Lift and drag coefficients of Brandenburg seaplane determined in free flight test.
- BRAUN, H.** Das Bestimmen der Leistung bei umlaufenden Wellen.  
Wirtschaftsmotor, 1922, Nr. 5, Berlin, pp. 5-8; Nr. 6, pp. 5-8, ill.
- BRAZIL.** Brazil or bust.  
Literary Digest, Vol. 73 (May 20, 1922), New York, pp. 73-76, map.
- Die luftfahrt in Brasilien.  
Nachr. Luftf., Jahrg. 3, Nr. 27-28 (16. Juli 1922), Berlin, p. 362.
- BRÉGUET.** Flugzeugbauart und Transportkosten nach Breguet.  
Nachr. Luftf., Jahrg. 3, Nr. 27-28 (16. Juli 1922), Berlin, pp. 364-365.
- BRÉGUET, LOUIS.** Aerodynamical efficiency and the reduction of air transport costs.  
Aeronautical Journal, Vol. 26, No. 140 (Aug. 1922), London, pp. 307-320.  
Flight, Vol. 14, No. 15 (Apr. 13, 1922), London, pp. 218-220.
- M. Bréguet on the reduction of air transport costs.  
Aer. Eng. Suppl. The Aeroplane, Vol. 22, No. 16 (Apr. 19, 1922), London, p. 279.
- Note sur le problème des plus grandes vitesses des avions.  
Aéronautique, 4<sup>me</sup> année, No. 42 (Nov. 1922), Paris, pp. 349-352.
- Des rapports de l'État avec les compagnies aériennes et les propriétaires d'avions de tourisme.  
L'Aérophile, 30<sup>e</sup> année, Nos. 17-18 (1er-15 sept. 1922), Paris, pp. 273-275.
- Le rendement aérodynamique des avions et le prix des transports aériens.  
Aéronautique Marchande, 1<sup>re</sup> année, No. 5 (Supplément à L'Aéronautique, No. 36, mai 1922), Paris, pp. 51-56.
- *See* Blanchet, Georges: Aviateurs contemporains. Louis Bréguet.

- BREMEN. Die Tagung der W. G. L. in Bremen.  
Luftweg, Nr. 10 (15. Juli 1922), Berlin, pp. 100-101, ill.
- BRENNAN, LOUIS. The Brennan helicopter.  
Engineer, Vol. 133, No. 3467 (June 9, 1922), London, p. 635.
- BRENNEMANN, OTTO. Hamburg-Amsterdam in  $2\frac{1}{2}$  stunden.  
Luftweg, Nr. 7 (15. Apr. 1922), Berlin, pp. 69-71, ill.
- BRENTON, ALBERT G. Indianapolis contender for Pulitzer race.  
U. S. Air Service, Vol. 7, No. 6 (July 1922), Washington, D. C., p. 23.
- BREWER, GRIFFITH. The Langley machine and the Hammondsport trials.  
Nature, Vol. 109, No. 2732 (Mar. 9, 1922), London, pp. 305-307.
- BRIGGS, LYMAN J. See Heyl, Paul R., and Lyman J. Briggs: The earth inductor compass.
- BRIGHT, CHARLES. An imperial air policy.  
Quarterly Review, Vol. 239, No. 476 (July 1922), New York, pp. 74-92.
- BRION, MAURICE. Aérodynamique et construction.  
Aéronautique, 4me année, No. 32 (jan. 1922), Paris, pp. 4-5.
- L'aviation allemande.  
Aéronautique, 4me année, No. 38 (juil 1922), Paris, pp. 229-230.
- BRISTOL. The Bristol air-cooled radial engines.  
Aer. Eng. Suppl. The Aeroplane, Vol. 22, No. 18 (May 3, 1922), London, pp. 315-318, ill.
- The Bristol "Lucifer" engine.  
Aviation, Vol. 13, No. 8 (Aug. 21, 1922), New York, p. 226, ill.
- The "Bristol" 10-seater commercial aeroplane. 400-horsepower Bristol "Jupiter" engine.  
Flight, Vol. 14, No. 3 (Jan. 19, 1922), London, p. 37, ill.
- The "Bristol" three-seater, 100-horsepower Bristol Lucifer engine. A machine for the owner pilot.  
Flight, Vol. 14, No. 49 (Dec. 7, 1922), London, pp. 711-716, ill., diagr.
- The "Bristol" three-seater taxi.  
Aer. Eng. Suppl. The Aeroplane, Vol. 23, No. 23 (Dec. 6, 1922), London, p. 438.
- The 100-horsepower Bristol "Lucifer" passes its type tests. Fine performance of air-cooled engine.  
Flight, Vol. 14, No. 19 (May 11, 1922), London, pp. 267-268, ill.
- Das 1600 PS.—verkehrsflugzeug Bristol "Pullman."  
Motorwagen, 25. Jahrg., Heft. 15 (31. Mai 1922), Berlin, pp. 289-290, ill.
- The type test of the Bristol "Lucifer" engine.  
Aer. Eng. Suppl. The Aeroplane, Vol. 22, No. 19 (May 10, 1922), London, pp. 333-340, ill.
- See Aeronautical Research Committee. Report No. 787.
- BRISTOW, W. A. Aerial transport, to-day and to-morrow.  
Flight, Vol. 14, No. 7 (Feb. 16, 1922), London, pp. 99-106.
- BRODÉTSKY, SELIG. The mechanical principles of the aeroplane.  
New York, The Macmillan Co., 1922, pp. 272, ill.
- Motorless or wind flight.  
Nature, Vol. 110 (Oct. 7, 1922), London, pp. 483-485.
- BROMBACHER, W. G. See Mears, A. H., H. B. Henrickson, and W. G. Brombacher: Altitude instruments. Part I. Altimeters and barographs.
- BROOKE-POPHAM, H. R. M. Some notes on aeroplanes, with special reference to the cross-desert route from Cairo to Baghdad.  
Flight, Vol. 14, No. 11 (Mar. 16, 1922), London, pp. 164-165.

- BROWN, D. T., and R. J. DIEFENBACH. The strength of airplane rib forms.  
Mehanical Engineering, Vol. 44, No. 2 (Feb. 1922), New York, pp. 110-111, ill.
- BROWN, W. G. The synchronization of N. A. C. A. flight records.  
National Advisory Committee for Aeronautics, Technical Notes No. 117, Oct. 1922 (Mimeograph), Washington, pp. 3, ill.
- See National Advisory Committee for Aeronautics: Technical Notes No. 120.  
A preliminary study of airplane performance.
- See Norton, Frederick Harwood, and W. G. Brown: Controllability and maneuverability of airplanes.
- See Norton, Frederick Harwood, and W. G. Brown: The pressure distribution over the horizontal tail surfaces of an airplane. III.
- See Norton, Frederick Harwood, and W. G. Brown: Pressure distribution over the rudder and fin of an airplane in flight.
- BROWNE, M. FITZHUGH. Picking up burdens from an airplane. An account of the first experiments of Godfrey L. Cabot and of their development by the Huff, Daland Co.  
Aviation, Vol. 12, No. 5 (Jan. 30, 1922), New York, pp. 137-138, ill.
- BRUET, A. Les rapports techniques du premier Congrès International de la Navigation Aérienne.  
L'Aérophile, 30<sup>e</sup> année, Nos. 1-4 (1<sup>er</sup>-15 janv.-1<sup>er</sup>-15 fév. 1922), Paris, pp. 22-23, 55-58.
- BRUN, A. See Vogt, H. C., and A. Brun: Flyvning uder motor.
- BRUNNER, FRANK J. Navy's own airship under construction. Design, structure, material, and gas in ZR-1 all made in America.  
U. S. Air Service, Vol. 7, No. 5 (June 1922), Washington, D. C., p. 8.
- BRUNS, WALTHER. Luftfahrt und weltverkehr.  
Luftweg, Hft. 14 (12. Nov. 1922), Berlin, p. 137.
- Was muss die post vom luftpostverkehr fordern?  
Luftweg, Hft. 15 (12. Dez. 1922), Berlin, p. 150.
- BRUSSELS. Belgien: Bedingungen für den luftlichtbilderwettbewerb in Brüssel.  
Nachr. Luftt., Jahrg. 3, Nr. 24 (18. Juni 1922), Berlin, pp. 318-319.
- BRYAN, G. H. The canonical forms of the equations of motion in still and gusty air.  
Aeronautical Research Committee Report R. and M. 689, London, 1922.
- BULL, A. A. Oil consumption.  
Journ. Soc. Aut. Eng., Vol. 11, Nos. 3, 6 (Sept., Dec. 1922), New York, pp. 232, 491-494, 519.
- BUREAU of Aeronautics. The Bureau of Aeronautics.  
Aviation, Vol. 13, No. 8 (Aug. 28, 1922), New York, p. 247.
- Staff of Naval Bureau of Aeronautics.  
Aviation, Vol. 12, No. 5 (Jan. 30, 1922), New York, p. 136.
- BUREAU of Standards. Impact tests for woods.  
National Advisory Committee for Aeronautics: Technical Notes No. 77, Feb. 1922 (Mimeograph), Washington, p. 77, ill., tabls.
- BURGOYNE, ALAN H. Aviation in industry and war.  
Flight, Vol. 14, No. 51 (Dec. 21, 1922), London, p. 774.
- BURZIO, F. Sulla stabilità longitudinale degli aeroplani.  
Atti. Assoc. Ital. Aerotechn., 1922, Vol. 2, Nos. 1-2, Roma, pp. 45-54.
- BUSCH, HERMANN. Auch ein dem untergang geweihtes denkmal deutscher luftschiffahrt.  
Zeitschr. Flugt. Motorl., 13. Jahrg., 12. Hft. (30. Juni 1922), München, pp. 169-172.

BUTMAN, C. H. Eliminating fires in airplanes. Special study of the subject by the Air Service shows considerable progress made in past year.  
 Aviation, Vol. 12, No. 18 (May 1, 1922), New York, p. 508.

## C.

C-2. The Army dirigible C-2.

Aeronautical Digest, Vol. 1, No. 7 (Oct. 1922), New York, p. 146, ill.

— Why C-2 could not use helium.

Literary Digest, Vol. 75, No. — (Nov. 18, 1922), New York, pp. 62-65.

C-7. The helium filled airship C-7.

Aviation, Vol. 12, No. 6 (Feb. 6, 1922), New York, p. 163.

C-65. El crucero aéreo Marsella-Mónaco.

Iberica, no. 436 (15 julio 1922), Tortosa, p. 41.

CADY, H. P., H. M. ELSEY, and E. V. BERGER. Solubility of helium in water.

Journ. Amer. Chem. Soc., Vol. 44 (July 1922), Washington, D. C., pp. 1456-1461, diagr.

CALIFORNIA. California aviation legislation destructive.

The Ace, Vol. 3, No. 5 (May 1922), Los Angeles, p. 5.

— See Smith, R. J.: Flying in California.

CALTHROP. The Calthrop "H" type parachute and frontal suspension harness.

Flight, Vol. 14, No. 12 (Mar. 23, 1922), London, pp. 176-177, ill., diagr.

— Calthrop parachute tests at Croydon.

Flight, Vol. 14, No. 19 (May 11, 1922), London, p. 268.

— A new Calthrop parachute development.

Flight, Vol. 14, No. 28 (July 13, 1922), London, pp. 396-397, diagr.

CALVERT, R. Helium for safe dirigibles, and the greater wonders of our atmosphere.

Review of Reviews, Vol. 65 (May 1922), New York, pp. 531-532.

CAMERON, D. R. Report on the use of aircraft in forest protection. Aircraft are used in forestry work in two main ways: I. In fire protection. II. In forest survey and reconnaissance.

Dominion of Canada, Report of the Air Board for the year 1922, Ottawa, F. A. Acland, Printer to the King's Most Excellent Majesty, 1922, pp. 70-75, tabl.

CAMPBELL, N. R. See Paterson, C., and N. R. Campbell: An investigation of certain spark gaps for magneto.

CAMBILARGIU, E. Salon de l'aviation 1922.

Ala d'Italia, Anno 1, Num. 6 (Dic. 1922), Milano, pp. 158-159, ill.

CAMPBELL, MARK M. What I think of the Air Service parachute.

U. S. Air Service, Vol. 7, No. 11 (Dec. 1922), Washington, D. C., pp. 25-26, ill.

CANADA. The Air Board of Canada.

Aeronautical Digest, Vol. 1, No. 6 (Sept. 1922), New York, p. 54.

— Aviation in Canada in 1921. Statistical summary issued by the Air Board.  
 Aviation, Vol. 12, No. 16 (Apr. 17, 1922), New York, p. 458.

— Canada and aerial forest patrols.

Flight, Vol. 14, No. 6 (Feb. 9, 1922), London, p. 90.

— Canada's use of seaplanes. A lesson to the "Old Country."  
 Flight, Vol. 14, No. 20 (May 18, 1922), London, pp. 279-283, ill.

— Canadian aviation statistics.

Aviation, Vol. 13, No. 7 (Aug. 14, 1922), New York, p. 191.

— Canadian forest patrol.

Aviation, Vol. 13, No. 2 (July 10, 1922), New York, p. 37.

- CANADA. Canadian technical memoranda. Technical branch of Canadian Air Board issues memoranda covering many questions arising in aircraft maintenance.  
 Aviation, Vol. 12, No. 4 (Jan. 23, 1922), New York, pp. 105-106.
- Flying between Canada and the United States.  
 Aviation & Wireless News, Vol. 4, No. 12 (Feb. 1922), Toronto, p. 27.
- In the Canadian air force.  
 Aviation, Vol. 12, No. 1 (Jan. 2, 1922), New York, p. 9.
- Kanada: Ein jahresbericht über die kanadische luftfahrt 1921.  
 Nachr. Luftf., Jahrg. 3, Nr. 27-28 (16. Juli 1922), Berlin, pp. 358-362.
- On Canadian enterprise.  
 Aeroplane, Vol. 22, Nos. 17-18 (Apr. 26, May 3, 1922), London, pp. 293-294, 309-310.
- Report of the Air Board for the year 1921.  
 F. A. Acland, Ottawa, 1922, p. 20, map.
- Summary of Canadian aviation certificates and licenses issued, canceled, renewed, and still in force, issued Dec. 31, 1921, by the Air Board, Ottawa, Canada.  
 Aviation, Vol. 12, No. 4 (Jan. 23, 1922), New York, p. 100.
- See Dominion of Canada: Report of the Air Board for the year 1922.
- See Helium: Helium in Canada.
- See Photography: Map-making and aerial photography. Canada's use of the new method.
- See Stedman, E. W.: Some technical aspects of aviation in Canada.
- See Wilson, E. G.: Aeronautic progress in Canada.
- CANNEGIETER, H. G. De ballon Neerlandia.  
 Vliegveld, 6de Jaarg., No. 10 (Oct. 1922), Amsterdam, pp. 250-251, ill.
- Luchtvartweerberichten en grondteekens vor het luchtverkeer.  
 Vliegveld, 6de Jaarg., 1922, Amsterdam, pp. 37-38.
- De toestand van den dampkring boven Soesterberg . . .  
 Vliegveld, 6de Jaarg., 1922, Amsterdam, pp. 16-17, 41, 64, 67-68, 117, 170, 207, 236-237, 308-309.
- CAPETTI, ANTONIO. Alcune recenti sistemazioni per le prove sui motori leggeri nel Laboratorio di Aeronautica del R. Politecnico di Torino.  
 Ingegneria, Vol. 1, No. 1 (July 1, 1922), Milan, pp. 12-16, ill.
- CAPITOL PLAZA. First plane to land on Capitol plaza.  
 U. S. Air Service, Vol. 7, No. 3 (Apr. 1922), Washington, D. C., p. 25.
- CAPRONI. A new Caproni giant.  
 Aviation, Vol. 13, No. 24 (Dec. 11, 1922), New York, p. 776.
- CARBURETORS. See Bernuth, W. S. von: Carburetor tests results may be far reaching.  
 — See Bawly, I.: De carburateur . . .
- CARLIER, ANDRE. Publicity by aeroplane.  
 Aerial Age, Vol. 15, No. 7 (Apr. 24, 1922), New York, p. 153.
- CARLIER, ANDRE H. La photographie aérienne.  
 Paris, Librairie Delagrave, 1922, p. 204, ill.
- CARPENTER, CLINT. R. King of the air. (A song.)  
 Aeronautical Digest, Vol. 1, No. 7 (Oct. 1922), New York, pp. 130-133.
- CARPENTER, F. A. Aeronautic accidents of two years compared.  
 Scientific Monthly, Vol. 14, (Apr. 1922), Garrison, N. Y., pp. 361-363.

- CARR, GARDNER W. Organization and activities of Engineering Division of the Army Air Service.  
U. S. Air Service, Vol. 6, No. 6 Vol. 7, Nos. 1-2 (Jan.-Mar. 1922), Washington, D. C., pp. 9-12, 22-27, 23-27, ill.
- CARRASCO, MANUEL HUERTAS. Porvenir militar del puerto de los Alfaques.  
Iberica, No. 441 (2 Sept. 1922), Tortosa, pp. 120-122, ill.
- CARRINGTON, H. The elastic constants of spruce as influenced by moisture.  
Aeron. Journ., Vol. 26, No. 144 (Dec. 1922), London, pp. 462-471, ill.
- CARROLL, THOMAS. The elimination of dead center in the controls of airplanes with thick sections.  
National Advisory Committee for Aeronautics: Technical Notes No. 119, Nov. 1922 (Mimeograph), Washington, p. 3, ill.
- A study of taking off and landing an airplane.  
National Advisory Committee for Aeronautics: Report No. 154, Oct. 9, 1922, Washington, Government Printing Office, 1922, p. 7, ill.
- See Miner, V. S., and T. Carroll: How to lay out a practical air route. Practical hints based upon map of air route between Washington, D. C., and Langley Field.
- See National Advisory Committee for Aeronautics: Technical Notes. No. 115. The effect of longitudinal moment of inertia upon dynamic stability.
- CARTOGRAPHY. Amtliche begutachtung des autokartographen.  
Luftweg, nr. 4 (23. Feb. 1922), Berlin, pp. 39-40.
- CARTOSIO, TOMASO. Fede che la guerra non ha spento.  
Gazz. Aviaz., 1922, Anno 4, No. 42, Milano, p. 2.
- Per salire.  
Gazz. Aviaz., Anno 4, 1922, No. 45, Milano, p. 5.
- CASE, JOHN. Helicopters.  
Aeron. Journ., Vol. 26, Nos. 142, 143 (Oct., Nov. 1922), London, pp. 390-407, 435-447 diagr., tab.
- Stresses in airscrews due to varying engine torque.  
Aeron. Journ., Vol. 26, No. 140 (Aug. 1922), London, pp. 321-324.
- CASSE. See Peyriller, E.: Aviateurs contemporains, Le Colonel Casse.
- CASTIGLIONI. Brack Papa coll' *R-700* conquista all' Italia il record mondiale di velocità.  
Ala d'Italia, Anno 1, Num. 3 (Sett. 1922), Milano, pp. 66-69, ill.
- Il circuito di Milano.  
Gazz. Aviaz., 1922, Anno 4, No. 38, Milano, p. 1.
- Per la rinascita dell'ala: La conferenza dell'on. Aldo Finzi e del Generale Giorgio Douhet.  
Gazz. Aviaz., 1922, Anno 4, No. 46, Milano, p. 2.
- Per non dimenticare.  
Ala d'Italia, Anno 1, Num. 5 (Nov. 1922), Milano, pp. 130-131, ill.
- Un ritorno alle origini: Il volo senza motor.  
Gazz. Aviaz., 1922, Anno 4, No. 37, Milano, pp. 1-2, ill.
- La riuscita manifestazione di Taliedo.  
Gazz. Aviaz., 1922, Anno 4, No. 45, Milano, p. 5.
- CATAPULTS. Catapults and short landing devices.  
Aerial Age, Vol. 15, No. 20 (Nov. 1922), New York, p. 558.

- CAUTLEY, JOHN R.** Transportation's ultimate—the air mail.  
Aerial Age, Vol. 15, No. 12 (May 29, 1922), New York, p. 272.
- Wright aircraft engines.  
Paterson, N. J., Wright Aeronautical Corp., 1921, p. 78.
- CEILING.** See National Advisory Committee for Aeronautics: Technical Notes No. 103. Simple formula for estimating airplane ceiling.
- CENTRAL AMERICA.** Viaje aéreo de Guatemala a San Salvador.  
Iberica, No. 447 (14 Oct. 1922), Tortosa, p. 213.
- CERRIC.** Cellon developments. "Cerric" productions.  
Flight, Vol. 11, No. 13 (Mar. 30, 1922), London, p. 194.
- CERTIFICATES.** Certificates of airworthiness for civil aircraft. Underwriters' Laboratories appoint resident aviation engineers in 32 cities for the inspection of aircraft.  
Aviation, Vol. 12, No. 22 (May 29, 1922), New York, pp. 624-625.
- The issue of airworthiness certificates.  
Aviation, Vol. 12, No. 22 (May 29, 1922), New York, p. 623.
- See Structural strength: Structural strength of aircraft. Requirements for certificates of airworthiness.
- CHAIT, B. A.** Het hoogtevliegtuit van Boerner.  
Vliegveld, 6de Jaarg., No. 2 (Feb. 1922), Amsterdam, pp. 28-29.
- CHAMBER of Commerce.** United States Chamber of Commerce on air legislation.  
Aviation, Vol. 12, No. 10 (Mar. 6, 1922), New York, p. 286.
- CHAMPSAUR.** A comparative study of the efficiency of various airships.  
U. S. Air Service, Vol. 7, No. 3 (Apr. 1922), Washington, D. C., pp. 19-21, ll.
- CHANDLER, DE F.** Advent of the American air liner.  
Current History Magazine, N. Y. Times, Vol. 16 (June 1922), New York, pp. 410-414, ill.
- CHANDLER, M. E.** See Mock, F. C., and M. E. Chandler: The hot-spot method of heavy-fuel preparation.
- CHATLEY, HERBERT.** A textbook of aeronautical engineering; the problem of flight.  
London, C. Griffin and Co., Ltd., 1921, pp. xii+150. Third edition.
- CHICAGO.** The Chicago flying meet.  
Aviation, Vol. 13, No. 5 (July 31, 1922), New York, p. 123.
- Chicago now headquarters of air men.  
U. S. Air Service, Vol. 7, No. 1 (Feb. 1922), Washington, D. C., p. 12.
- Chicago plans big aviation meet Aug. 4-13. Twenty events with prizes totaling \$22,475 announced by Aeronautical Bureau of Chicago.  
Aviation, Vol. 13, No. 3 (July 17, 1922), New York, pp. 64-66.
- See Jones, Keith: Will Chicago become center of aircraft industry?
- CHILDERS, ERSKINE.** Erskine Childers.  
Aeroplane, Vol. 23, No. 22 (Nov. 29, 1922), London, pp. 410-411.
- CHINA.** Aircraft in China.  
Aeroplane, Vol. 23, No. 9 (Aug. 30, 1922), London, pp. 166-167.
- Aviation in China.  
Aer. Eng. Suppl. The Aeroplane, Vol. 23, No. 23 (Dec. 6, 1922), London, p. 440.
- China's contribution.  
Aviation, Vol. 12, No. 20 (May 15, 1922), New York, p. 563.
- A Chinese school in Vancouver.  
Aeroplane, Vol. 23, No. 8 (Aug. 23, 1922), London, p. 146.
- Der Misserfolg der Luftfahrt in China.  
Nachr. Luftf., Jahrg. 3, Nr. 22 (4. June 1922), Berlin, p. 294.

- CHOLLET, L.** Les étoffes bandruchées en aérostation.  
Aéronautique, 4<sup>me</sup> année, No. 39 (août 1922), Paris, pp. 258-262, ill.
- CHORLTON, ALAN E. L.** Aero engines.  
Journ. Roy. Soc. Arts, Vol. 69, No. 3591 (Sept. 16, 1921), London, pp. 725-740, ill.
- Special light weight aero engine.  
Aeron. Journ., Vol. 26, No. 136 (May 1922), London, pp. 137-143.
- CHRISTIANSEN, O. C.** Flight test of antiknock injector.  
Air Service Information Circular, Vol. 4, No. 372 (Sept. 1, 1922), Washington, D. C., p. 5, ill.
- CHU LYNN.** Damping coefficients due to tail surfaces in aircraft. By Lynn Chu.  
Condensed and modified by Edward P. Warner.  
National Advisory Committee for Aeronautics, Report No. 136, Dec. 22, 1922, Washington,  
Government Printing Office, 1922, p. 14, diagrs.
- CIVIL aviation.** Civil aviation and safety. The cross-channel fetish.  
Flight, Vol. 14, No. 24 (June 13, 1922), London, pp. 340-342.
- Civil aviation in 1921. Half-yearly report of Controller General of Civil Aviation.  
Flight, Vol. 14, No. 1 (Jan. 5, 1922), London, pp. 11-12.
- Civil aviation in the United States. Aeronautical Chamber of Commerce memorandum on 12 months' operation of civil aircraft.  
Aviation, Vol. 12, No. 21 (May 22, 1922), New York, pp. 593-595.
- Civil aviation statistics.  
Aviation, Vol. 12, No. 21 (May 22, 1922), New York, p. 591.
- Encouraging civil aviation.  
Aviation, Vol. 12, No. 22 (May 29, 1922), New York, p. 623.
- Failure of civil aviation.  
Engineer, Vol. 133, No. 3469 (June 23, 1922), London, pp. 697-698.
- The future of civil aviation.  
Aeroplane, Vol. 22, No. 20 (May 10, 1922), London, p. 346.
- On serious transport and civil aviation.  
Aeroplane, Vol. 22, No. 21 (May 24, 1922), London, pp. 365-366.
- On uncommercial and uncivil aviation.  
Aeroplane, Vol. 22, No. 22 (May 31, 1922), London, pp. 381-382.
- Progress of civil aviation. Half yearly report.  
Flight, Vol. 14, No. 30 (July 27, 1922), London, p. 422.
- Registering civil aircraft.  
Aviation, Vol. 12, No. 6 (Feb. 6, 1922), New York, p. 159.
- CIVIL Aviation Advisory Board.** The Civil Aviation Advisory Board.  
Aeroplane, Vol. 22, No. 10 (Mar. 8, 1922), London, pp. 165-168, 179.
- See Mail: Imperial air mail services. First report of Civil Aviation Advisory Board.
- See Sayers, W. H.: The first report of the Civil Aviation Advisory Board.
- CLARK, D. W.** How to build model airplanes.  
Pop. Mech., Vol. 38 (July 1922), Chicago, pp. 149-152, ill., diagrs.
- CLARK, E. H.** How to build an aerocycle.  
Illustrated World, Vol. 38 (Sept. 1922), Chicago, pp. 119-122, ill.
- CLARKSON, CHRISTOPHER.** A King's cup log.  
Aeroplane, Vol. 23, No. 11 (Sept. 13, 1922), London, pp. 210-212.
- CLAUDY, C. H.** Why the mail plane?  
Scient. Amer., Vol. 126 (Apr. 1922), New York, pp. 250-251, ill.

- CLEARY, C. J. Rubber materials in airplane construction.  
India Rubber World, Vol. 66 (Sept. 1922), New York, pp. 801-802, ill., diagrs.
- CLEARY, F. J. Bombing of the U. S. S. *Ex-Iowa* and the former German ships.  
Mechanical Engineering, Vol. 44 (Feb. 1922), New York, p. 131.
- Relative importance of capital ships and aircraft.  
Outlook, Vol. 129 (Nov. 9, 1921), New York, pp. 392-395, ill.
- CLERMONT-FERRAND. Flugzeuge vom französischen Segelflug-Wettbewerb von Clermont-Ferrand.  
Nachr. Luftf., Jahrg. 3, Nr. 33 (20. Aug. 1922), Berlin, p. 427.
- See Weyl, Alfred Richard: Der französische Segelflug-Wettbewerb von Clermont-Ferrand.
- CLERMONT meeting. French gliders entered at the Clermont meeting.  
Aer. Eng. Suppl. The Aeroplane, Vol. 23, No. 15 (Oct. 11, 1922), London, p. 294.
- CLEVELAND-DETROIT. Cleveland-Detroit airway inaugurated. Aeromarine airways open their Great Lakes division with a daily flying-boat service.  
Aviation, Vol. 13, No. 4 (July 24, 1922), New York, pp. 94-95, ill.
- CLIFT, ERIC HOLLOCOMBE. Eric Clift.  
Aer. Eng. Suppl. The Aeroplane, Vol. 23, No. 23 (Dec. 6, 1922), London, p. 440.
- COAST patrol. Holland: Beobachtung von Luftfahrzeugen durch Küstenwachposten und Feuerschiffe.  
Nachr. Luftf., Jahrg. 3, Nr. 31 (6. Aug. 1922), Berlin, p. 396.
- COBHAM, ALAN. "Blazing the trail." Mr. Cobham's 6,000 miles.  
Flight, Vol. 14, No. 15 (Apr. 13, 1922), London, pp. 212-213, ill., map. ~
- COCKPITS. Cockpit of modern airplane is mass of instruments and controls.  
Pop. Mech., Vol. 38 (Aug. 1922), Chicago, p. 276, diagrs.
- COFFIN, HOWARD E. Some phases of aviation.  
U. S. Air Service, Vol. 7, No. 11 (Dec. 1922), Washington, D. C., pp. 19-23, ill.
- COKER, E. G., and K. C. CHAKKO. The stress-strain properties of nitrocellulose and the law of its optical behavior.  
Phil. Trans. Roy. Soc. London, Ser. A, Vol. 221, No. A, 536, London, 1920, London, pp. 139-162.
- COLLAS, ROBERT. La catastrophe du Roma.  
L'Aérophile, 30e année, Nos. 5-6 (1er-15 mars 1922), Paris, pp. 81-83, ill.
- La rapport officiel sur les causes de la perte du R-38.  
L'Aérophile, 30e année, Nos. 5-6 (1er-15 mars 1922), Paris, p. 83.
- COLLEGE POINT. Aerial lighthouse, College Point.  
Aviation, Vol. 12, No. 19 (May 8, 1922), New York, p. 547.
- COLLIER trophy. Contenders for the Collier trophy.  
Aviation, Vol. 12, No. 1 (Jan. 2, 1922), New York, p. 16.
- See Loening, Albert P.: The Loening claim for the Collier trophy. Principal features of document submitted to contest committee, Aero Club of America, claiming outstanding achievement during 1921.
- COLLINS, F. A. Land lighthouses.  
Aeronautical Digest, Vol. 1, No. 8 (Nov. 1922), New York, p. 196.
- Upkeep of an airplane.  
Review of Reviews, Vol. 66 (July, 1922), New York, p. 86.
- COLOMBIA. Air service in Colombia. Developments in 1921; facts and figures.  
Flight, Vol. 14, No. 20 (May 18, 1922), London, p. 286.

- COMMERCIAL aeronautics. Aerial route between Italy and Egypt.  
Aerial Age, Vol. 15, No. 21 (Dec. 1922), New York, p. 608.
- Airship line from Sevilla to Buenos Aires.  
Aerial Age, Vol. 15, No. 21 (Dec. 1922), New York, pp. 607-608.
- Commercial aviation.  
Aerial Age, Vol. 15, No. 15 (June 19, 1922), New York, pp. 345-346.
- The commercial operation of flying boats.  
Aviation, Vol. 12, No. 26 (June 26, 1922), New York, p. 752.
- Commercial success.  
Aviation, Vol. 12, No. 14 (Apr. 3, 1922), New York, p. 391.
- The cost of running a flying-boat service.  
Flight, Vol. 14, No. 4 (Jan. 26, 1922), London, p. 58.
- Cost of transportation by various means.  
Aeronautical Digest, Vol. 1, No. 7 (Oct. 1922), New York, p. 137.
- The De Haviland aeroplane hire service. Flying for less than taxi fares.  
Flight, Vol. 14, No. 31 (Aug. 3, 1922), London, p. 440, ill.
- Detroit-Cleveland flying-boat line carrying many passengers.  
The Ace, Vol. 4, No. 2 (Sept. 1922), Los Angeles, p. 12.
- Die Entwicklung der Handelsluftfahrt in den Vereinigten Staaten.  
Nachr. Luftf., Jahrg. 3, Nr. 32 (13. Aug. 1922), Berlin, pp. 410-411.
- Estimated air speed—United States.  
Aeronautical Digest, Vol. 1, No. 4, 1922, New York, pp. 6-7.
- Express company ready to contract with airways. An address at the aviation executives' luncheon on requirements for New York-Chicago line.  
Aviation, Vol. 12, No. 11 (Mar. 13, 1922), New York, pp. 319-320.
- Government aid for commercial aviation.  
Aviation, Vol. 13, No. 23 (Dec. 4, 1922), New York, p. 739.
- Halbjahresbericht über die Fortschritte der Zivilluftfahrt.  
Nachr. Luftf., Jahrg. 3, Nr. 48 (3. Dez. 1922), Berlin, pp. 598-600; Nr. 49 (10 Dez. 1922) pp. 609-611.
- The ideal mode of travel.  
Aeronautical Digest, Vol. 1, No. 6 (Sept. 1922), New York, pp. 60-62.
- The latest commercial machine for economic transportation.  
Aerial Age, Vol. 15, No. 19 (Oct. 1922), New York, pp. 503-505.
- Load factors for commercial aircraft.  
Aer. Eng. Suppl. The Aeroplane, Vol. 23, No. 2 (July 12, 1922), London, p. 26.
- Making air transport pay.  
Aviation, Vol. 12, No. 12 (Mar. 20, 1922), New York, p. 335.
- New York-Chicago air mail and merchandise service.  
Aeronautical Digest, Vol. 1, No. 7 (Oct. 1922), New York, p. 115.
- On commercial aviation.  
Aeroplane, Vol. 23, No. 13 (Sept. 27, 1922), London, pp. 241-244.
- On passengers and papers.  
Aeroplane, Vol. 23, No. 23 (Dec. 6, 1922), London, pp. 429-431.
- Operations of the model airway.  
Aeronautical Digest, Vol. 1, No. 6 (Sept. 1922), New York, p. 105.
- The problem of the passenger aeroplane.  
Aer. Eng. Suppl. The Aeroplane, Vol. 22, Nos. 2-3 (Jan. 11-18, 1922), London, pp. 27-28, 47-50, ill.

**COMMERCIAL aeronautics.** Real commercial aviation.

Aeroplane, Vol. 22, No. 23 (June 7, 1922), London, p. 415.

— Selling by airplane.

Aviation, Vol. 12, No. 6 (Feb. 6, 1922), New York, p. 166.

— Two lines of long distance airship travel.

Aeronautical Digest, Vol. 1, No. 7 (Oct. 1922), New York, p. 145.

— The value of a library to aircraft companies.

Aeronautical Digest, Vol. 1, No. 6 (Sept. 1922), New York, pp. 63.

— See Bibbins, J. Rowland: Commercial air transport the next step for American business.

— See Lent, L. B.: Commercial operation of airplanes.

— See National Advisory Committee for Aeronautics: Technical Notes No. 113. Report on the general design of commercial aircraft.

— See Noorduyn, R. B. C.: Air lines and some of their problems.

— See Offermann, E.: Technik und Oekonomik im Luftverkehr mit Flugzeugen.

— See Redden, Charles F.: Commercial aviation.

— See Warner, Edward P.: Commercial use of airplanes.

**COMMERCIAL air conference.**

Aviation, Vol. 12, No. 8 (Feb. 20, 1922), New York, p. 232.

**COMMERCIAL airplanes.** Neue ausländische Verkehrsflugzeuge.

Luftweg, Nr. 3 (9. Feb. 1922), Berlin, pp. 26-30, ill.

**COMPASSES.** New airplane compass.

Aviation, Vol. 12, No. 7 (Feb. 13, 1922), New York, p. 204.

— See B., C. H.: Note on the gyro-compass.

— See Boykow, H.: Das Problem der Kompassablenkung durch zusätzliche Beschleunigungsfelder.

— See Moritz, A. J. L.: Het tegenwoordige vliegtuigkompas.

— See National Advisory Committee for Aeronautics: Report No. 128. Aeronautic instruments. Section IV: Direction instruments.

— See Van der Hoop: Moet een luchtvaartcompas cardanisch opgehangen worden?

**CONFEDERAZIONE aeronautica Italiana.** La confederazione aeronautica italiana nella sua costituzione di Genova.

Ala d'Italia, Anno 1, Num. 6 (dec. 1922), Milano, pp. 153-155.

**CONFERENCES.** La conferenza internazionale aeronautica.

Gazz. Aviaz., 1922, Anno 4, No. 45, Milano, p. 1.

— La conferenza internazionale di aeronautica.

Ala d'Italia, Anno 1, Num. 5 (nov. 1922), Milano, p. 125, ill.

— De engelsche pers over de air conference.

Vliegveld, 6de Jaarg., No. 3 (Maart 1922), Amsterdam, pp. 55-56.

— De I. C. A. R.

Vliegveld, 6de Jaarg., No. 9 (Sept. 1922), Amsterdam, pp. 225-228, ill.; No. 10 (Oct.), pp. 248-250.

— De 2<sup>e</sup> air conference te London.

Vliegveld, 6de Jaarg., No. 2 (Feb. 1922), Amsterdam, pp. 27-28.

**CONGRÈS International de la Navigation Aérienne.**

See Bruet, A.: Les rapports techniques du premier Congrès International de la Navigation Aérienne.

**CONGRESS.** Aviation in Congress. February 2–March 18, 1922.  
 Aviation, Vol. 12, No. 22 (May 29, 1922), New York, p. 636.

— Aviation in Congress, April 12–June 2, 1922.  
 Aviation, Vol. 13, No. 1 (July 3, 1922), New York, p. 10.

— Aviation in Congress June 3–July 11, 1922.  
 Aviation, Vol. 13, No. 13 (Sept. 25, 1922), New York, p. 387.

**CONSTANTIN, JOESSEL, and DALOZ.** L'emploi d'un moteur éolien pour actionner un navire contre le vent.

Génie Civil, Vol. 81 (nov. 4, 1922), Paris, pp. 421–422, ill.

**CONSTANTINOPLE.** See Bastogi, Gino: Costantinopoli negli interessi aeronautici italiani.

**CONSTRUCTION.** Fortschritte im R.-Flugzeugbau.

Luftweg, Nr. 9 (15. Juni 1922), Berlin, pp. 90–91, map.

— Der französische Luftfahrzeugbaudienst.  
 Nachr. Luftf., Jahrg. 3, Nr. 46 (19. Nov. 1922), Berlin, pp. 575–576.

— How the fastest aeroplane in the world was built.  
 Aerial Age, Vol. 15, No. 20 (Nov. 1922), New York, p. 537.

— Konstruktions-einzelheiten.  
 Flugsport, 14. Jahrg., Nr. 14 (12. Juli 1922), Frankfurt, pp. 230–233.

— On orders for aircraft.  
 Aeroplane, Vol. 23, No. 8 (Aug. 23, 1922), London, p. 141.

— Personal und Material der französischen Luftverkehrsgesellschaften nach dem Stande vom 31. Mai 1922.  
 Nachr. Luftf., Jahrg. 3, Nr. 33 (20. Aug. 1922), Berlin, pp. 422–423.

— Richtlinien für den Bau von Verkehrsflugzeugen.  
 Flugsport, 14. Jahrg., Nr. 1 (4. Jan. 1922), Frankfurt, pp. 10–14.

— Verordnung über Luftfahrzeugbau.  
 Nachr. Luftf., Jahrg. 3, Nr. 31 (6. Aug. 1922), Berlin, p. 393.

**CONTESTS.** Civic value of aeronautical contests.

Aviation, Vol. 12, No. 6 (Feb. 6, 1922), New York, p. 159.

**CONTINENTAL** flight. See Gatlin, Lillian: Lillian Gatlin, the first woman to cross the continent by airplane.

**CONTROLS.** Control aeroplane flight by wireless in France.  
 Aerial Age, Vol. 15, No. 16 (June 26, 1922), New York, p. 377.

— Le problème du vol des avions sans pilotes.  
 Génie Civil, Vol. 79 (déc. 3, 1921), Paris, pp. 496–497.

— Show position of airplane controls on record.  
 Pop. Mech., Vol. 38 (Aug. 1922), Chicago, p. 219, ill.

— La télémécanique.  
 Vie Technique et Industrielle, Vol. 3, No. 29 (fév. 1922), Paris pp. 401–403, ill.

— See Lateral Control.

— See National Advisory Committee for Aeronautics: Technical Notes No. 119. The elimination of dead center in the controls of airplanes with thick sections.

**COOPER, HOWARD.** See May, O. J., and Howard Cooper: Tests of aeroplane motor with different gasolines.

**CORELLI, R. M.** See Gallo, G., e R. M. Corelli. Reazioni della dimetil—gliossima sopra i sali ferrici e ferrosi.

- CORNIDES. Zeitschrift, Beihefte und Rumplerbuch.  
Zeitschr. Flugt. Motorl., 13 Jahrg., 11. Hft. (15. Juni 1922), Berlin, pp. 159-160.
- COSTANTINO, NIGRA. Idroaviazione.  
Gazz. Aviaz., 1922, Anno 4, No. 37, Milano, p. 1.
- Motori ed apparecchi.  
Gazz. Aviaz., 1922, Anno 4, No. 45, p. 5.
- COUPE JACQUES SCHNEIDER. See Hirschauer, Louis: La semaine d'hydraviation de Naples et la coupe Jacques Schneider.
- COUTURIER, ROGER. L'aéronautique anglaise.  
L'Aérophile, 30e année, Nos. 3-4 (1er-15 fév. 1922), Paris, pp. 47-51, ill.
- CRANE, H. M. New system of spring-suspension for automotive vehicles.  
Journ. Soc. Aut. Eng., Vol. 11, No. 3 (Sept. 1922), New York, pp. 236-240.
- CROCCO. See Baumhauer, A. G. v.: De télèbombe van Crocco.
- CROCCO, G. ARTURO. The dead weight of the airship and the number of passengers that can be carried.  
National Advisory Committee for Aeronautics: Technical Notes No. 80, Jan. 1922 (Mimeograph), Washington, pp. 20, diagr., table.
- Il dirigibile semirigido italiano.  
Rivista Marittima, Vol. 55, No. 3 (mar. 1922), Rome, pp. 901-927, ill.
- Meccanica.—Sull'influenza, del rapporto tra volume e superficie nelle aeronavi.  
Atti della Reale Accademia Nazionale dei Lincei, Anno 31, 1922, Ser. 5; Rendiconti Classific. Mat. Nat., Vol. 31, Fas. 10, 1. sem., Roma, 1922, pp. 426-429.
- CROSARA, LEONARDO. Cronologia aeronautica. Vol. 1.  
Rome, Italy, Alfieri & Lacroix, 1922, pp. 275, ill.
- CROSS country flying. Cross country flying in the Air Service.  
Aviation, Vol. 12, No. 13 (Mar. 27, 1922), New York, p. 367.
- CROYDON. Air traffic control at Croydon air port.  
Aviation, Vol. 12, No. 7 (Feb. 13, 1922), New York, p. 203, ill.
- Flughafen Croydon.  
Nachr. Luftf., Jahrg. 3, Nr. 27-28 (16. Juli 1922), Berlin, pp. 354-355, diagr.
- On the second Croydon meeting.  
Aeroplane, Vol. 22, No. 16 (Apr. 19, 1922), London, pp. 273-275.
- The second Croydon aviation race meeting. The season opened at Waddon.  
Flight, Vol. 14, No. 16 (Apr. 20, 1922), London, pp. 230-232, ill.
- The third Croydon aviation race meeting. Good racing, but few visitors.  
Flight, Vol. 14, No. 23 (June 8, 1922), London, pp. 323-325, ill.
- See Verville, Alfred: Croydon important center of British and French aircraft transportation.
- CUATRO VIENTOS. Servicios del Laboratorio aerodinámico de Cuatro Vientos.  
Iberica, No. 456 (16 dic. 1922), Tortosa, p. 356.
- CURRENIUM. Currenium gas for airway load carriers.  
The Acc, Vol. 3, No. 4 (Apr. 1922), Los Angeles, p. 9, ill.
- "Currenium"—What is it?  
Aviation, Vol. 12, No. 17 (Apr. 24, 1922), New York, p. 481.
- A new gas for airships.  
Flight, Vol. 14, No. 20 (May 18, 1922), London, p. 283.
- Origin and possibilities of "Currenium." Invention based on change in atomic valency; formula still a secret; production predicted.  
Aviation, Vol. 12, No. 21 (May 22, 1922), New York, p. 602.

- CURTISS. The Curtiss model *CD-12* 400-horsepower aero engine.  
*Flight*, Vol. 14, No. 1 (Jan. 5, 1922), London, pp. 7-9, ill., diagr.
- Curtiss model *D-12* aeronautical engine.  
*Aerial Age*, Vol. 15, No. 20 (Nov. 1922), New York, pp. 542-545, ill.
- Curtiss *18-B* Doppeldecker und *18-T* Dreidecker.  
*Nachr. Luitf.*, Jahrg. 3, Nr. 33 (20. Aug. 1922), Berlin, p. 426.
- The Curtiss sail plane.  
*Aerial Age*, Vol. 15, No. 19 (Oct. 1922), New York, p. 503, ill.
- Curtiss Torpedo-Flugzeug.  
*Flugsport*, 14. Jahrg., Nr. 7 (29. März 1922), Frankfurt, pp. 107-108.
- The Curtiss twin-engined torpedo seaplane.  
*Aviation*, Vol. 12, No. 6 (Feb. 6, 1922), New York, p. 172.
- First trials of the Curtiss sailplane.  
*Aviation*, Vol. 13, No. 12 (Sept. 18, 1922), New York, p. 354, ill.
- See North Pole: Curtiss *Oriole* to the North Pole.
- CURTISS, GLENN H. Curtiss develops hydrosailplane. New type of motorless sail-plane now undergoing tests.  
*Aviation*, Vol. 13, No. 10 (Sept. 4, 1922), New York, p. 284, ill.
- Glenn H. Curtiss wins seaplane decision. Circuit court of appeals reverses decision of district court; awards Curtiss broad patent on flying boat.  
*Aviation*, Vol. 12, No. 1 (Jan. 2, 1922), New York, pp. 19-20.
- Motorless flight.  
*Aeronautical Digest*, Vol. 1, No. 7 (Oct. 1922), New York, pp. 124-125, ill.
- CURTISS cantilever. The Curtiss twin-engined torpedo seaplane. A cantilever monoplane of novel design.  
*Flight*, Vol. 14, No. 9 (Mar. 2, 1922), London, pp. 137-138, ill.
- See Naval aeronautics: A new torpedo seaplane for the United States Navy. Curtiss cantilever monoplane driven by twin engines represents notable advance in aeronautical engineering.
- CURTISS marine trophy. Characteristics of the aircraft entered in the Curtiss marine flying trophy race, Saturday, October 7, 1922.  
*Aviation*, Vol. 13, No. 14 (Oct. 2, 1922), New York, pp. 413-415, ill.
- The Curtiss marine flying trophy race.  
*Flight*, Vol. 14, No. 44 (Nov. 2, 1922), London, pp. 637-638, ill.
- The Curtiss marine trophy race.  
*Aer. Eng. Suppl. The Aeroplane*, Vol. 23, No. 21 (Nov. 22, 1922), London, pp. 402-404.
- Rules of the Curtiss marine flying trophy race.  
*Aviation*, Vol. 13, No. 14 (Oct. 2, 1922), New York, pp. 411-413, ill.
- CURTISS-NAVY racer. 1921 Curtiss-Navy racer speed increased 16 miles.  
*Aerial Age*, Vol. 15, No. 20 (Nov. 1922), New York, p. 538.
- CZECHOSLOVAKIA. A Czechoslovak commercial airplane.  
*Aviation*, Vol. 13, No. 2 (July 10, 1922), New York, p. 45, diagr.
- A new Czechoslovak commercial biplane.  
*Aerial Age*, Vol. 15, No. 17 (Aug. 1922), New York, pp. 406-407, diagr.
- See Aero Ae 10: A Czechoslovak commercial aeroplane.
- See Limousine Ae 10: A new Czechoslovak commercial biplane

## D.

- D., Ch. La Coupe Deutsch de la Meurthe.  
Aéronautique, 4<sup>me</sup> année, No. 41 (Oct. 1922), Paris, pp. 305-308, ill.
- DH-4B. Fuel consumption test of *DH-4B* with Liberty "12" engine.  
Air Service Information Circular, Vol. 4, No. 346 (May 15, 1922), Washington, D. C., pp. 5, ill.
- D. H. 34. The *D. H. 34*.  
Aer. Eng. Suppl. The Aeroplane, Vol. 22, No. 13 (Mar. 29, 1922), London, pp. 230-232, diagr.
- The *D. H. type 34* commercial biplane. First machines ready.  
Flight, Vol. 14, No. 13 (Mar. 30, 1922), London, pp. 185-188, ill., diagr.
- The *D. H. type 34* commercial biplane. Napier "Lion" engine.  
Flight, Vol. 14, No. 1 (Jan. 5, 1922), London, p. 4, diagr.
- D. H. 37. The *D. H. 37*.  
Aer. Eng. Suppl. The Aeroplane, Vol. 23, No. 4 (July 26, 1922), London, pp. 65-67, diagr.
- The *D. H. 37*. 275-horsepower Rolls-Royce "Falcon" engine.  
Flight, Vol. 14, No. 32 (Aug. 10, 1922), London, pp. 452-455, ill., diagr.
- DACY, G. H. Taking the error out of airplane wings.  
Scient. Amer., Vol. 127 (Sept. 1922), New York, p. 167, ill.
- DAGNAUX, JEAN. L'aviation en "avant-garde" de la colonisation.  
Aéronautique, 4<sup>me</sup> année, No. 35 (avril 1924), Paris, pp. 96-98, ill.
- "DAILY Mail." Entries for the "Daily Mail" competition.  
Aer. Eng. Suppl. The Aeroplane, Vol. 23, No. 15 (Oct. 11, 1922), London, pp. 294-296.
- Un planeur français gagne le prix du "Daily Mail." Maneyrol, sur planeur "Peyret," porte à 3<sup>h</sup> 22<sup>m</sup>, le record mondial de durée.  
Aéronautique, 4<sup>me</sup> année, No. 42 (Nov. 1922), Paris, pp. 339-340, ill.
- DALOZ. See Constantin, Joessel and Daloz: L'emploi d'un moteur éolien pour actionner un navire contre le vent.
- DANIELS, R. W. Duralumin.  
Journ. Soc. Aut. Eng., Vol. 11, No. 6 (Dec. 1922), New York, pp. 477-480, 490.
- DANIELS, SAMUEL. See Johnson, J. B., and Samuel Daniels: Study of some failures in aircraft plane and engine parts.
- DANTIN, C. Phare électrique très puissant pour la navigation aérienne.  
Génie Civil, Vol. 79 (déc. 24, 1921), Paris, pp. 553-555, ill.  
Electrical World, Vol. 79 (Feb. 18, 1922), New York, p. 342.
- DANZIG. Herstellung von Luftfahrtgerät in Danzig.  
Nachr. Luftf., Jahrg. 3, Nr. 26 (2 Juli 1922), Berlin, pp. 343-344.
- DAUGHERTY, EARL S. "There's a reason." America's greatest stunt flyer also has a few words to say about stunt flying.  
The Ace, Vol. 4, No. 1 (Aug. 1922), Los Angeles, p. 8.
- DAVIES, A. C. See Horton, F., and A. C. Davies: Production of radiation and ionization by electron bombardment in pure and in impure helium.
- DAVIS, F. F. Bird flight principles compared to the modern aeroplanes.  
Aerial Age, Vol. 15, No. 17 (Aug. 1922), New York, p. 422.
- DAVIS, W. JEFFERSON. Air laws and air lanes.  
U. S. Air Service, Vol. 7, No. 3 (Apr. 1922), Washington, D. C., pp. 9-12, 28-31.
- DAYTON-WRIGHT. The Dayton-Wright flying school.  
Aviation, Vol. 13, No. 2 (July 10, 1922), New York, p. 37, ill.
- Dayton Wright issues statement.  
Aviation, Vol. 13, No. 17 (Oct. 23, 1922), New York, p. 563.

- DAYTON WRIGHT.** The Dayton-Wright suit.  
*Aerial Age*, Vol. 15, No. 21 (Dec. 1922), New York, pp. 603-604.
- DAYTONA, Fla.** Gliding meet at Daytona, Fla.  
*Aviation*, Vol. 13, No. 22 (Nov. 27, 1922), New York, p. 716.
- DE HAVILAND.** The De Haviland flying school.  
*Aeroplane*, Vol. 23, No. 12 (Sept. 20, 1922), London, p. 238.
- The De Haviland 37.  
*Flight*, Vol. 14, No. 33 (Aug. 17, 1922), London, pp. 467-468, diagr.
- The new De Haviland glider. Parasol monoplane with wire bracing.  
*Flight*, Vol. 14, No. 40 (Oct. 5, 1922), London, pp. 578-581, ill., diagr.
- The new De Haviland bomber *Derby*. Type D. H. 27.  
*Flight*, Vol. 14, No. 47 (Nov. 23, 1922), London, p. 691, ill.
- Performance test of *DH-4* with 400-horsepower Liberty "12" engine, equipped as two-seater corps observation airplane.  
*Air Service Information Circular*, Vol. 3, 287 (Oct. 1, 1921), Washington, D. C., p. 7, ill.
- See Commercial aeronautics: The De Haviland aeroplane hire service. Flying for less than taxi fares.
- DE HAVILAND, G.** The design of a commercial aeroplane.  
*Aeron. Journ.*, Vol. 26, No. 139 (July 1922), London, pp. 204-218.  
*Aer. Eng. Suppl. The Aeroplane*, Vol. 22, No. 14 (Apr. 5, 1922), London, pp. 243-246.
- DEBROUETTE, GEORGES.** See Blanchet, Georges: *Aviateurs et aéronautes contemporains*. Pierre Debrouette.
- DEFENSE.** Is de vliegdienst onze "first line of defense"?  
*Vliegveld*, 6de Jaarg., No. 6 (Jun. 1922), Amsterdam, pp. 130-132.
- See Nieuwenhuis, H.: On our first line of defense.
- DELANGHE, G.** Un nouveau nomogramme utilisant directement la polaire d'un avion pour le calcul des performances.  
*Techn. Aér.*, 13<sup>e</sup> année, n. s., No. 14 (15 déc. 1922), Paris, pp. 418-423, ill.
- Le planeur *Vampyr*.  
*Techn. Aér.*, 13<sup>e</sup> année, n. s., No. 11 (15 sept. 1922), Paris, pp. 344-347, ill.
- Les profils d'ailes "Marcel Besson."  
*Techn. Aér.*, 13<sup>e</sup> année, n. s., No. 12 (15 oct. 1922), Paris, pp. 358-366, ill.
- DENEURAN, P.** Les avions au VIII<sup>e</sup> salon de l'aéronautique.  
*L'Aérophile*, 30<sup>e</sup> année, Nos. 23-24 (1er-15 déc. 1922), Paris, pp. 364-368, ill.
- DENHAUT, FRANÇOIS.** See Blanchet, Georges: *Aviateurs contemporains*. François Denhaut.
- DEPARTMENT of Commerce.** See United States Congress. Senate. Committee on Commerce: Bureau of Aeronautics in Department of Commerce.
- DERBY.** Aerial derby and August bank holiday meeting.  
*Flight*, Vol. 14, No. 31 (Aug. 3, 1922), London, pp. 435-437, diagr., map.
- The aerial derby of 1922.  
*Aeroplane*, Vol. 23, Nos. 2, 4, 5, 6 (July 12, 26, Aug. 2, 9, 1922), London, pp. 33-35, 60, 95, 113-116, ill.
- The seventh aerial derby.  
*Flight*, Vol. 14, No. 32 (Aug. 10, 1922), London, pp. 447-451, ill.
- DESIGN.** Airplane of French design has unusual features.  
*Pop. Mech.*, Vol. 37 (June 1922), Chicago, p. 919, ill.
- Combination land and sea plane of original design.  
*Pop. Mech.*, Vol. 36 (Dec. 1921), Chicago, p. 804, ill.

**DESIGN.** The design of seaplanes.

Aer. Eng. Suppl. The Aeroplane, Vol. 22, No. 13 (Mar. 29, 1922), London, pp. 227-228.

— “Flight” designing competition. Prizes offered for designs for motorless plane.  
Flight, Vol. 14, No. 35 (Aug. 31, 1922), London, pp. 493-494.

— French-designed multiplane has strange appearance.  
Pop. Mech., Vol. 37 (Mar. 1922), Chicago, p. 384, ill.

— New design of airship will use nonexplosive gas.  
Pop. Mech., Vol. 38 (July 1922), Chicago, p. 9, ill.

— The preliminary design of aircraft.  
Aviation, Vol. 13, No. 13 (Sept. 25, 1922), New York, pp. 381-382.

— Problems in seaplane design.  
Aviation, Vol. 12, No. 17 (Apr. 24, 1922), New York, p. 475.

— See Black, Archibald: Influence of design on cost of operating airplanes.

— See De Haviland, G.: The design of a commercial aeroplane.

— See Monteith, C. N.: Airplane design and performance improvements since the armistice.

**DESTREM.** J. Voyages d'étude sur Paris Lusanne II. Notes de Navigation.  
Aéronautique, 4<sup>me</sup> année, No. 33 (fév. 1922), Paris, p. 52.

**DETONATION.** See National Advisory Committee for Aeronautics: Technical Notes No. 93. The background of detonation.

**DETROIT.** Aviation Club of Detroit trophy race. Event No. 3, Thursday, October 12.  
Aviation, Vol. 13, No. 15 (Oct. 9, 1922), New York, pp. 448-449.

— Constructional details seen at the Detroit meet.  
Aviation, Vol. 13, No. 17 (Oct. 9, 1922), New York, p. 549, ill.

— The Detroit aviation meet.  
Aviation, Vol. 13, No. 5 (July 31, 1922), New York, p. 129.

— The Detroit contests.  
Aeronautical Digest, Vol. 1, No. 9 (Dec. 1922), New York, p. 299.

— Detroit race impressions. Great progress indicated in American design and construction.  
Aviation, Vol. 13, No. 17 (Oct. 23, 1922), New York, pp. 550-558.

— The Detroit races. Entries assure greatest aeronautic event on record.  
Aerial Age, Vol. 15, No. 19 (Oct. 1922), New York, pp. 487, 490-493.

— The Detroit seaplane and airplane races. A compendium of useful information concerning the scheduled events, the ships and the pilots.  
Aviation, Vol. 13, No. 14 (Oct. 2, 1922), New York, p. 410.

— Detroit's aerial contests.  
Aerial Age, Vol. 15, No. 17 (Aug. 1922), New York, pp. 397-399, 424, ill.

— Meet at Detroit greatest of its kind. Story of the numerous contests based upon official figures.  
U. S. Air Service, Vol. 7, No. 10 (Nov. 1922), Washington, D. C., pp. 13-17.

— Navy entries in the Detroit airplane races.  
Aviation, Vol. 13, No. 12 (Sept. 18, 1922), New York, pp. 346-348, ill.

— New world speed records at Detroit.  
Aeronautical Digest, Vol. 1, No. 8 (Nov. 1922), New York, pp. 178-184, ill.

— Pilots at Detroit will fly faster than any human being ever traveled before.  
U. S. Air Service, Vol. 7, No. 9 (Oct. 1922), Washington, D. C., pp. 12-14.

- DETROIT. Preparing for the Detroit Aero Congress. Thirty-nine entries in land and water speed events announced by Detroit Aviation Society.  
*Aviation*, Vol. 13, No. 8 (Aug. 21, 1922), New York, pp. 219-220.
- Revised table of performances at Detroit meet.  
*Aviation*, Vol. 13, No. 19 (Nov. 6, 1922), New York, p. 631.
- Rules of the Detroit airplane races. Detroit News aerial mail trophy race, event No. 2, Thursday, Oct. 12.  
*Aviation*, Vol. 13, No. 15 (Oct. 9, 1922), New York, pp. 446-448, map.
- See Hudson, Fred E.: Detroit's place in aviation.
- DETROIT-CLEVELAND. Detroit-Cleveland airway a success.  
*Aviation*, Vol. 13, No. 7 (Aug. 14, 1922), New York, p. 185.
- DEUTSCH DE LA MEURTHE, HENRY. Competitors for the Deutsch Cup.  
*Aviation*, Vol. 13, No. 9 (Aug. 28, 1922), New York, p. 260.
- Las copas Schneider y Deutsch de la Meurthe.  
*Iherica*, No. 450 (4 Nov. 1922), Tortosa, pp. 261-262, ill.
- La coppa "Deutsch de la Meurthe."  
*Ala d'Italia*, Anno 1, Num. 4 (Ott. 1922), Milano, pp. 94-96, ill.
- La coppa Deutsch de la Meurthe: La sfortunata prova italiana.  
*Gazz. Aviaz.*, 1922, Anno 4, No. 44, Milano, p. 2, ill.
- The Coupe Deutsch. Only one British representative.  
*Flight*, Vol. 14, No. 34 (Aug. 24, 1922), London, p. 485.
- The Coupe Deutsch race at Etampes.  
*Flight*, Vol. 14, No. 39 (Sept. 28, 1922), London, p. 563.
- The Coupe Deutsche.  
*Aer. Eng. Suppl. The Aeroplane*, Vol. 22, No. 21 (May 24, 1922), London, p. 376.
- The Deutsch Cup.  
*Aeroplane*, Vol. 23, No. 13 (Sept. 27, 1922), London, p. 244.
- The Deutsch de la Meurthe Cup race. French speed classic is won by Fernand Lasne, who covered the 300-kilometer course at 179 miles per hour.  
*Aviation*, Vol. 13, No. 19 (Nov. 6, 1922), New York, pp. 630-631, ill.
- On the Deutsch Cup disgrace.  
*Aeroplane*, Vol. 23, No. 14 (Oct. 4, 1922), London, pp. 261-264, 277-278, ill.
- The race for the Coupe Deutsch de la Meurthe. France remains the holder of the cup.  
*Flight*, Vol. 14, No. 40 (Oct. 5, 1922), London, pp. 573-576, ill.
- See I. T.: Coupe Henry Deutsch de la Meurthe.
- See James, P.: La Coupe Henry Deutsch de la Meurthe.
- DEVALUEZ. Regulation of air traffic.  
*Aerial Age*, Vol. 15, No. 14 (June 12, 1922), New York, pp. 318-319.
- DÉVÉ, CH. Le bruit des avions.  
*Rev. Gén. Sciences*, 33e année, No. 10 (30 mai 1922), Paris, pp. 304-305, diagrs.
- DEVILLERS, RENÉ. The dynamics of the aeroplane. Translated by Capt. Wm. John Walker.  
London, E. and F. N. Spon, Ltd., 1922, pp. 310. New impression.
- La dynamique de l'avion.  
Paris, Librairie Aéronautique, 1922, pp. 291.
- DEWOITINE. L'avion monoplan Dewoitine.  
*L'Aérophile*, 30e année, Nos. 21-22 (1er-15 nov. 1922), Paris, pp. 332-334, ill.

- DIAMOND, JAMES E. The aluminum-alloy piston.  
Journ. Soc. Aut. Eng., Vol. 11, No. 3 (Sept. 1922), New York, pp. 253-261.
- DIEFENBACH, R. J. See Brown, D. T., and R. J. Diefenbach: The strength of airplane rib forms.
- DIEHL, WALTER S. Centre of pressure coefficients for aerofoils at high speeds.  
Flight, Vol. 14, No. 24 (June 15, 1922), London, pp. 346-347, diagr.
- The determination of downwash.  
Flight, Vol. 14, No. 2 (Jan. 12, 1922), London, pp. 24-26.
- Construction and testing of model airplanes.  
Aviation, Vol. 12, No. 9 (Feb. 27, 1922), New York, pp. 262-263, ill.
- Effect of aerofoil aspect ratio on the slope of the lift curve.  
National Advisory Committee for Aeronautics, Technical Notes, No. 79, Jan. 1922 (Mimeograph), Washington, p. 4, diagrs.
- F-5-L boat seaplane comparative performance with direct drive and geared engines.  
National Advisory Committee for Aeronautics, Technical Notes No. 116, Oct. 1922 (Mimeograph), Washington, p. 12, tables.
- F-5-L seaplane—performance characteristics.  
National Advisory Committee for Aeronautics, Technical Notes No. 118, Oct. 1922 (Mimeograph), Washington, p. 8, diagrs.
- Notes on the construction and testing of model airplanes.  
National Advisory Committee for Aeronautics, Technical Notes No. 82, Jan. 1922 (Mimeograph), Washington, p. 6, ill., diagr.
- Notes on the standard atmosphere.  
National Advisory Committee for Aeronautics, Technical Notes No. 99, June 1922 (Mimeo-graph), Washington, p. 9, tables.
- Simple formula for estimating airplane ceiling.  
National Advisory Committee for Aeronautics, Technical Notes No. 103, June 1922 (Mimeo-graph), Washington, p. 4, diagr.  
Aerial Age, Vol. 15, No. 20 (Nov. 1922), New York, pp. 539, 571.
- Skin frictional resistance of plane surfaces in air: Abstract of recent German tests, with notes.  
National Advisory Committee for Aeronautics, Technical Notes No. 102, July 1922 (Mimeo-graph), Washington, p. 4, diagrs.
- Surface area coefficients for airship envelopes.  
National Advisory Committee for Aeronautics, Technical Notes No. 86, Feb. 1922 (Mimeo-graph), Washington, p. 5, diagr.
- DIESEL. Diesel engines for aircraft.  
Aer. Eng. Suppl. The Aeroplane, Vol. 22, No. 6 (Feb. 8, 1922), London, p. 102.  
Engineering, Vol. 133, No. 3448 (Jan. 27, 1922), London, p. 97.  
Research work, royal aircraft establishment at Farnborough.
- See Dumanois, M.: Le cycle Diesel et le moteur d'aviation.
- DIETRICH. Dietrich-passagier-doppeldecker.  
Luftweg, Nr. 10 (15. Juli 1922), Berlin, p. 101.
- Dietrich passagier-doppeldecker D. P. I.  
Flugsport, 14. Jahrg., Nr. 15 (26. Juli 1922), Frankfurt, pp. 246-247.
- The Dietrich sporting two-seater.  
Aer. Eng. Suppl. The Aeroplane, Vol. 23, No. 4 (July 26, 1922), London, p. 68, ill.
- DIME, S. Y. Les nouveaux dirigeables souples "P. L." de 31 000<sup>m</sup>³ et 60 000<sup>m</sup>³.  
Aéronautique, 4<sup>me</sup> année, No. 38 (juil. 1922), Paris, pp. 233-235.
- Les planeurs du Rhön.  
Aéronautique, 4<sup>me</sup> année, No. 39 (août 1922), Paris, pp. 251-252.

- DIME, S. Y. Trois nouveaux hydravions L. F. G.  
*Aéronautique*, 4<sup>e</sup> année, No. 41 (oct. 1922), Paris, pp. 314-318, ill.
- Le troisième concours de la Rhône.  
*Aéronautique*, 4<sup>e</sup> année, No. 40 (sept. 1922), Paris, pp. 281-288, ill.
- Le vol à voile en terrain plat. Selon les théories et les expériences de Knoller et Botz au tunnel aérodynamique.  
*Aéronautique*, 4<sup>e</sup> année, No. 42 (nov. 1922), Paris, pp. 341-342, ill.
- DIRECTION finding. Radio direction finding in flying machines.  
*Nature*, Vol. 110, No. 2742 (July 8, 1922), London, p. 52.
- DIRECTION instruments. See National Advisory Committee for Aeronautics: Report No. 128. Aeronautic instruments. Section IV: Direction instruments.
- DIRIGIBLES, semirigid. See Crocco, G. Arturo: Il dirigibile semirigido italiano.
- DIRIGIBLES. See Franzen, L.-P.: Les dirigeables.
- See Garufi, E.: Projet de dirigeable. système Vaugean-Gargiulo, à raréfaction variable.
- See Hirschauer: Doit-on organiser des lignes aériennes par ballons dirigeables?
- See Hirschauer, L.: Le trafic commercial par ballons dirigeables.
- See Knight, William: The Rish nonrigid dirigible.
- See Margarit, Ad: Dirigibles semirrígidos.
- DISTRICT of Columbia. Aviation bill for District of Columbia.  
*Aviation*, Vol. 12, No. 25 (June 19, 1922), New York, p. 724.
- DOBKEVICIUS. The Dobkevicius monoplane.  
*Aer. Eng. Suppl. The Aeroplane*, Vol. 23, No. 13 (Oct. 13, 1922), London, p. 310, ill., diagr.
- DÖRING, HERMANN. Der Ausschluss der Haftpflicht gegenüber Passagieren und Personal im Luftverkehr.  
*Luftweg*, Nr. 5 (15 Mai 1922), Berlin, p. 32.
- DOLLFIUS, CHARLES. L'avion silencieux et le moteur silencieux.  
*Aéronautique*, 4<sup>e</sup> année, No. 36 (mai 1922), Paris, pp. 145-147, ill.
- Historique de la photographie aérienne.  
*Aéronautique*, 4<sup>e</sup> année, No. 37 (juin 1922), Paris, pp. 177-178, ill.
- Les planeurs du premier Congrès expérimental d'aviation sans moteur.  
*Aéronautique*, 4<sup>e</sup> année, No. 39 (août 1922), Paris, pp. 249-251, ill.
- See Hirschauer, L., et Charles Dollfus: L'année aéronautique. 3<sup>e</sup> année, 1921-22.
- See Tissandier, Paul, and Charles Dollfus: L'Aéronautique des origines à 1922.
- DOLPH, R. J. Improvements in aircraft power plants. Engines should embody even greater lightness and compactness than to-day, and obtain them without sacrifice in reliability.  
*Aviation*, Vol. 12, No. 12 (Mar. 20, 1922), New York, pp. 345-346.
- DOMINION of Canada. Report of the Air Board for the year 1922.  
 Ottawa, F. A. Acland, Printer to the King's Most Excellent Majesty, 1922, p. 75, ill., maps, tables.
- DONALDSON, J. O. Escaping from two German prisons.  
*U. S. Air Service*, Vol. 7, No. 5-6 (June-July 1922), Washington, D. C., pp. 28-32, 27-31, ill.
- DOOLITTLE, JAMES H. Across the continent in 22 hours. Lieutenant Doolittle's wonderful feat.  
*Aerial Age*, Vol. 15, No. 19 (Nov. 1922), New York, pp. 586, 591, ill.

- Doolittle, James H. The story of a great flight.  
Aviation, Vol. 13, No. 23 (Dec. 4, 1922), New York, p. 747, ill.
- Dornier. Aerodynamische Verfeinerung der Flugzeuge.  
Motorwagen, 25 Jahrg., Heft 27 (30. Sept. 1922), Berlin, pp. 525-527, ill.
- The Dornier Dragonfly, flying boat landing on the ice.  
Flight, Vol. 14, No. 34 (Aug. 24, 1922), London, p. 487, ill.
- Dornier Dragonfly lands on ice.  
Aviation, Vol. 12, No. 23 (June 5, 1922), New York, p. 667, ill.
- The Dornier Falke, fighter.  
Aer. Eng. Suppl. The Aeroplane, Vol. 23, No. 24 (Dec. 13, 1922), London, pp. 451-452, ill.
- Der Dornier Wal, ein neues Zweimotoren-Verkehrsflugboot.  
Luftweg, Nr. 10 (15. Juli 1922), Berlin, p. 102, ill.
- Das neue Landverkehrsflugzeug Dornier, Komet, 1922.  
Motorwagen, 25. Jahrg., Heft 30 (31. Okt. 1922), Berlin, pp. 579-581.
- A Swiss-built Dornier.  
Aer. Eng. Suppl. The Aeroplane, Vol. 23, No. 1 (July 5, 1922), London, p. 10, ill.
- See Meyer, E.: Das neue Zweimotorenverkehrsflugboot, Dornier *Wal*.
- Douglas, Wm. D. Testing aircraft to destruction.  
Aeron. Journ., Vol. 26, No. 138 (June 1922), London, pp. 195-230, ill., diagr.  
Flight, Vol. 14, No. 10 (Mar. 9, 1922), London, pp. 151-152.
- Douhéret. L'hélicoptère Douhéret.  
L'Aéophile, 30e année, Nos. 9-10 (1er-15 mai 1922), Paris, p. 140.
- Douhet, Giorgio. Il dominio dell'aria.  
Gazz. Aviaz., 1922, Anno 4, No. 37, Milano, p. 3; No. 38, p. 1; No. 35, p. 2; No. 42, p. 1.
- In merito ad una conferenza del Col. Moizo.  
Gazz. Aviaz., 1922, Anno 4, No. 45, Milano, p. 2.
- Dow, D. B. Gasoline recovered from still vapors.  
Automotive Manufacturer, Vol. 44, No. 5 (Aug. 1922), New York, pp. 21-23.
- Downwash. See Diehl, Walter S.: The determination of downwash.
- Drag. See Aeronautical Research Committee. Report Nos. 762, 770.
- See National Advisory Committee for Aeronautics: Report No. 137. Point drag and total drag of Navy struts No. 1 modified.
- See National Advisory Committee for Aeronautics: Report No. 138. The drag of C class airship hull with varying length of cylindric midships.
- See National Advisory Committee for Aeronautics: Technical Notes No. 92. Full scale determination of the lift and drag of a seaplane.
- Dresden-Berlin. See Berlin-Dresden.
- Driggs, L. L. Fighting forest fires from the air.  
Outlook, Vol. 127, No. (Jan. 26, 1921), New York, pp. 133-142, ill.
- Drosne, P. Les lois de la résistance de l'air et des fluides.  
Techn. Aér., 13e année, n. s., No. 12 (15 oct. 1922), Paris, pp. 354-357.
- Drury, Audrey. World metric standardization—an urgent issue.  
San Francisco, World Metric Standardization Council, 1922, pp. 524.
- Drzewiecki. Le vol d'un avion sans moteur.  
L'Aéophile, 30e année, Nos. 7-8 (1er-15 avril 1922), Paris, pp. 99-100.

- DUGIT altimeter. *See* Blakely, J. H.: The Dugit altimeter and air speed indicator. Instruments based on application of Archimedean spiral give increased precision and a uniform sensitiveness.
- DUMANOIS. Le cycle Diesel et le moteur d'aviation.  
Techn. Aér., 13e année, n. s., Nos. 8, 9 (15 juin, juil. 1922), Paris, pp. 235-242, 267-276, ill.  
Technique Automobile et Aérienne, Vol. 13, No. 118 (1922), Paris, pp. 90-95, ill.
- DUNN, THOMAS F. Keeping the record straight.  
U. S. Air Service, Vol. 7, No. 5 (June 1922), Washington, D. C., p. 33.
- DURALUMIN. *See* Daniels, R. W.: Duralumin.
- DURAND, WILLIAM FREDERICK, and E. P. LESLEY. Experimental research on air propellers. V.  
National Advisory Committee for Aeronautics, Report No 141, Sept. 16, 1922, Washington, Government Printing Office, 1922, p. p. 82, ill., diagrs., table.
- DUTCH East Indies. Aviation in the Dutch East Indies.  
Aviation, Vol. 12, No. 25 (June 19, 1922), New York, p. 725.
- DUVAL, A. Maps and navigation methods.  
Aerial Age, Vol. 15, No. 9 (May 8, 1922), New York, pp. 198-199.
- DUVAL, A-B., and L. HÉBRARD. Traité pratique de navigation aérienne.  
Paris, Gauthier-Villars et Cie, 1922, p. p. 60.  
Reviewed in: Ala d'Italia, Anno 1, Num. 5 (Nov. 1922), Milano, p. 151.  
Vliegfeld, 6de Jaarg., No. 10 (Oct. 1922), Amsterdam, p. 263.  
Zeitschr. Flugt. Motorl., 13. Jahrg., 22. Hft. (15. Nov. 1922), München, p. 316.
- DYER, J. W. Rubber as applied to aircraft.  
Engineering, Vol. 114, No. — (Oct. 6, 1922), London, pp. 434-435.  
Flight, Vol. 14, No. 41 (Oct. 12, 1922), London, p. 600.
- DYNAMIKOS. Undeveloped possibilities of wireless for commercial aeroplanes.  
Aero. Eng. Suppl. The Aeroplane, Vol. 2, No. 21 (May 24, 1922), London, p. 371.
- Wireless at the air conference.  
Aer. Eng. Suppl. The Aeroplane, Vol. 22, No. 17 (Apr. 26, 1922), London, p. 300.
- E.**
- E. P. Le grand tourisme aérien. Le voyage au Maroc de M. Laurent Eynac.  
L'Aérophile, 30e année, Nos. 23-24 (1er-15 déc. 1922), Paris, pp. 369-370.
- Guynemer au Panthéon. (30 avril 1922).  
L'Aérophile, 30e année, Nos. 9-10 (1er-15 mai 1922), Paris, p. 134.
- EASTER, EWING. Notes on landing places for seaplanes along the Atlantic coast.  
Aerial Age, Vol. 15, No. 8 (May 1, 1922), New York, pp. 174-175.
- EATON, H. N. Aerial navigation and navigating instruments.  
National Advisory Committee for Aeronautics, Report No. 131, June 21, 1922, Washington, Government Printing Office, 1922, pp. 5-44, ill., diagrs.
- Power plant instruments. Part IV. Air pressure and oil-pressure gauges.  
National Advisory Committee for Aeronautics, Report No. 129, Sept. 30, 1922, Washington, Government Printing Office, 1922, pp. 57-62, ill., table.
- EATON, H. N., and G. H. KEULEGAN. Sylphon diaphragms, a method for predicting their performance for purposes of instrument design.  
National Advisory Committee for Aeronautics, Technical Notes No. 90, May 1922 (Mimeo graph), Washington, p. 14, ill., diagr.  
Aerial Age, Vol. 15, No. 16 (June 26, 1922), New York, pp. 370-372.
- EBERHARDT, C. Vom pteranodon.  
Flugsport, 14. Jahrg., Nr. 6 (15. März 1922), Frankfurt, pp. 94-95.

**EDUCATION.** *See* Seymour, Lester Draper: Research University at Washington, D. C., giving training in aviation.

— *See Training.*

**EFFICIENCY.** On efficiency and economy.

Aeroplane, Vol. 22, No. 6 (Feb. 8, 1922), London, pp. 93-96.

**EGGLESTON.** Aerodynamical report and tests on the Eggleston air-cell giant biplane. Flight, Vol. 14, No. 5 (Feb. 2, 1922), London, pp. 70-71, ill., diagr.

**EGTVEDT, C. L.** Flighty reflections.

Soc. Auto. Eng. Journ., Vol. 10, No. — (June 1922), New York, pp. 466-468.

**EIFFEL, GUSTAVE.** Méthode permettant, pour les essais des ailes d'avions, au Laboratoire Eiffel d'obtenir des polaires comparatives selon que les attaches sont prises en dessus ou en dessous de l'aile.

L'Aérophile, 30<sup>e</sup> année, No. 15-16 (1er-15 août 1922), Paris, pp. 227-230, ill.

**EIGHTEEN years of flight.**

Aviation, Vol. 12, No. 1 (Jan. 2, 1922), New York, p. 7.

**EISENLOHR, ROLAND.** Erfolge deutscher Flugzeuge beim Flugmeeting in Zürich. Motorwagen, 25. Jahrg., Heft 29 (30. Okt. 1922), Berlin, pp. 565-566.

— Kann uns Maneyrols Rekordflug neues bringen? Zeitschr. Flugt. Motorl., 13. Jahrg., 24. Hft. (30. Dez. 1922), München, pp. 337-338.

— Die technik der Rhön-Flugzeuge 1922. Luftfahrt, Vol. 20, No. 10 (Oct. 1922), Berlin, pp. 134-138, ill.

— Zum Rhön-Segelflug-Wettbewerb 1922. Motorwagen, 25. Jahrg., Heft 18 (30. Juni 1922), Berlin, pp. 357-358.

**ELECTRICAL equipment.** El equipo eléctrico de los aeroplanos.

Ibélica, No. 450 (4 Nov. 1922), Tortosa, pp. 264-265.

Reference to British Electrical and Allied Manufacturers' Ass'n, Vol. 10, p. 299.

**ELIAS.** The Elias *EM-1* expeditionary airplane.

Aviation, Vol. 12, No. 1 (Jan. 2, 1922), New York, p. 9, ill.

— Elias & Bro. put new commercial plane on market. Aerial Age, Vol. 15, No. 16 (June 26, 1922), New York, p. 368.

**ELIAS-STUPAR.** Elias-Stupar *ES-1* commercial airplane. Twin-engined tractor biplane, seating five persons, built to meet requirements of commercial operation. Aviation, Vol. 13, No. 1 (July 3, 1922), New York, p. 8, ill.

**ELIEL, LEON T.** Engineering with the eagles. The inside story of aerial photography. The Ace, Vol. 3, No. 6 (June 1922), Los Angeles, pp. 9, 14, diagr.

— "Sit tight and shoot." A map making scramble in the Hollywood air. The Ace, Vol. 5, No. 1 (Aug. 1922), Los Angeles, p. 9, ill.

**ELSEY, H. M.** *See* Cady, H. P., H. M. Elsey, and E. V. Berger: Solubility of helium in water.

**ELVORSON.** L'oscilloscope Elverson.

Aéronautique 4<sup>e</sup> année, No. 40 (Sept. 1922), Paris, p. 301, ill.

**ELY, EDMUND.** The status of aircraft insurance.

Aeronautical Digest, Vol. 1, No. 8 (Nov. 1922), New York, pp. 183-189.

**ENDURANCE.** Airplane endurance.

Scien. Amer. Vol. 126 (Mar. 1922), New York, p. 165.

**ENGINES.** Aeromarine aircraft engine sets world's record in endurance test.

Aerial Age, Vol. 15, No. 18 (Sept. 1922), New York, pp. 449-450, ill.

— American influence felt in German design.

Automotive Manufacturer, Vol. 64 (44), No. 1 (Apr. 1922), New York, p. 17.

- ENGINES.** Amerikanische Flug motoren 1921-22.  
 Nachr. Luftf., Jahrg. 3, Nr. 23 (11. Juni 1922), Berlin, p. 311.
- Are German aircraft engines more efficient?  
 Aerial Age, Vol. 15, No. 21 (Dec. 1922), New York, p. 609.
- British engines for foreign aircraft.  
 Engineer, Vol. 133, No. 3449 (Feb. 3, 1922), London, p. 125.
- Comparative performance test of X. B. I.-A. equipped with high compression Wright model "H" and Packard 1237 engines.  
 Air Service Information Circular, Vol. 4, No. 327 (Mar. 15, 1922), Washington, D. C., p. 8, ill.
- Le concours de moteurs d'aviation de 1924.  
 L'Aérophile, 30e année, Nos. 3-4 (1er-15 fév. 1922), Paris, p. 51.
- Le concours de moteurs de grande endurance pour l'aéronautique.  
 L'Aérophile, 30e année, Nos. 5-6 (1er-15 mars 1922), Paris, pp. 79-80.
- Cooling system test of Le Pere P-70 equipped with side radiators.  
 Aerial Age, Vol. 15, No. 15 (June 19, 1922), New York, pp. 343-344, 352, ill.
- Cooling system test of the Curtiss JN-6 with Packard 1A-744 engine equipped with side radiators.  
 Air Service Information Circular, Vol. 3, No. 294 (Oct. 20, 1921), Washington, D. C., p. 12, ill.
- Crude oil aero engines.  
 Engineer, Vol. 135, No. 3503 (Feb. 16, 1923), London, p. 171.
- Engine installation.  
 Aerial Age, Vol. 15, No. 5 (Apr. 10, 1922), New York, p. 99.
- Franco-British aero engines.  
 Engineer, Vol. 133, No. 3460 (Apr. 21, 1922), London, p. 437.
- Heavy-oil engines for aircraft.  
 Aviation, Vol. 12, No. 19 (May 8, 1922), New York, p. 533.
- High temperature causes excessive valve-seat wear.  
 Journ. Soc. Aut. Eng., Vol. 11, No. 6 (Dec. 1922), New York, p. 566.
- Italienische flugmotoren.  
 Nachr. Luftf., Jahrg. 3, Nr. 47 (26. Nov. 1922), Berlin, pp. 595-596.
- Luftgekühlte Standflugmotoren in Sternform.  
 Autom. Flugv., Nr. 3, 1922, Berlin, pp. 92-93.
- Light high-power engine of British design.  
 Pop. Mech., Vol. 37, (Apr. 1922), Chicago, p. 541.
- Motorbau.  
 Nachr. Luftf., Jahrg. 3, Nr. 26 (2. Juli 1922), Berlin, pp. 350-352.
- Motoren?  
 Flugsport, 14. Jahrg., Nr. 4-5 (5. März 1922), Frankfurt a. M., pp. 57-58.
- The new B. M. W. engines.  
 Aerial Age, Vol. 15, No. 18 (Sept. 1922), New York, p. 467, ill.
- A new low-power German radial air-cooled aero engine.  
 Aerial Age, Vol. 15, No. 17 (Aug. 1922), New York, p. 421, ill.
- New Navy seaplane engine.  
 Aerial Age, Vol. 15, No. 18 (Sept. 1922), New York, pp. 447-448, ill.
- Single versus multiple engines.  
 Aviation, Vol. 12, No. 1 (Jan. 2, 1922), New York, p. 5.
- Standard engines of the Air Service.  
 Aviation, Vol. 12, No. 17 (Apr. 24, 1922), New York, p. 480.

ENGINES. Starting aero engines at low temperatures.

Wireless and Aviation News, Vol. 5, No. 2 (Apr. 1922), Toronto, p. 31.

— Starting aircraft engines at low temperatures.

Aviation, Vol. 12, No. 18 (May 1, 1922), New York, p. 505.

— Two new aero engines: Napier "Lion," Bristol Aeroplane Company's "Cherub."

Engineer, Vol. 135, No. 3505 (Mar. 2, 1923), London, p. 227.

— The typical airplane motor of to-day.

Wireless and Aviation News, Vol. 5, No. 1 (Mar. 1922), Toronto, p. 25.

— See Aeronautical Research Committee: Internal combustion engine sub-committee.

— See Angle, G. D.: Airplane engine encyclopedia.

— See Armstrong-Siddeley: The Armstrong-Siddeley "Jaguar" radial aero engine. An interesting air-cooled engine of 350 horsepower.

— See Bagnall-Wild, R. K.: Engine installation.

— See Bagnall-Wild, R. K.: Installatie van vliegtuigmotoren.

— See Bauly, I.: Het nuttig effect der moderne snellopende explosiemotoren.

— See Biggar, P. E.: The aeroplane engine.

— See Bristol: The Bristol air-cooled radial engines.

— See Bristol: The type test of the Bristol "Lucifer" engine.

— See Capetti, Antonio: Alcune recenti sistemazioni per le prove sui motori leggeri nel Laboratorio di Aeronautica del R. Politecnico di Torino.

— See Cawley, J. R.: Wright aircraft engines.

— See Chorlton, Alan E. L.: Aero engines.

— See Chorlton, Alan E. L.: Special light weight aero engines.

— See Christiansen, O. C.: Flist test of antiknock injector.

— See Costantino, Nigra: Motori ed apparecchi.

— See Curtiss: The Curtiss model CD-12, 400-horsepower aero engine.

— See Diamond, James E.: The aluminum-alloy piston.

— See Diesel: Diesel engines for aircraft.

— See France: The French aero engine competition. Two prizes of 1,000,000 francs each assigned to competition for best 350-450 horsepower aircraft engine.

— See France: The French 2,000,000 francs engine competition. Extracts from the regulations.

— See Fullerton, A. L.: Commercializing the airplane engine. Lighter engines per horsepower requiring less space with increase of all round efficiency and reliability.

— See Gibson A. H.: The relationship between air temperature and the power of a petrol engine.

— See Günther, Otto: Luftgekühlte Sternflugmotoren.

— See Hallett, George E. A.: A method of developing aircraft engines.

— See Heron, S. D.: Air-cooled airplane engines.

— See Heron, S. D.: Some aspects of air-cooled cylinder design and development.

- ENGINES. *See* Hourwich, Iskander: Power output and air temperature.
- *See* Hourwich, Iskander: Water jacket temperature and performance. Investigation shows how the variation of water-jacket temperature affects performance of aviation engines.
- *See* Instruments: A useful aid to engine timing.
- *See* Jehle, Ferdinand, and Frank Jardine: Aluminum pistons.
- *See* Judge, Arthur W.: Automobile and aircraft engines in theory and experiment.
- *See* Lawrance engine: Lawrence engine runs 200-hour test.
- *See* Lawrance engine: Lawrance model J1 air-cooled engine. Details of power plant used in TR1 seaplane which won Curtiss Marine trophy.
- *See* Magee, John: Piston rings.
- *See* Manes, C. R.: Piston rings and ring grooves.
- *See* Marks, Lionel, S.: The airplane engine.
- *See* Martinot-Lagarde: Les moteurs d'aviation.
- *See* Morse, J. L.: History and development of internal-combustion motors.
- *See* Müller, Friedrich: Ueber den Einfluss der Flughöhe auf das Verhalten der Flugmotoren.
- *See* Napier: The test of the Napier Lion engine.
- *See* National Advisory Committee for Aeronautics: Report No. 134. Performance of Maybach 300-horsepower airplane engine. By S. W. Maybach.
- *See* National Advisory Committee for Aeronautics: Report No. 135. Performance of B. M. W. 185-horsepower airplane engine. By S. W. Sparrow.
- *See* National Advisory Committee for Aeronautics: Technical Notes No. 101. Comparing maximum pressures in internal-combustion engines.
- *See* Nusselt, Wilhelm: Die Selbstentzündung ausströmenden Wasserstoffes.
- *See* Osborne, H. C.: The Bellows (Sylphon) fuel pump for Liberty "12" and Wright model "H" engines.
- *See* Pomeroy, L. H.: The fundamentals of internal-combustion engine design.
- *See* Parsons, S. R., and D. R. Harper: Radiators for aircraft engines.
- *See* Ricker, Chester S., and John C. Moore: Valve actions in relation to internal-combustion engine design.
- *See* Rowledge, A. L.: The importance of low weight per B. H. P. and low fuel consumption per B. H. P. of the power plant for aeroplanes.
- *See* Ryder, E. A.: Aeromarine model U873 engine. A development of the U8D in which numerous refinements have been incorporated.
- *See* Siemens-Halske: A new low-power German radial air-cooled aero engine. The 60-horsepower, 5-cylinder Siemens-Halske.
- *See* Siemens-Halske: The new Siemens-Halske aero engine.
- *See* Statax: A really light low-powered engine at last? The German Statax 3-cylinder rotary.

**ENGINES.** *See* Taylor, C. F.: Curves for estimating the fuel consumption of an aviation engine on the basis of piston displacement and revolutions per minute.

— *See* Tillinghast, T. E.: Variation in volumetric efficiency of an engine with valve lift.

— *See* Toyotarô Suhara and Naozo Sato: On the distribution and variation of temperature in the cylinder and piston of an aircraft engine.

— *See* Werner, Erich: *Triebwerkanordnung und Flugsicherheit*.

— *See* Wimperis, H. E.: The internal-combustion engine.

**ENGLAND.** *See* Great Britain.

**ENOCH,** O. Zur Frage der Kraftverluste bei Luftreifen.

Motorwagen, 25. Jahrg., Heft 28 (10. Okt. 1922), Berlin, pp. 529-531.

**ENTLER.** Another low-powered German machine.

Aer. Eng. Suppl. The Aeroplane, Vol. 23, No. 1 (July 5, 1922), London, p. 10, ill.

— The Entler all-metal sporting cantilever biplane.

Flight, Vol. 14, No. 26 (June 29, 1922), London, p. 375, ill.

**ENVELOPES:** *See* National Advisory Committee for Aeronautics: Technical Notes No. 86. Surface area coefficients for airship envelopes.

**EPPINGER, CURT.** Die Begriffsbestimmungen des obersten Rates über die Unterscheidung von Militär- und Zivilluftfahrzeugen.

Zeitschr. Flugt. Motorl., 13. Jahrg., 8. Hft. (29. Apr. 1922), Berlin, pp. 108-110.

— XI. Ordentliche Mitglieder-Versammlung der Wissenschaftlichen Gesellschaft für Luftfahrt E. V.

Zeitschr. Flugt. Motorl., 13. Jahrg., 13. Hft. (15. Juli 1922), München, pp. 185-188.

**EREDIA,** F. L'organizzazione meteorologica internazionale in relazione con l'aeronautica.

Atti Assoc. Ital. Aeroteen., 1922, Vol. 2, n. 1-2, Roma, pp. 15-27.

**ERNOUL.** The Ernoul commercial monoplane "F. A. T. M. A. 2." An interesting French machine now being built.

Flight, Vol. 14, No. 6 (Feb. 9, 1922), London, pp. 89-90, ill., diagr.

**ESNAULT-PELTIERIE.** L'affaire Esnault-Pelterie en Cour d'Appel.

L'Aérophile, 30<sup>e</sup> année, Nos. 21-22 (1er-15 nov. 1922), Paris, p. 339; Nos. 23-24 (1er-15 déc. 1922), p. xix.

**ESTOPPY, J.** Variable factors in aerial bombing.

U. S. Air Service, Vol. 7, Nos. 7-8 (Aug.-Sept. 1922), Washington, D. C., pp. 15-21, 28-31.

**ÉTIENNE, RAOUL.** L'aviation en Finlande.

Aéronautique. 4<sup>me</sup> année, No. 42 (Nov. 1922), Paris, pp. 353-357, ill.

**EUROPE.** Aerial survey of Europe.

Wireless and Aviation News, Vol. 5, No. 2 (Apr. 1922), Toronto, p. 31.

— Air transport in Europe.

Aerial Age, Vol. 15, No. 7 (Apr. 24, 1922), New York, pp. 147, 166.

— Commercial aviation in Europe.

Aeronautical Digest, Vol. 1, No. 7 (Oct. 1922), New York, p. 138.

Aviation, Vol. 13, No. 13 (Sept. 25, 1922), New York, p. 375.

— European air line requirements. Combine of German, Dutch, and Scandinavian air lines issues technical requirements for commercial aviation.

Aviation, Vol. 12, No. 10 (Mar. 6, 1922), New York, pp. 287-288.

— European air traffic.

Aerial Age, Vol. 15, No. 21 (Dec. 1922), New York, p. 607.

- EUROPE. International air lines in Europe.  
*Aerial Age*, Vol. 15, No. 11 (May 22, 1922), New York, p. 245.
- See Gill, W. S.: Airplane travel in Europe.
- See Records: The European duration record.
- See Upson, Ralph: Aeronautical lessons from Europe.
- EVERLING, E. Luftfahrt im Schulunterricht.  
*Zeitschr. Flugt. Motorl.*, 13. Jahrg., 8. Hft. (29. Apr. 1922), Berlin, p. 113.
- Messgeräte für Flugzeuge.  
*Zeit. Ver. Deutsch Ing.*, Bd. 66, No. 13 (Apr. 1, 1922), Berlin, pp. 322-326, ill.
- Die neue Theorie der Tragflügel und Luftschauben.  
*Zeit. des Ver. Deutsch. Ing.*, Bd. 65, No. 44 (Oct. 29, 1921), Berlin, pp. 1142-1143.
- Ein neues Rechenblatt für Flugleistungen.  
*Zeitschr. Flugt. Motorl.*, 13. Jahrg., 18. Hft. (30. Sept. 1922), München, pp. 249-251.
- Sicherheitsvorkehrungen für Flugzeuge.  
*Motorwagen*, 25. Jahrg., Heft 24 (31. Aug. 1922), Berlin, pp. 453-467; Heft 27 (30. Sept.) pp. 511-516, ill.
- EXPERIMENTAL study of habituation to rotation.  
*Aerial Age*, Vol. 15, No. 10 (May 15, 1922), New York, p. 224.
- EXPOSITIONS. VIII. Exposición Internacional de Aeronáutica.  
*Iberica*, Tortosa, No. 445 (30 Sept. 1922), p. 181.
- EVTINGE, BRUCE. Flying guide and log book.  
New York, John Wiley & Sons (Inc.), 1922.
- EYNAC, LAURENT. See Aimé, Emmanuel: Deux aviateurs à la tête de l'aviation française.  
— See E. P.: Le grand tourisme aérien. Le voyage au Maroc de M. Laurent Eynac
- F.**
- F. A. I. See Records: New F. A. I. duration record.
- F-5-L BOAT. See National Advisory Committee for Aeronautics: Technical Notes No. 116. F-5-L boat seaplane, comparative performance with direct drive and geared engines.
- F-5-L SEAPLANE. See National Advisory Committee for Aeronautics: Technical Notes No. 118. F-5-L seaplane, performance characteristics.
- FABRICS. See Aeronautical Research Committee. Report No. 757.
- FACILITIES. Listing aviation facilities.  
*Aviation*, Vol. 12, No. 18 (May 1, 1922), New York, p. 503.
- FAGE, A., and R. G. HOWARD. A consideration of air-screw theory in the light of data from an experimental investigation of the distribution over pressure over the entire surface of an air-screw blade.  
Aeronautical Research Committee Report R. and M. 681, London, 1922.
- FAIREY. A Fairey load carrier.  
*Aer. Eng. Suppl. The Aeroplane*, Vol. 22, No. 3 (Jan. 18, 1922), London, p. 50, ill.
- The new Fairey long-distance seaplane. Rolls-Royce "Eagle" engine.  
*Flight*, Vol. 14, No. 3 (Jan. 19, 1922), London, pp. 35-36, ill.
- FAIREY, C. R. Seaplanes.  
*Engineer*, Vol. 135, No. 3503 (Feb. 16, 1923), London p. 174.

- FAIRCHILD, S. M. Winged surveyors; what aerial photography is doing for industry and science.  
Scient. Amer., Vol. 126, (Mar. 1922), New York, pp. 157-160, ill., map.
- FAKIR. Fakir fuel pump.  
Aerial Age, Vol. 15, No. 21 (Dec. 1922), New York, pp. 586-587, diagr.
- FALCON. The Falcon metal-tipping scheme for air screws.  
Flight, Vol. 14, No. 46 (Nov. 16, 1922), London, p. 675, diagr.
- FARMAN. Les essais de l'avion géant Farman du dernier Salon de l'Aéronautique.  
L'Aéophile, 30e année, Nos. 9-10 (1er-15 mai 1922), Paris, p. 130, ill.
- Le moteur d'avion Farman, 600 h. p., 18 w. d.  
Aéronautique, 4me année, No. 42 (nov. 1922), Paris, pp. 343-348, ill.
- Farman A2 observation airplane.  
Aviation, Vol. 13, No. 23 (Dec. 4, 1922), New York, p. 750, ill.
- See Petit, Henri: Le moteur d'aviation Farman.
- FARWELL, H. G. European and American automotive brake and clutch practice.  
Journ. Soc. Aut. Eng., Vol. 11, No. 1 (July 1922), New York, pp. 67-80, ill.
- FAUNCE, C. Q. Airliner and its inventor, Alfred W. Lawson.  
Columbus, Ohio, Rockcastel Pub. Co., 1921, p. 206.
- FAURE-FAVIER, LOUISE. Un monument à la mémoire de Latham.  
L'Aéophile, 30e année, Nos. 15-16 (1er-15 août 1922), Paris, pp. 249-250.
- Le premier voyage aérien nocturne: Paris-Londres-Paris.  
L'Aéophile, 30e année, Nos. 11-12 (1er-15 juin 1922), Paris, pp. 178-179, ill.
- See Aimé, Emmanuel: Aviatrice contemporaine. Louise Faure-Favier.
- FÉDÉRATION AÉRONAUTIQUE INTERNATIONALE. See G. B.: Conférence de la F. A. I. tenue à Rome en octobre.
- FELLOWSHIPS. See Royal Aeronautical Society: Associate fellowship examination, September 25-26, 1922.
- FICKER, H. Veränderlichkeit des luftdruckes in der unteren troposphäre über Lindenberg.  
Arbeiten Preuss. Aeron. Observ. bei Lindenberg, 14. bd., 1922, pp. 85-103.
- FILM. "Flieger," Deutschlands erster Fliegerfilm.  
Autom. Flugv., Nr. 3, 1922, Berlin, p. 94, ill.
- FILON, L. N. G., and H. T. JESSUP. On the stress-optical effect in transparent solids strained beyond the elastic limit.  
Phil. Trans. Roy. Soc. London, Ser. A., Vol. 223, No. A607, London, 1922, pp. 89-125. Pub. July 14, 1922.
- FIRE prevention. See Aeronautical Research Committee: Reports and memoranda, No. 795. (F. 1.) The prevention of fire in single-engined aeroplanes. Report of the fire prevention subcommittee, January, 1922.
- FISKE, H. C. Air photos as plane-table sheets aid mapping.  
Engineering News-Record, Vol. 89, No. — (Oct. 5, 1922), New York, pp. 552-554, maps.
- FISSE, JOHANN VOLKMAR. Die Luftfahrt als Verkehrsmittel.  
Greifswald, Gesellschaft von Freunden und Förderern der Universität, 1922, pp. 192.  
Reviewed in: Zeitschr. Flugt. Motorl., 13. Jahrg., 10. Hft. (31. Mai 1922), München, p. 145.
- FLAGLE, W. W. See Schwartz, H. A., and W. W. Flagle: Malleable-iron drilling data.
- FLANDIN, PIERRE-ETIENNE. L'aviation militaire devant le parlement.  
Aéronautique, 4me année, No. 32 (jan. 1922), Paris, pp. 21-22.

- FLANDIN, PIERRE-ETIENNE.** Le congrès des sociétés affiliées à l'Aéro-Club de France.  
L'Aéophile, 30<sup>e</sup> année, Nos. 17-18 (1er-15 sept. 1922), Paris, p. 263.
- See Aimé, Emmanuel: Deux aviateurs à la tête de l'aviation française.
- FLEMING, A. P. M., and J. G. PEARCE.** Research in industry; the basis of economic progress.  
London, Isaac Pitman & Son, 1922, p. 260.
- FLEURY, R DE.** Un procédé de réalisation de charpente ultra-légère à grande rigidité locale.  
Techn. Aér., 13<sup>e</sup> année, n. s., No. 7 (15 mai 1922), Paris, pp. 199-201, ill.
- FLORIDA.** Flying boat traffic increases Florida. Aeromarine airways carrying passengers from all over the world.  
Aviation, Vol. 12, No. 9 (Feb. 27, 1922), New York, pp. 259-260, ill.
- FLOWERS, JOHN B.** Introducing the two-way airplane.  
Aviation, Vol. 13, No. 1 (July 3, 1922), New York, pp. 9-10, ill.
- FLUID resistance.** See National Advisory Committee for Aeronautics: Technical Notes No. 121. Further information of the laws of fluid resistance.
- FLYING.** Human factors in flying.  
Aviation, Vol. 12, No. 19 (May 8, 1922), New York, p. 545.
- Showing an aviator how he flies. N. A. C. A. develops ingenious instrument for recording behavior of an airplane in flight.  
Aviation, Vol. 12, No. 23 (June 5, 1922), New York, pp. 658-659, ill.
- FLYING services.** On the history of the flying services.  
Aeroplane, Vol. 23, No. 7 (Aug. 16, 1922), London, pp. 121-123.
- FOG.** Cables to guide aircraft flying in fog.  
Literary Digest, Vol. 73, No.— (Apr. 22, 1922), New York, pp. 71-73, diagr.
- Controlling aeroplanes in fog.  
Engineer, Vol. 133, No. 3449 (Feb. 3, 1922), London, p. 125.
- Guiding airplanes through fog.  
Aviation, Vol. 12, No. 10 (Mar. 6, 1922), New York, p. 279.
- Safe flying in fog.  
Aviation, Vol. 12, No. 11 (Mar. 13, 1922), New York, p. 321.
- FOKKER.** A flying scale model of the Fokker F III cantilever monoplane.  
Aerial Age, Vol. 15, No. 5 (Apr. 10, 1922), New York, p. 113, diagr.
- The Fokker F4 passenger transport airplane.  
Aviation, Vol. 12, No. 6 (Feb. 6, 1922), New York, p. 169, diagr.
- Fokker-überlandflug-preis.  
Zeitschr. Flugt. Motorl., 13. Jahrg., 19-20. Hft. (30. Okt. 1922), München, p. 289.
- Fokker's first flight in England. Gliding demonstration over South Downs.  
Flight, Vol. 14, No. 41 (Oct. 12, 1922), London, pp. 592-593, ill.
- Het Fokker-schoolvliegtuit, type S. I.  
• Vliegveld, 6de Jaarg., No. 1 (Jan. 1922), Amsterdam, pp. 8-9, ill.
- Log of the duration record Fokker T2.  
Aviation, Vol. 13, No. 24 (Dec. 11, 1922), New York, p. 773.
- The new Fokker amphibian flying boat. 450-horsepower Napier "Lion" engine.  
Flight, Vol. 14, No. 51 (Dec. 21, 1922), London, pp. 772-773, ill.
- El nuevo aeroplano con camarote de Fokker.  
Uebersee-Post, 15. Jahrg., 1922 (15. Apr., 1922), Leipzig, p. 2012, ill.

- FOKKER.** Official performance test of Fokker monoplane D-VIII equipped with 110-horsepower Oberursel engine.  
 Air Service Information Circular, Vol. 3, No. 288 (Oct. 1, 1921), Washington, D. C., p. 8, ill.
- Onderzoek naar den invloed van een uitsnijding in den voorrand van het draagvlak van het Fokker F3 vliegtuig op de aerodynamische eigenschappen. Rapport A 29. Rijksstudiedienst voor de Luchtvaart, Amsterdam.  
 De Ingenieur, 33e Jaarg., No. 3 (20 Jan. 1923), Den Haag, pp. 50-54, diagr., ill.
- FORBES, W. A. D.** [The internal-combustion turbine.]  
 Engineer, Vol. 133, No. 3450 (Feb. 10, 1922), London, p. 154.
- FORESTRY.** Airplane fire patrol abolished.  
 Literary Digest, Vol. 72, No. 8 (Feb. 25, 1922), New York, p. 26, ill.
- Airplane forest patrol makes good western record in 1921.  
 Engineering News-Record, Vol. 88, No. (Jan. 26, 1922), New York, pp. 163, ill.  
 Journal of Electricity, Vol. 48 (Feb. 15, 1922), San Francisco, p. 157.
- Discontinuing the airplane forest patrol.  
 Journal of Electricity, Vol. 48 (Jan. 15, 1922), San Francisco, p. 45.
- Operation of aeroplanes over forested areas.  
 Aerial Age, Vol. 15, No. 1 (Mar. 13, 1922), New York, pp. 11.
- Operation of airplanes over forested areas. A review of the activities of the United States aerial forest patrol service.  
 Aviation, Vol. 12, No. 11 (Mar. 13, 1922), New York, pp. 317-318.
- See Cameron, D. R.: Report on the use of aircraft in forest protection.
- See Canada: Canadian forest patrol.
- See Jordan, John A.: The aerial forest fire patrol.
- See Richards, Charles W.: Radio activities of the airplane patrols of the national forests.
- See Wilson, Elwood: Forest mapping and estimating from the air. Brief account of an aerial timber survey carried out in the Canadian woods by a crew of four men.
- FOREST Products Laboratory.** The Forest Products Laboratory. A decennial record, 1910-1920.  
 Madison, Wis., Decennial Committee, 1922.
- FORT Worth.** See Helium: The plant at Fort Worth.
- FOSTER, J. S.** Relative intensities of Stark effect components in the helium spectrum.  
 Physical Review, Vol. 20 (Sept. 1922), Ithaca, N. Y., pp. 214-220, 5 pls.
- FOX, HARRY.** Mon tour d'Europe.  
 Paris, Les Ailes, 1922, p. 32, ill.
- FRAMEWORKS, braced.** See Aeronautical Research Committee. Report No. 790.
- FRANCE.** Civil aviation in France.  
 Aerial Age, Vol. 15, No. 2 (Mar. 20, 1922), New York, p. 31.
- Frankreichs luftverkehr.  
 Flugsport, 14. Jahrg., 1922, Frankfurt, pp. 3-9, 22-25, ill.
- The French aero engine competition. Two prizes of 1,000,000 francs each assigned to competition for best 350-450 horsepower aircraft engine.  
 Aviation, Vol. 12, No. 25 (June 19, 1922), New York, p. 723.

- FRANCE.** The French engine competition.  
*Aer. Eng. Suppl. The Aeroplane*, Vol. 22, No. 17 (Apr. 26, 1922), London, pp. 302-304.
- The French glider craze.  
*Aer. Eng. Suppl. The Aeroplane*, Vol. 23, No. 13 (Sept. 27, 1922), London, p. 252.
- The French gliding competition.  
*Flight*, Vol. 14, No. 35 (Aug. 31, 1922), London, pp. 500-501.
- The French soaring flight meeting.  
*Aer. Eng. Suppl. The Aeroplane* Vol. 22, No. 21 (May 24, 1922), London, p. 374.
- The French 2,000,000-francs engine competition. Extracts from the regulations.  
*Flight*, Vol. 14, No. 18 (Mar. 4, 1922), London, pp. 261-262.
- French air budget.  
*Aviation*, Vol. 12, No. 12 (Mar. 20, 1922), New York, p. 346.
- French air traffic progress.  
*Aviation*, Vol. 12, No. 18 (May 1, 1922), New York, p. 514.
- French air transport economics.  
*Aviation*, Vol. 12, No. 12 (Mar. 20, 1922), New York, p. 343.
- The French engine competition.  
*Aeria Age*, Vol. 15, No. 13 (June 5, 1922), New York, p. 303.
- The French gliding tests.  
*Aer. Eng. Suppl. The Aeroplane*, Vol. 23, No. 8 (Aug. 23, 1922), London, p. 154.
- Organization of French civil aviation. Department of Commerce report showing organization of French Civil Aviation Bureau and activities of air lines.  
*Aviation*, Vol. 12, No. 3 (Jan. 16, 1922), New York, p. 76.
- Le salon de l'aéronautique, 15 décembre 1922-2 janvier 1923.  
*Aéronautique*, 4<sup>me</sup> année, No. 43 (déc. 1922), Paris, pp. 395-437, ill.
- See Aimé, Emmanuel: Deux aviateurs à la tête de l'aviation française.
- See Brace, A. M.: Commercial aviation in France.
- See Hangars: French Bascule hangar door.
- See Hirschauer, L.: L'aviation commerciale Française.
- See Motorless flight: The "First experimental congress for motorless flight." French soaring and gliding competition.
- See Peyriller, Edouard: Le budget de l'aéronautique à la Chambre des Députés.
- See Peyriller, Edouard: La discussion de budget de l'aéronautique à la Chambre des Députés.
- See Peyriller, Edouard: La rapport de M. Bouilloux-Lafont sur le budget de l'aéronautique en 1923.
- See Records: French airman climbs 34,768 feet.
- FRANCK.** Communications and beacons on air routes.  
*Aerial Age*, Vol. 15, No. 8 (May 1, 1922), New York, pp. 177, 190.
- FRANCK, P., et A. Volmerange.** Le guidage des avions par câbles électrique:  
*Aéronautique*, 4<sup>me</sup> année, No. 33 (fev. 1922), Paris, pp. 39-47, ill.
- FRANÇOIS, LOUIS.** La T. S. F. appliquée aux navires et aux aéronefs.  
*Rev. Gén. Sciences*, 33e année, No. 6 (30 mars 1922), Paris, pp. 165-174.
- FRANK, W. H.** Marks to identify landing facilities.  
*U. S. Air Servicee*, Vol. 7, No. 8 (Sept. 1922), Washington, D. C., p. 11.

**FRANKLIN** W. S., and M. H. STILLMAN. Direction instruments. Part I. Inclinometers and banking indicators.

National Advisory Committee for Aeronautics, Report No. 128, Sept. 1, 1922, Washington, Government Printing Office, 1922, pp. 1-15, ill.

**FRANTZEN**, L. P. Les dirigeables. Classification.—Inconvénients et avantages.—Comparaison du dirigeable et de l'aéroplane.—Le dirigeable de demain.—Les dépenses probables actuelles d'une ligne de dirigeables commerciaux.—L'avenir des dirigeables.—Les petits dirigeables souples.—Un programme à suivre pour les dirigeables français commerciaux.

L'Aérophile, 30e année, Nos. 1-2 (1er-15 janv. 1922), Paris, pp. 12-16, ill.

**FRAZAR**, E. W. Around the world flight.

Aeronautical Digest, Vol. 1, No. 7 (Oct. 1922), New York, pp. 134-136.

**FRAZER**, R. A., and H. BATEMAN. Measurements of normal force and pitching moment on rigid airship *R 33*.

Aeronautical Research Committee, Reports and Memoranda, No. 808, Apr., 1922, London, H. M. Stationery Office, 1922, pp. 19, ill., diagrs., tables.

**FREEMAN**, jr., JOHN R. *See* Peterson, John B., and John R. Freeman, jr.: Altitude instruments. Part II. Precision altimeter design.

**FRIEDRICHSHAFEN**. Fabricación en serie en la industria aeronáutica alemana.

Iberica, No. 435 (8 Julio 1922), Tortosa a, p. 20.

**FRIESLEY**. The Friesley Falcon cabin biplane.

Flight, Vol. 14, No. 1 (Jan. 5, 1922), London, pp. 5-6, ill.

**FRONVAL**, ALFRED. *See* Blanchet, Georges: Aviateurs contemporains. Fronval.

**FROST**, EDWARD PURKIS. Edward P. Frost, J. P., D. L.

Aeron. Journ., Vol. 28, No. 135 (Mar. 1922), London, p. 117.

**FULD**, E. "Comité Amsterdam-Vlieghaven."

Vliegveld, 6de Jaarg., No. 5 (Mei 1922), Amsterdam, pp. 110-111, ill.

— Eenige opmerkingen naar aanleiding van de jaarlijksche algemeene ledenvergadering der Kon. Ned. Ver. voor Luchtvaart.

Vliegveld, 6de Jaarg., No. 5 (Mei 1922), Amsterdam, p. 116.

— Ons luchtverkeer in gevaar.

Vliegveld, 6de Jaarg., No. 2 (Feb. 1922), Amsterdam, pp. 25-26.

**FUELS**. *See* Hinckley, W. O.: The comparative merits of benzol and gasoline as engine fuels.

— *See* Kutzbach: Problem of fuel for aviation engines.

— *See* McKee, Ralph H.: Gasoline from oil shale.

— *See* May, O. J., and Howard Cooper: Tests of aeroplane motor with different gasolines.

— *See* Midgley, Thomas, and T. A. Boyd: Detonation characteristics of some blended motor-fuels.

— *See* Tice, P. S.: Vaporization of motor-fuels.

**FUELS**, doped. The effect of doped fuels on the fuel system.

Air Service Information Circular, Vol. 4, No. 383 (Nov. 1, 1922), Washington, D. C., pp. 3, ill.

— Investigations of the effect of doped fuels on fuel system.

Air Service Information Circular, Vol. 4, No. 308 (Mar. 15, 1922), Washington, D. C., pp. 6, ill.

**FUEL tanks**. Aeronautic safety fuel tank awards.

Journ. Soc. Aut. Eng., Vol. 11, No. 2 (Aug. 1922), New York, p. 187.

- FUEL tanks. Air Ministry tank competition. The winner of first prize. Some particulars of the Silverton tank.  
*Flight*, Vol. 14, No. 21 (May 25, 1922), London, pp. 296-297, ill.
- Safety fuel tank: Awards.  
*Flight*, Vol. 14, No. 18 (May 4, 1922), London, p. 280.
- Safety fuel tanks for aeroplanes.  
*India-Rubber Journ.*, Vol. 63, No. 18 (May 6, 1922), London, pp. 17-19, ill.
- FULLAM, W. F. The domination of air power.  
*Aerial Age*, Vol. 15, No. 12 (May 29, 1922), New York, p. 273.
- FULLER, E. W. The American airplane market.  
*Aviation*, Vol. 12, No. 22 (May 29, 1922), New York, pp. 630-631.
- FULLERTON, A. L. Commercializing the airplane engine. Lighter engines per horsepower requiring less space with increase of all-around efficiency and reliability.  
*Aviation*, Vol. 13, No. 1 (July 3, 1922), New York, p. 12.
- FULTON, GARLAND. Rigid airships.  
*U. S. Naval Inst. Proc.*, Vol. 47, Nos. 10-11 (Oct.-Nov. 1921), Annapolis, Md., pp. 1565-1591, 1697-1723, ill.
- FUSELAGE. Report of static test of XB-1-A fuselage.  
*Air Service Information Circular*, Vol. 4, No. 338 (May 1, 1922), Washington, D. C., p. 9, ill.
- G.**
- G. B. Conférence de la F. A. I. tenue à Rome en octobre.  
*L'Aérophile*, 30e année, Nos. 21-22 (1er-15 nov. 1922), Paris, pp. 345-348, ill.
- GALE. The Gale indicator.  
*Flight*, Vol. 14, No. 5 (Feb. 2, 1922), London, p. 72, diagr.
- GALLO, GINO, e R. M. CORELLI. Reazioni della dimetil-glossima sopra i sali ferrici e ferrosi.  
*Rend. Istituto Sper. Aer.*, Anno 10-Ser. 2a, N. 4 (15 dic. 1922), Roma, pp. 291-297.
- GALLO, GINO. La struttura ed i trattamenti termici degli acciai impiegati in aeronautica.  
*Atti. Assoc. Ital. Aerotech.*, 1922, Vol. 2, Nos. 3-4, Roma, pp. 65-85, ill.
- GALLOWAY, W. Aeroplane crashes: The "hole in the air," the "spin."  
*Nature*, Vol. 109, No. 2741 (May 13, 1922), London, p. 612.
- GAMBIER, P., et J. AMET. Cours pratique d'aviation.  
Paris, Librairie Delagrave, 1922, p. 292, ill.  
Reviewed in: *Ala d'Italia*, Anno 1, Num. 5 (Nov. 1922), Milano, p. 151.
- GARDEN City. The spring meet at Garden City.  
*Aviation*, Vol. 12, No. 19 (May 8, 1922), New York, pp. 534-536, ill.
- GARDNER, LESTER D. Who's who in American aeronautics?  
New York, The Gardner, Moffat Co., 1922.
- GARRISON, WILLIAM H., Jr. The San Antonio air intermediate depot. Plant and stock valued at \$100,000,000. Story of growth of great Texas depot.  
*U. S. Air Service*, Vol. 7, No. 7 (Aug. 1922), Washington, D. C., pp. 24-26, ill.
- GARTNER, CHARLES L. Reaching the stars by aeroplane. Being the tale of movie luminaries who have succumbed to the lure of "Giving 'er the gun."  
*Aerial Age*, Vol. 15, No. 7 (Apr. 24, 1922), New York, pp. 150-151, ill.
- GAS armor. See Boothby, F. L. M.: Gas armour for aircraft.
- GASES. See Currenium: A new gas for airships.
- GASOLINE. Gasoline stocks decreasing.  
*Automotive Manufacturer*, Vol. 64, No. 5 (Aug. 1922), New York, p. 28.
- See Dow, D. B.: Gasoline recovered from still vapors.

- GASOLINE.** *See* Waldo, J. B.: Ramage gasoline process successful.
- GASOLINE indicators.** *See* Smith: The Smith petrol level indicator.
- GATLIN, LILLIAN.** Lillian Gatlin, the first woman to cross the continent by airplane. *Aeronautical Digest*, Vol. 1, No. 8 (Nov. 1922), New York, p. 209, ill.
- GAUBERT, LOUIS.** *See* Blanchet, Georges: *Aviateurs contemporains*. Louis Gaubert.
- GAULE, KARL.** Dipl.-Ing. Karl G. Gaule. *Zeitschr. Flugt. Motorl.*, 13. Jahrg., 13. Hft. (15. Juli 1922), Berlin, p. 195, port.
- Wasserstart zum Segelflug. *Zeitschr. Flugt. Motorl.*, 13. Jahrg., 10. Hft. (31. Mai 1922), Berlin, p. 136.
- Gears.** *See* Saurer: The Saurer bevel-gear testing machine.
- GECKELER, JOSEF.** Ueber Auftrieb und statische Längsstabilität von Flugzeugtragflügeln in ihrer Abhängigkeit von der Profilform. *Zeitschr. Flugt. Motorl.*, 13. Jahrg., 10. Hft. (31. Mai 1922), Berlin, pp. 137-145; 12. Hft. (30. Juni), pp. 176-180; 13. Hft. (15. Juli), pp. 191-195, ill.
- GEDDES Committee.** The Geddes report and air economies. *Flight*, Vol. 14, No. 7 (Feb. 16, 1922), London, pp. 107-109.
- The report of the Geddes committee. *Aeroplane*, Vol. 22, No. 7 (Feb. 15, 1922), London, p. 116.
- GELKEY, W. K.** *See* Midgeley, jr., Thomas, and W. K. Gelkey: Spectroscopic investigation of internal combustion.
- GENERAL air service.** The general air service. *Independent and Weekly Review*, Vol. 108, No. 3809 (Mar. 18, 1922), New York, p. 276.
- GENERAL AIR SERVICE Co.** General Air Service Co. organized. Plans to operate German built Schuette-Lanz airships on public transport services in this country and abroad. *Aviation*, Vol. 12, No. 10 (Mar. 6, 1922), New York, p. 285.
- GENÈVE.** *See* R. L.: La semaine d'aérostation de Genève.
- GENOA.** *See* Bastogi, Gino: Gli interessi aerei di Genova.
- *See* Oldofredi, G.: Discussioni sui progetti per l'aeroporto di Genova.
- GENTRY, FRANK M.** Description of the M. I. T. sailplane. Product of Aeronautical Engineering Society of M. I. T. embodies many interesting features. *Aviation*, Vol. 13, No. 10 (Sept. 4, 1922), New York, pp. 280-281, ill.
- The M. I. T. soaring machine. *Aerial Age*, Vol. 15, No. 18 (Sept. 1922), New York, pp. 451-452, ill.
- GEORGES-BARTHÉLEMY.** Faisons sa place à l'aviation coloniale. *Aéronautique*, 4<sup>e</sup> année, No. 35 (avril 1922), Paris, pp. 93-95, ports.
- GEORGI, WALTER.** Ueber Windbeeinflussung durch Gebirge. *Zeitschr. Flugt. Motorl.*, 13. Jahrg., 5. Hft. (15. März 1922), München, pp. 64-65, ill.
- GERHARDT, W. F.** Harris Booth's Airplane Performance Calculation. *U. S. Air Service*, Vol. 7, No. 5 (June 1922), Washington, D. C., p. 18.
- Technical discussion of helicopter progress. An important forward step in aerial transportation may soon be made. *U. S. Air Service*, Vol. 6, No. 6 (Jan. 1922), Washington, D. C., pp. 22-26, 35, ill.
- GERMANY.** Aircraft manufacture in Germany. *Engineer*, Vol. 133, No. 3461 (Apr. 28, 1922), London, p. 465.
- General arrangement drawings to a uniform scale of four German gliders, the Darmstadt monoplane, the Dresden biplane, and the Munich and Aachen monoplanes. These machines took part in last year's Rhön competition. *Flight*, Vol. 14, No. 41 (Oct. 12, 1922), London, p. 591, diagr.

## GERMANY. German aeronautic emigration.

Aviation, Vol. 13, No. 24 (Dec. 11, 1922), New York, p. 782.

## — German air activities.

Literary Digest, Vol. 72, No. 11 (Mar. 18, 1922), New York, p. 22.

## — German air legislation. Decree relative to aircraft construction.

Flight, Vol. 14, No. 26 (June 29, 1922), London, p. 373.

## — German air war plans.

Aviation, Vol. 12, No. 17 (Apr. 24, 1922), New York, p. 483.

## — German aircraft industry.

Engineer, Vol. 133, No. 3451 (Feb. 17, 1922), London, p. 179.

## — Germany and aviation.

Aviation, Vol. 12, No. 8 (Feb. 20, 1922), New York, p. 219.

## — German aviation.

Aeronautical Digest, Vol. 1, No. 4, 1922, New York, pp. 17-18.

## — A German commercial move.

Aer. Eng. Suppl. The Aeroplane, Vol. 23, No. 20 (Nov. 15, 1922), London, p. 390.

## — The German gliders.

Aer. Eng. Suppl. The Aeroplane, Vol. 23, No. 10 (Sept. 6, 1922), London, pp. 188-192, ill.

## — German gliders. The Rhön competition, 1922. Particulars of the machines entered.

Flight, Vol. 14, No. 38 (Sept. 21, 1922), London, pp. 546-549, ill.

## — German list of Zeppelin casualties.

Literary Digest, Vol. 74, No. 8 (Aug. 19, 1922), New York, p. 52.

## — The German-Russian airway.

Aviation, Vol. 13, No. 2 (July 10, 1922), New York, p. 35.

## — German soaring contests of 1922.

Aer. Eng. Suppl. The Aeroplane, Vol. 22, No. 21 (May 24, 1922), London, p. 372, ill.

## — The German soaring records.

Aer. Eng. Suppl. The Aeroplane, Vol. 23, No. 9 (Aug. 30, 1922), London, p. 174.

## — Germans outstrip allies in passenger aviation.

Literary Digest, Vol. 75, No. 7 (Nov. 18, 1922), New York, pp. 65-66.

## — Germany's naval airships and their war record.

Engineer, Vol. 133 (May 12, 1922), London, pp. 513-514.

## — Germany's position in the air. Regulations in force since May 5, 1922.

Flight, Vol. 14, No. 20 (May 18, 1922), London, p. 286.

## — Limitation of German aircraft.

Aviation, Vol. 12, No. 25 (June 19, 1922), New York, p. 724.

## — New German engines.

Aer. Eng. Suppl. The Aeroplane, Vol. 23, No. 1 (July 5, 1922), London, p. 11.

## — On German soaring extraordinary.

Aeroplane, Vol. 23, No. 8 (Aug. 23, 1922), London, pp. 141-142.

## — The reproduction of German aircraft.

Aeroplane, Vol. 22, No. 18 (May 3, 1922), London, p. 311.

## — Soaring pilot certificates in Germany.

Aviation, Vol. 12, No. 3 (Jan. 16, 1922), New York, p. 69.

## — A war record of Germany's airships.

Flight, Vol. 14, No. 15 (Apr. 13, 1922), London, p. 220.

- GERMANY. *See* Beach, S. Y.: Germany's 1922 soaring flight competition.
- *See* Knight, William: The aeronautical situation in Germany.
- *See* National Advisory Committee for Aeronautics: Report No. 143. Analysis of stresses in German airplanes.
- *See* Neumann, Georg Paul: The German air force in the Great War. Translated by J. E. Gurdon.
- *See* Orcy, L. d': Soaring birdmen; a study of soaring birds and a review of recent glider experiments in Germany.
- *See* Udet: The Udet sporting single-seater. The production of a newcomer to the German aircraft industry.
- GESNER, W. Ueber das Luftbild.  
Zeitschr. Flugt. Motorl., 13. Jahrg., 2. Hft. (31. Jan. 1922), Berlin, pp. 24-26, ill.
- GIBRALTAR. Gibraltor aviation base.  
Aerial Age, Vol. 15, No. 20 (Nov. 1922), New York, p. 559.
- Gibraltar, base aéronautique.  
Aéronantique, 4<sup>me</sup> année, No. 42 (nov. 1922), Paris, pp. 358-359, ill.
- GIBSON, A. H. The relationship between air temperature and the power of a petrol engine.  
Aeronautical Research Committee Report I. C. E. No. 19, London, 1922.
- GILDART, R. S. Standardizing malleable iron improves product.  
Automotive Manufacturer, Vol. 63, No. 12 (Mar. 1922), New York, pp. 16-17.
- GILL, W. S. Airplane travel in Europe.  
Travel, Vol. 38 (Dec. 1921), New York, p. 31, ill.
- GIULIANI, DINO. Sugli idroplani (glisseurs) a redans multipli ed elica aerea.  
Revista Marittima, Vol. 54, No. 10 (Oct. 1921), Roma, pp. 169-183, ill.
- GLAUERT, H. The calculation of the characteristics of tapered wings.  
Aeronautical Research Committee Report R. and M. 767, London, 1922.
- Experimental determination of tail-plane characteristics.  
Aeronautical Research Committee Report R. and M. 761, London, 1922.
- Some applications of the vortex theory of aerofoils.  
Aeronautical Research Committee Report R. and M. 752, London, 1922.
- GLIDING flight. American gliding tests.  
Aerial Age, Vol. 15, No. 21 (Dec. 1922), New York, pp. 612-613.
- Gliders.  
Spectator, Vol. 129 (Aug. 26, 1922), London, pp. 263-264.
- Gliders and gliding.  
Scient. Amer., Vol. 127, No. 5 (Nov. 1922), New York, pp. 298-299, 361, ill.
- Gliders: Some early experiments.  
Spectator, Vol. 129 (Oct. 21, 1922), London, pp. 548-549.
- Gliding and soaring flight.  
Aerial Age, Vol. 15, No. 21 (Dec. 1922), New York, pp. 613-614.
- Gliding flight.  
Discovery, Vol. 3, No. 35 Nov. 1922), London, pp. 282-285.
- Der Pelzner Hängegleiter.  
Flugsport, 14. Jahrg., Nr. 4-5 (15. März 1922), Frankfurt, pp. 60-61, ill.

- GLIDING flight.** Preis des Verbandes Deutscher Luftfahrzeug-Industrieller G. m. b. H. für motorlosen Segelflug.  
Luftweg, Nr. 4 (23. Feb. 1922), Berlin, pp. 44-45.
- Sviluppo, passato e futuro del movimento dell'aviazione a vela.  
Gazz. Aviaz., 1922, Anno 4, No. 45, Milano, p. 2.
- Usefulness of gliding flights.  
Aviation, Vol. 13, No. 15 (Oct. 9, 1922), New York, p. 445.
- See Soaring.
- GLIDERS.** American glider successful.  
Aviation, Vol. 13, No. 8 (Aug. 21, 1922), New York, p. 220.
- The German sailplanes.  
Aerial Age, Vol. 15, No. 20 (Nov. 1922), New York, p. 550.
- Glider development.  
Aviation, Vol. 13, No. 24 (Dec. 11, 1922), New York, p. 781.
- M. I. T. builds glider.  
Aviation, Vol. 12, No. 17 (Apr. 24, 1922), New York, p. 477.
- M. I. T. glider has flown.  
Aviation, Vol. 13, No. 2 (July 10, 1922), New York, p. 42.
- M. I. T. gliders at French competition. American team sails with two machines entered in French gliding competition at Puy-de-Combegrasse.  
Aviation, Vol. 13, No. 5 (July 31, 1922), New York, p. 120, ill.
- GLOUCESTERSHIRE.** The Gloucestershire goods carrier.  
Aer. Eng. Suppl. The Aeroplane, Vol. 22, No. 7 (Feb. 15, 1922), London, pp. 120-124, ill., diagr.
- A Gloucestershire goods type commercial airplane. Rolls-Royce "Eagle" engine.  
Flight, Vol. 14, No. 6 (Feb. 9, 1922), London, pp. 87-88, diagr.
- GLUE.** Preparation and the use of glue.  
Aviation, Vol. 12, No. 7 (Feb. 13, 1922), New York, p. 202.
- GNOSPPELIUS, O. T.** Experimental data without a wind channel.  
Flight, Vol. 14, No. 51 (Dec. 21, 1922), London, pp. 775-776.
- GÖTTINGEN.** The Göttingen aerodynamical laboratory.  
Aer. Eng. Suppl. The Aeroplane, Vol. 23, No. 5 (Aug. 2, 1922), London, pp. 87-90, ill., diagr.  
Aviation, Vol. 12, No. 11 (Mar. 13, 1922), New York, p. 310, ill.
- Instituto de Goettingen para ensayos aerodinámicos.  
Iberica, Tortosa, No. 449 (28 Oct. 1922), pp. 246-247, ill.
- GOHLKE, GERHARD.** Der Verlauf des Rhön-Segelflug-Wettbewerbs 1922.  
Luftfahrt, Vol. 26, No. 9 (Sept. 1922), Berlin, pp. 123-128, ill.
- GOLDBEATERS' skins.** See Meadowcroft, M.: Report on goldbeaters' skins for ZR 1.  
— See Patterson, T. T.: Million goldbeaters' skins in Navy's new dirigibles.  
Handed down to us by the ancients, goldbeaters' skins now find their most important use in construction of airships.
- GOLDFARB, HANS.** Die wirtschaftliche Bedeutung des Flugzeuges.  
Giessen, 1922, pp. 63.  
Mang. diss.—Univ. Giessen.
- GOODYEAR.** The Goodyear "AC" nonrigid dirigible.  
Flight, Vol. 14, No. 34 (Aug. 24, 1922), London pp. 486-487, ill.
- The Goodyear semirigid dirigible.  
Aerial Age, Vol. 15, No. 20 (Nov. 1922), New York, p. 554.

**GOODYEAR.** The new Goodyear military airship.

Aeronautical Digest, Vol. 1, No. 4, 1922, New York, p. 17.

— Trials of Goodyear type AC airship. Nonrigid airship of novel type, built for air service, makes successful trials at Goodyear-Akron air station.

Aviation, Vol. 12, No. 14 (Apr. 3, 1922), New York, pp. 395-396.

— See Kraft, H. T.: New Goodyear military airship. Nonrigid of 180,000 cubic feet capacity and low aspect ratio, to have geared propellers driven by two 135-horsepower Aeromarine model U6D engines.

**GORDON BENNETT.** De Muyter wins Gordon Bennett cup.

Aviation, Vol. 13, No. 12 (Sept. 18, 1922), New York, p. 354.

— G. B. balloon team sails.

Aviation, Vol. 13, No. 5 (July 31, 1922), New York, p. 129, ill.

— Gordon-Bennett balloon race. Demuyter declared the winner.

Flight, Vol. 14, No. 34 (Aug. 24, 1922), London, p. 481, ill., map.

— The Gordon-Bennett cup race.

Aviation, Vol. 13, No. 8 (Aug. 21, 1922), New York, p. 225.

— La XI. copa Gordon-Bennett.

Iberica, No. 444 (23 Sept. 1922), Tortosa, pp. 166-167, ill.

— See Honeywell, H. E.: H. E. Honeywell on the Gordon-Bennett balloon race.

— See La Vaulx: XIe Coupe Gordon-Bennett d'aérostation.

— See R. L.: La coupe Gordon-Bennett.

— See R. L.: La XIe coupe Gordon-Bennett.

**GORELL, LORD.** Civil aviation.

Flight, Vol. 14, No. 6 (Feb. 9, 1922), London, pp. 83-86.

**GOTHENBURG.** Gothenburg aero exhibition.

Aerial Age, Vol. 15, No. 6 (Apr. 17, 1922), New York, p. 136.

— Gothenburg 1923 aero exhibition.

Flight, Vol. 14, No. 46 (Nov. 16, 1922), London, p. 676.

**GOTT, E. N.** Flying and its relation to the general public.

U. S. Air Service, Vol. 7, No. 9 (Oct. 1922), Washington, D. C., pp. 19-23.

**GOUBERT.** Kleinverkehrs-Flugzeug Goubert.

Flugsport, 14. Jahrg., Nr. 3 (1. Feb. 1922), Frankfurt, pp. 43-44, ill.

**GRADENWITZ, ALFRED.** The Hugershoff autocartograph. Ingenious apparatus simplifies process of map drawing from aerial photographs.

Aviation, Vol. 13, No. 25 (Dec. 18, 1922), New York, pp. 805-806, ill.

**GRAMBERO, A.** Maschinenuntersuchungen und das Verhalten der Maschinen im Betriebe.

Berlin, Julius Springer, 1922, pp. xviii, 601, ill.

Reviewed in: Zeitschr. Flugt. Motorl., 13. Jahrg., 24. Hft. (30. Dez. 1922), München, pp. 346-347.

**GRAMMEL, R.** Die mechanischen Beweise für die Bewegung der Erde.

Berlin, Julius Springer, 1922, pp. vi, 71, ill.

Reviewed in: Zeitschr. Flugt. Motorl., 13. Jahrg., 18. Hft. (30. Sept. 1922), München, p. 253.

**GRAND CANYON.** Into the Grand Canyon and out again by airplane.

Literary Digest Vol. 75 (Oct. 7, 1922), New York, pp. 63-66.

**GRARD, C.** Aluminum and its alloys: Their properties, thermal treatment, and industrial application. Translated by C. M. Phillips and H. W. L. Phillips.

New York, D. Van Nostrand Co., 1922, pp. 184, ill.

- GRARD, C. Le problème métallurgique posé par le moteur d'aviation.  
Aéronautique, 4<sup>me</sup> année, No. 36 (mai 1922), Paris, pp. 156-165.
- GRASE, B. Het "Boerner hoogevliegtuit" een 1 April grap?  
Vliegveld, 6de Jaarg., No. 2 (Feb. 1922), Amsterdam, pp. 31-32.
- GRASE, J. C. G., Jr. *See* Hoff, B., and J. C. G. Grase, jr.: Het zweven der vogels.
- GREAT BRITAIN. Aeronautics in 1921.  
Engineer, Vol. 133, No. 3445 (Jan. 6, 1922), London, pp. 18-21, ill.
- Air circuit of Great Britain.  
Flight, Vol. 14, No. 31 (Aug. 3, 1922), London, p. 439.
- Aircraft industry at a glance.  
Flight, Vol. 14, No. 50 (Dec. 14, 1922), London, pp. 725-756, ill.
- British aircraft in foreign markets. Some notes dealing with the Aircraft Disposal Co. and its methods.  
Flight, Vol. 14, No. 21 (May 25, 1922), London, pp. 293-295, ill.
- The British aircraft industry of 1922.  
Aeroplane, Special Foreign Issue, (Dec. 1922), London, 74 pp., ill.
- British commercial aircraft.  
Wireless and Aviation News, Vol. 5, No. 2 (Apr. 1922), Toronto, p. 30.
- British flyers plan to circle the globe.  
U. S. Air Service, Vol. 7, No. 6 (July 1922), Washington, D. C., p. 24.
- The British gliding competition.  
Flight, Vol. 14, No. 43 (Oct. 26, 1922), London, pp. 624-629, ill.
- The British gliding competition. The minimum duration exceeded on first day of meeting.  
Flight, Vol. 14, No. 42 (Oct. 19, 1922), London, pp. 606-612, ill.
- The British Navy and aviation. Ship bombing tests lead to provision for defense force of 500 airplanes.  
Aviation, Vol. 13, No. 9 (Aug. 28, 1922), New York, p. 253.
- British prizes for aeronautic papers.  
Journ. Soc. Aut. Eng. Vol. 11, No. 3 (Aug. 1922), New York, p. 231.
- British safety fuel tank awards.  
Aerial Age, Vol. 15, No. 11 (May 22, 1922), New York, pp. 254-255.
- British safety tank competition.  
Aviation, Vol. 12, No. 12 (Mar. 20, 1922), New York, p. 333.
- Civil aviation and the Government.  
Engineer, Vol. 133, No. 3505 (Mar. 2, 1923), London, pp. 233-234.
- Civil aviation in Great Britain.  
Aviation and Wireless News, Vol. 4, No. 12 (Feb. 1922), Toronto, p. 25.
- Great Britain abandons airships.  
Wireless and Aviation News, Vol. 5, No. 1 (Mar. 1922), Toronto, p. 24.
- The imperial airship scheme.  
Engineer, Vol. 133, No. 3462 (May 5, 1922), London, p. 493.
- Motorless flight in England.  
Science, n. s., Vol. 56 (Nov. 17, 1922), Garrison, N. Y., pp. 573-574.
- Shall Britannia rule the air?  
Aerial Age, Vol. 15, No. 17 (Aug. 1922), New York, p. 408.
- Traveling by air in England.  
Literary Digest, Vol. 73 (Apr. 22, 1922), New York, pp. 22-23, ill.
- *See* Air conference: Air conference—Great Britain.

- GREAT BRITAIN.** *See* Aston, G.: Air forces and British empire defense.  
 — *See* Couturier, Roger: L'aéronautique anglaise.  
 — *See* Lighthouses: Lights as aid to aerial navigation. British practice and British design.  
 — *See* Luke, G. F.: The awakening of Great Britain.  
 — *See* Obermeyer, H., and A. L. Greene: Taking the air in England.  
 — *See* Royal Air Force.  
 — *See* Schneider cup: The British victory at Naples. Supermarine wins the Schneider cup race.
- GREGG, WILLIAM RAY.** Standard atmosphere.  
 National Advisory Committee for Aeronautics, Report No. 147, June 30, 1922, Washington, Government Printing Office, 1922, pp. 11, diagrs., tables.
- GREY, CHARLES GREY.** Gliding and soaring machines.  
 Living Age, Vol. 315 (Oct. 7, 1922), Boston, pp. 42-45.
- GREY, SPENSER.** Intercity air race. Col. Spenser Grey's suggestion.  
 Flight, Vol. 14, No. 39 (Sept. 28, 1922), London, p. 562.
- GREEN, FRED. M.** Development of the fighting aeroplane.  
 Aeron. Journ., Vol. 26, No. 134 (Feb. 1922), London, pp. 46-62, diagr.
- Future development of the fighting airplane. Development of two types of pursuit airplanes predicted: One for high altitude fighting and one for "dog fighting."  
 Aviation, Vol. 12, No. 12 (Mar. 20, 1922), New York, pp. 340-343, diagr.
- Research from the designers', constructors', and users' points of view.  
 Aerial Age, Vol. 15, Nos. 1, 3 (Mar. 13-27, 1922), New York, pp. 8-9, 61-62.  
 Flight, Vol. 14, No. 8 (Feb. 23, 1922), London, pp. 121-122.
- GREENE, A. L.** *See* Obermeyer, H., and A. L. Greene: Taking the air in England.
- GREENHILL, G.** Units in aeronautics.  
 Nature, Vol. 109, No. 2725 (Jan. 19, 1922), London, pp. 74-75.
- GRIMAUT, P.** Tendances actuelles de la construction des avions.  
 Aéronautique, 4<sup>me</sup> année, No. 43 (déc. 1922), Paris, pp. 387-394, ill.
- GROSFILS, PAUL.** La réorganisation des lignes anglaises.  
 L'Aéronautique Marchande Supplément à L'Aéronautique, 4<sup>me</sup> année, No. 41 (oct. 1922), Paris, pp. 111, ill.
- GROVES, PERCY ROBERT CLIFFORD.** Our future in the air—a survey of the vital question of British air power.  
 London, Hutchinson & Co., 1922, pp. 136.
- GÜNTHER, OTTO.** Luftgekühlte Sternflugmotoren.  
 Motorwagen, 25. Jahrg., Heft 32 (20. Nov. 1922), Berlin, pp. 603-611.
- Der Vickers-Vulcan.  
 Motorwagen, 25. Jahrg., Heft 18 (30. Juni 1922), Berlin, pp. 359-361.
- GUIDE cables.** *See* James, P.: Les câbles-guides de M. Loth. La direction des aéronefs sans aucune visibilité.  
 — *See* Loth: The Loth guide cable. An interesting French aid to air navigation.
- GUIDON, A.** Gliders, sail planes, and the peace treaty.  
 Aerial Age, Vol. 15, No. 20 (Nov. 1922), New York, p. 561.
- GUIDONI, A.** Preparing altitude records.  
 Aviation, Vol. 12, No. 12 (Mar. 20, 1922), New York, p. 318.

- GUIDONI, A. Problems of the independent air force.  
Aviation, Vol. 13, No. 21 (Nov. 20, 1922), New York, p. 687.
- GURDON, J. E. *See* Neumann, Georg Paul, translated by J. E. Gurdon: The German air force in the Great War.
- GURNEY, H. P., and C. H. TAVENER. Energy-absorbing capacity of vulcanized rubber.  
Journ. Ind. & Eng. Chemistry, Vol. 14 (Feb. 1922), Washington, D. C., pp. 134-139.
- GUYNEMER. *See* E. P.: Guynemer au Panthéon. (30 avril 1922.)
- GYRO compass. *See* B., C. H.: Note on the gyro compass.

## H.

- H. C. Deux expériences concluantes de navigation aérienne. Le raid de deux officiers portugais de Lisbonne au rocher de Saint-Paul.  
L'Aérophile, 30e année, Nos. 9-10 (1er-15 mai 1922), Paris, pp. 131-132.
- HAACKE engine. The 45-horsepower Haacke engine.  
Aer. Eng. Suppl. The Aeroplane, Vol. 23, No. 13 (Sept. 27, 1922), London, p. 248, ill.
- HAARDT, H. Flugzeugverkehr im Osten.  
Luftzeug, Nr. 9 (15. Juni 1922), Berlin, pp. 87-88.
- HAILER. Mein Zugspitzflug.  
Flugsport, 14. Jahrg., Nr. 7 (29. März 1922), Frankfurt, pp. 108-112.
- HALL, CHARLES S. Air transport improvement needed.  
The Ace, Vol. 4, No. 2 (Sept. 1922), Los Angeles, pp. 10-11.
- HALL, M. H. How to find economical size for airshaft.  
Coal Age, Vol. 22 (Sept. 7, 1922), New York, pp. 361-362.
- HALL of fame. Aeronautical hall of fame.  
Aeronautical Digest, Vol. 1, Nos. 7-9 (Oct.-Dec. 1922), New York, pp. 129, 164; 201; 263.
- HALLETT, GEORGE E. A. A method of developing aircraft engines.  
Journ. Soc. Aut. Eng., Vol. 10, No. 6 (June 1922), New York, pp. 469-474, ill.; Vol. 11, No. 3 (Sept. 1922), pp. 240-244.
- HALSTED, ARTHUR. Piloting an airplane in squall winds.  
U. S. Air Service, Vol. 7, No. 7 (Aug. 1922), Washington, D. C., pp. 21-22.
- HAMBURG. Eine Luftfahrtausstellung in Hamburg.  
Luftweg, Nr. 4 (23. Feb. 1922), Berna, pp. 38-39, ill.
- HAMILTON, W. L. Aerial photography.  
Aerial Age, Vol. 15, Nos. 1-2 (Mar., 3-20, 1922), New York, pp. 6-7, 36-38, ill.
- HAMLEN, W. L. From Ile d'Yeu to the Spanish border. Hunting submarines in airships over area of 9,500 square miles.  
U. S. Air Service, Vol. 7, No. 9 (Oct. 1922), Washington, D. C., pp. 27-29.
- HANDASYDE. The Handasyde H2 commercial monoplane. Airplane built for Australian airways follows original ideas in construction.  
Aviation, Vol. 13, No. 3 (July 17, 1922), New York, pp. 68-69, diagr.
- The Handasyde monoplane.  
Aeroplane, Vol. 23, No. 24 (Dec. 13, 1922), London, p. 460, ill.
- The Handasyde monoplane glider. The machine on which Raynham remained up for nearly two hours.  
Flight, Vol. 14, No. 44 (Nov. 2, 1922), London, pp. 640-643, ill., diagr.
- The Handasyde monoplane, type H 2. Rolls-Royce "Eagle" engine.  
Flight, Vol. 14, No. 29 (July 20, 1922), London, pp. 412-416, ill., diagr.



- HANSEN. The Hansen compressed air model.  
Aerial Age, Vol. 15, No. 3 (Mar. 27, 1922), New York, p. 65, diagr.
- HARDING, WARREN G. President Harding commends Aero C. of C. Chief Executive predicts amazing development of aerial transport. Sees need of public interest and support.  
Aviation, Vol. 13, No. 3 (July 17, 1922), New York, p. 67.
- President Harding's message to aviation world.  
U. S. Air Service, Vol. 7, No. 7 (Aug. 1922), Washington, D. C., p. 8.
- HARDY, A. B. C. The production man's place in our industry.  
Journ. Soc. Aut. Eng., Vol. 11, No. 6 (Dec. 1922), New York, pp. 561-563.
- HARLAUT. Les essais en vol.  
Techn. Aér., 13e année, n. s., Nos 10, 11 (15 août, 15 sept. 1922), Paris, pp. 297-306, 332-343, ill., diagr.
- HARMSEN, CONRAD. Ueber die Grundlagen der Nautik des Luftmeeres.  
Schiffbau, Vol. 23, Nos. 14, 15, 17, 18 (Jan. 4, 11, 25, Feb. 1, 1922), Berlin, pp. 403-408, 435-439, 495-501, 533-538, ill.
- HARMSWORTH, ALFRED. The Viscount Northcliffe.  
Aeroplane, Vol. 23, No. 7 (Aug. 16, 1922), London, pp. 123-142.
- HARPER, D. R. See Parsons, S. R., and D. R. Harper: Radiators for aircraft engines.
- HARRINGTON, JOHN WALKER. Commercial aviation ready for its broadcast.  
Aerial Age, Vol. 15, No. 18 (Sept. 1922), New York, pp. 439-442, ill.
- HARRISON, GEORGE B. Railroad and aerial transportation survey.  
U. S. Air Service, Vol. 7, No. 2 (Apr. 1922), Washington, D. C., pp. 13-14.
- HARTFORD. Aviation meet at Hartford. A two-day meet of great importance to eastern aviation interests.  
Aviation, Vol. 13, No. 16 (Oct. 16, 1922), New York, pp. 512-513, ill.
- Hartford aviation meet.  
Aerial Age, Vol. 15, No. 20 (Nov. 1922), New York, p. 552.  
Aviation, Vol. 13, No. 19 (Nov. 6, 1922), New York, p. 634.
- The Hartford aviation meet. First district, N. A. A., elects officers and governors.  
Aviation, Vol. 13, No. 22 (Nov. 27, 1922), New York, p. 719.
- HARTNESS, JAMES. Progress of aviation in Vermont. It is the next natural big epoch-making boom for this country.  
U. S. Air Service, Vol. 7, No. 5 (June 1922), Washington, D. C., pp. 9-10, ill.
- HARTNEV, HAROLD E. Could a sport plane be used in wartime? Large fleet of sport airplanes armed with machine guns may prove valuable auxiliary for "ground strafing."  
Aviation, Vol. 12, No. 3 (Jan. 16, 1922), New York, pp. 70-71, ill.
- Vital importance of the Detroit races.  
Aerial Age, Vol. 15, No. 18 (Sept. 1922), New York, pp. 442, 474.
- HASKINS, GEORGE W. The Barling bomber of the Army Air Service.  
U. S. Air Service, Vol. 7, No. 11 (Dec. 1922), Washington, D. C., p. 24, ill.
- HASLETT, ELMER. United States of Mexico alive to aviation. Chief of air service is young man whose dreams come true.  
U. S. Air Service, Vol. 6, No. 6 (Jan. 1922), Washington, D. C., pp. 13-16.
- HAVILAND, G. DE. The design of a commercial aeroplane.  
Flight, Vol. 14, No. 14 (Apr. 6, 1922), London, pp. 204-206.
- HAWKER, H. G. See Hawker, Muriel: H. G. Hawker, airman. His life and work.

- HAWKER, MURIEL. H. G. Hawker, airman: His life and work.  
London, Hutchinson & Co., 1922, pp. 319+xxii.
- HAZELETT, CLARENCE W. The storage battery as a mechanical problem.  
*Journ. Soc. Aut. Eng.*, Vol. II, No. 4 (Oct. 1922), New York, pp. 350-354, ill.
- HEARLE, E. Aerial survey of mosquito breeding places.  
*Agricultural Gazette of Canada*, Vol. 9 (May 1922), Ottawa, pp. 191-195, ill.
- HEAT. See Case, John: Notes and examples on the theory of heat and heat engines.
- HEATH. The Heath sport plane.  
*Flight*, Vol. 14, No. 27 (July 6, 1922), London, p. 381, ill.
- An interesting sport plane.  
*Aviation*, Vol. 12, No. 19 (May 8, 1922), New York, p. 547, ill.
- HÉBRARD, L. See Duval, A. B., and L. Hébrard: *Traité pratique de navigation aérienne*.
- HEGENER, HENRI. Het glijvliegtuig-concours van de Daily Mail.  
Vliegveld, 6de Jaarg., No. 11 (Nov. 1922), Amsterdam, pp. 278-282, ill.
- Het zeilyvliegtuigconcours bij Clermont Ferrand.  
Vliegveld, 6de Jaarg., No. 9 (Sept. 1922), Amsterdam, pp. 231-234.
- Hoe "het Vliegveld" uit een F III plofte.  
Vliegveld, 6de Jaarg., No. 10 (Oct. 1922), Amsterdam, pp. 251-252.
- De huidige stand van de wereldluchtschipvloot.  
Vliegveld, 6de Jaarg., No. 3 (Maart 1922), Amsterdam, pp. 59-61, ill.
- Met een Rumpler op de beiersche zugspitze.  
Vliegveld, 6de Jaarg., No. 5 (Mei 1922), Amsterdam, pp. 113-115, 140.
- De Nederlandsche-vliegtuigen fabriek te Veere.  
Vliegveld, 6de Jaarg., 1922, Amsterdam, pp. 101-103, 135-136, ill.
- Van over de grenzen.  
Vliegveld, 6de Jaarg., 1922, Amsterdam, pp. 12-13, 35-37, 62-63, 83-85, 111-113, 166-170, 202-204, 235-236, 257-259, 282-283, ill.
- Van 'n arbeidzame Aero Club.  
Vliegveld, 6de Jaarg., No. 2 (Feb. 1922), Amsterdam, pp. 43-44.
- HEIN, A. L., A. C. KNAUSS, and LOUIS SEUTTER. Internal stresses in laminated construction.  
National Advisory Committee for Aeronautics, Report No. 145, Nov. 15, 1922, Washington, Government Printing Office, 1922, pp. 56, ill.
- HELICOPTERS. Another helicopter.  
*Scient. Amer.*, Vol. 127 (Nov. 1922), New York, p. 338, ill.
- Helicopter and the variable pitch propeller.  
*Mechanical Engineering*, Vol. 44 (Sept. 1922), New York, pp. 575-578, ill., diagrs.
- The helicopter craze.  
*Aeroplane*, Vol. 22, No. 23 (June 7, 1922), London, p. 402.
- Man-carrying helicopter makes short flight.  
*Pop. Mech.*, Vol. 38 (Aug. 1922), Chicago, p. 181, ill.
- See Berliner: The Berliner helicopter.
- See Berliner: The Berliner helicopter in flight.
- See Case, John: Helicopters.
- See Douhéret: L'hélicoptère Douhéret.
- See Gerhardt, W. F.: Technical discussion of helicopter progress. An important forward step in aerial transportation may soon be made.

**HELICOPTERS.** *See* Margoulis, W.: *Les hélicoptères.*

- *See* Pescara, R. Pateras: *Les derniers essais de l'hélicoptère Pescara.*
- *See* Sellers, M. B.: *Some notes on the helicopter. Elements of the problem. Some experimental results. Difficulties yet awaiting solution.*

**HELIUM.** *Dirigible accident hastens helium development.*

*Chemical and Metallurgical Engineering, Vol. 27, No. — (Oct. 25, 1922), New York, p. 852.*

- **Helium.**  
*Brass World and Platers' Guide, Vol. 18 (Sept. 1922), New York, p. 276.*
- **Helium and airship piloting.**  
*Aviation, Vol. 12, No. 5 (Jan. 30, 1922), New York, p. 132.*
- **Helium and the ZR 3.**  
*Aviation, Vol. 12, No. 25 (June 19, 1922), New York, p. 715.*
- **Helium as an aid to airship piloting.**  
*Aviation, Vol. 12, No. 1 (Jan. 2, 1922), New York, p. 5.*
- **Helium for airships.**  
*Engineer, Vol. 133, No. 3449 (Feb. 3, 1922), London, p. 125.*
- **Helium in Canada.**  
*Aviation, Vol. 12, No. 20 (May 15, 1922), New York, p. 568.*
- **Helium investigation.**  
*Aviation, Vol. 12, No. 3 (Jan. 16, 1922), New York, p. 74.*
- **Helium plant closed down.**  
*Aerial Age, Vol. 15, No. 3 (Mar. 27, 1922), New York, p. 63.*
- **Least advertised commercial earth product.**  
*Engineering and Mining Journ., Vol. 112 (Nov. 5, 1921), New York, pp. 722-723, ill.*
- **Our stored helium supply.**  
*Aviation, Vol. 12, No. 16 (Apr. 17, 1922), New York, p. 457.*
- **The plant at Fort Worth.**  
*Aeronautical Digest, Vol. 1, No. 9 (Dec. 1922), New York, p. 234.*
- **Present state of the helium question. Cheaper production method announced by Bureau of Mines.**  
*Aviation, Vol. 13, No. 23 (Dec. 4, 1922), New York, p. 745.*
- **Propriétés, fabrication et emplois de l'hélium.**  
*Génie Civil, Vol. 80 (Jan. 14, 1922), Paris, pp. 41-42.*
- **United States helium supply.**  
*Aviation, Vol. 12, No. 7 (Feb. 13, 1922), New York, p. 205.*
- **Vast superiority of helium over hydrogen in aviation.**  
*Current Opinion, Vol. 72, No. — (June 1922), New York, pp. 826-828, ill.*
- *See C 7: The helium-filled airship C 7.*
- *See Cady, H. P., H. M. Elsey, and E. V. Berger: Solubility of helium in water.*
- *See Calvert, R.: Helium for safe dirigibles, and the greater wonders of our atmosphere.*
- *See Horton, F., and A. C. Davies: Production of radiation and ionization by electron bombardment in pure and in impure helium.*
- *See Foster, J. S.: Relative intensities of Stark effect components in the helium spectrum.*
- *See Lansdowne, Zachary: Helium, an important national asset. Haven't we in the United States been living in a ready-made fool's paradise?*

- HELIUM.** *See* Millikan, Robert Andrews: Facts bearing on the structure of atoms, particularly of the helium atom.
- *See* Moore, R. B.: Helium.
- *See* Roberts, S. G.: Industrial production of helium.
- *See* Tolman, R. C.: Thermodynamic treatment of the possible formation of helium from hydrogen.
- *See* Van Vleck, J. H.: Normal helium atom and its relation to the quantum theory.
- *See* Winters, S. R.: New helium research laboratory.
- HENDERSON, PAUL.** Achievements and projects of the air mail.  
Aviation, Vol. 13, No. 16 (Oct. 16, 1922), New York, p. 502.
- Air mail night flying from coast to coast in 28 hours.  
Aeronautical Digest, Vol. 1, No. 8 (Nov. 1922), New York, pp. 186-187.
- The air mail service in the United States.  
Aeronautical Digest, Vol. 1, No. 7 (Oct. 1922), New York, pp. 139-141, ill.
- Night flying from coast to coast in 28 hours.  
U. S. Air Service, Vol. 7, No. 10 (Nov. 1922), Washington, D. C., p. 24.
- HENRI-PAUL.** L'avion métallique quadrimoteur, type Henri-Paul, des établissements Schneider.  
Génie Civil, Vol. 81, No. 23 (Dec. 2, 1922), Paris, pp. 505-510, ill.
- HENRICKSON, H. B.** *See* Mears, A. H., H. B. Henrickson, and W. G. Brombacher:  
Altitude instruments. Part I. Altimeters and barographs.
- HEPBURN, HENRY A.** The internal-combustion turbine.  
Engineer, Vol. 133, No. 3450 (Feb. 10, 1922), London, pp. 153-154.
- HERATH, FRIEDRICH.** Meteorologie und Wellentelegraphie.  
Arbeiten d. Preuss. Aeron. Observ. bei Lindenbergs, 14. Bd., 1922, pp. 119-127.
- HERFF, A. P.** The problem of soaring flight. A new theory based on observations of the flight of the turkey buzzard. Requirements for reproducing soaring flight with airplanes.  
Aviation, Vol. 12, No. 6 (Feb. 6, 1922), New York, p. 167.
- HERGESELL, HUGO.** Die Arbeiten des Preussischen Aeronautischen Observatoriums bei Lindenbergs. XIV. Band, Wissenschaftliche Abhandlungen.  
Herausgegeben von Dr. Hugo Hergesell, Director, Braunschweig, 1922, p. 167.
- Der tägliche Gang der Temperatur in der freien Atmosphäre über Lindenbergs.  
Arbeiten Preuss. Aeron. Observ. bei Lindenbergs, 14. bd., 1922, pp. 1-43, diagrs.
- HERMAN, F. W.** Wind tunnel test of the Junker L-6 monoplane.  
Air Service Information Circular, Vol. 4, No. 367 (Sept. 1, 1922), Washington, D. C., pp. 15, ill.
- HERMANT, PAUL.** Pour l'avenir du trafic aérien, un organisme international est il nécessaire.  
L'Aéronautique marchande, 1<sup>re</sup> année, No. 3 (Supplément à l'Aéronautique, No. 34, mars 1922), Paris, pp. 27-28, ill.
- HERON, S. D.** Air-cooled airplane engines.  
U. S. Air Service, Vol. 7, No. 4 (May 1922), Washington, D. C., pp. 26-27.
- Some aspects of air-cooled cylinder design and development.  
Journ. Soc. Aut. Eng., Vol. 11, No. 4 (Oct. 1922), New York, pp. 363-367.
- HERRMANN, K. L.** Some causes of gear-tooth errors and their detection.  
Journ. Soc. Aut. Eng., Vol. 11, No. 5 (Nov. 1922), New York, pp. 391-397, diagr.

- HERSEY, MAYO D.** Aeronautic instruments. Section I. General classification of instruments and problems including bibliography.  
National Advisory Committee for Aeronautics, Report No. 125, June 3, 1922, Washington, Government Printing Office, 1922, pp. 22.
- HEYL, PAUL R., and LYMAN J. BRIGGS.** The earth inductor compass.  
U. S. Air Service, Vol. 7, Nos. 10-11 (Nov.-Dec. 1922), Washington, D. C., pp. 30-33; 30-33, ill.
- HICKS, FREDERICK C.** Federal regulation for civilian aviation.  
Aeronautical Digest, Vol. 1, No. 8 (Dec. 1922), New York, p. 248, ill.
- HILDEBRANDSSON, H.** Hildebrand: Résultats des recherches empiriques sur les mouvements généraux de l'atmosphère, 1918.  
Nova Acta Regiae Societatis Scientiarum Upsaliensis, Seriei quartæ, Vol. 5, Fasc. 1, Upsala, 1921, pp. 1-50, table 6  
Présenté à la Société Royale des Sciences d'Upsala le 12 avril 1918.
- HILL, F. T.** Practical aeroplane construction; a treatise on modern workshop practice as applied to the building of aircraft. A handbook for students, apprentices, and draughtsmen interested in the aeronautical industry.  
London, E. and F. N. Spon, Ltd., 1922, p. 248.
- HILL, G. C.** See Zahm, Albert Francis, R. M. Bear, and G. C. Hill: Lift and drag effects of wing-tip rake.
- See Zahm, Albert Francis, R. H. Smith, and G. C. Hill: The drag of C class airship hull with varying length of cylindric midships.
- See Zahm, Albert Francis, R. H. Smith, and G. C. Hill: Point drag and total drag of Navy struts No. 1 modified.
- HINCKLEY, W. O.** The comparative merits of benzol and gasoline as engine fuels.  
Journ. Soc. Aut. Eng., Vol. 11, No. 4 (Oct. 1922), New York, pp. 359-362.
- HINTON, WALTER.** A flying-boat voyage of about 8,365 miles.  
Aeronautical Digest, Vol. 1, No. 6 (Sept. 1922), New York, pp. 82-83, ill.
- HIRSCHAUER, LOUIS, and CHARLES DOLLFUS.** L'année aéronautique. 3e année 1921-1922.  
Paris, Libr. Dunod, 1922, pp. viii, 128.
- HIRSCHAUER, LOUIS.** L'aviation commerciale française.  
La Technique Moderne, Vol. 13, No. 4 (Apr. 1921), Paris, pp. 145-153, ill.
- Les collections de l'aéronautique.  
La Technique Moderne, Vol. 14, No. 1 (Jan. 1922), Paris, pp. 12-14, ill.
- Doit-on organiser des lignes aériennes par ballons dirigeables?  
L'Aérophile, 30e année, Nos. 13-14 (1er-15 juil. 1922), Paris, pp. 204-208, ill.
- La semaine d'hydraviation de Naples et la coupe Jacques Schneider.  
L'Aérophile, 30e année, Nos. 19-20 (1er-15 oct. 1922), Paris, pp. 311-312, ill.
- Le trafic commercial par ballons dirigeables.  
La Techuique Moderne, Vol. 13, No. 6 (June 1921), Paris, pp. 241-249, ill.
- HISPANO-SUIZA engine.** See Morse, H. G.: Variation in performance of a Hispano-Suiza (Model E) engine with degree of throttle opening.
- HOARE, P. V.** Notes on the storage of aircraft.  
Aeronautical Journal, Vol. 26, Nos. 138-139 (June-July 1922), London, pp. 231-254, 219-242, ill.
- HOEPPNER.** Deutschlands Krieg in der Luft.  
Leipzig, Verlag K. O. Kochler, 1921, pp. 183.  
Reviewed in: Zeitschr. Flugt. Motorl., 13. Jahrg., 4. Hft. (28. Feb. 1922), München, p. 51.
- HOFF, B., and J. C. G. GRASE, jr.** Het zweven der vogels.  
Ingenieur, Vol. 37, No. 4 (Jan. 28, 1922), The Hague, pp. 63-64.
- HOFF, WILHELM.** Analysis of stresses in German airplanes.  
National Advisory Committee for Aeronautics, Report No. 143, Jan. 6, 1922, Washington, Government Printing Office, 1922, pp. 52, ill.

- HOFF, WILHEM. Betrachtung zur rechnerischen Nachprüfung von anfänglich gekrümmten, durch druck-längskräfte belasteten Stäben auf Biegefestigkeit.  
Zeitschr. Flugt. Motorl., 13. Jahrg., 7. Hft. (13. Apr. 1922), München, pp. 92-94.
- Die Festigkeit deutscher Flugzeuge.  
Berichte u. Abhandlungen d. Wiss. Gesellschaft für Luftfahrt, 8. Hft., 1922, Berlin, pp. 141-169, ill.
- Zur Frage der Förderung des Segelflugs.  
Zeitschr. Flugt. Motorl., 13. Jahrg., 19., 20. Hft. (30. Okt. 1922), Berlin, pp. 276-278.
- Der Segelflug und die Rhön-Segelflug-Wettbewerbe.  
Zeit. für angewandte Mathematik u. Mechanik, Vol. 2, No. 3 (June 1922), Berlin, pp. 207-218, ill.  
Zeit. Ver. Deutsch. Ing., Bd. 66, No. 45 (Nov. 11, 1922), Berlin, pp. 1037-1040, ill.
- Windsaugwirkungen am Dach der Luftschiiffhalle "Nord" in Staaken.  
Zeitschr. Flugt. Motorl., 13. Jahrg., 15. Hft. (14. Aug. 1922), München, pp. 219-223.
- HOGG, J. E. Aerial photos taken from the ground.  
Illustrated World, Vol. 37 (June, 1922), Chicago, pp. 510-512, ill.
- Taking aeronautical photographs from the ground.  
Scient. Amer. Vol. 127 (Sept. 1922), New York, p. 169, ill.
- HOLCOMB, T. G. Chamber's action assures airport for Boston.  
American City, Vol. 27 (Oct. 1922), New York, pp. 354-355, ill.
- HOLLAND. A Dutch competition.  
Flight, Vol. 14, No. 27 (July 6, 1922), London, p. 384.
- Progress in Holland.  
Aeroplane, Vol. 23, No. 8 (Aug. 23, 1922), London, pp. 157-158.
- See Knight, William: Aviation developments in Holland.
- HOLT. Holt & Co.'s claim.  
Aer. Eng. Suppl. The Aeroplane, Vol. 23, No. 5 (Aug. 2, 1922), London, p. 92.
- HONEYWELL, H. E. H. E. Honeywell on the Gordon-Bennett balloon race.  
Aviation, Vol. 13, No. 14 (Oct. 2, 1922), New York, p. 421.
- HOOT, H. I., and D. L. BACON. The effect on rudder control of slip stream body and ground interference.  
National Advisory Committee for Aeronautics, Technical Notes No. 110, Sept. 1922 (Mimeograph), Washington, pp. 7, tables, diagrs., ill.
- HORNEFFER, ERNST. Die grosse Wunde.  
München, R. Oldenbourg, 1922, pp. 157.  
Reviewed in: Zeitschr. Flugt. Motorl., 13. Jahrg., 18. Hft. (30. Sept. 1922), München, p. 253.
- HORNESPEED propeller. The Hornespeed propeller.  
Aviation, Vol. 12, No. 19 (May 8, 1922), New York, p. 536, ill.
- HORTON, F., and A. C. DAVIES. Production of radiation and ionization by electron bombardment in pure and in impure helium.  
Philosophical Magazine and Journal Science, 6th ser., Vol. 42 (Nov. 1921), London, pp. 746-773, diagr.
- HOURWICH, ISKANDER. Power output and air temperature.  
U. S. Air Service, Vol. 7, No. 6 (June 1922), Washington, D. C., pp. 12-16.
- Water-jacket temperature and performance. Investigation shows how the variation of water-jacket temperature affects performance of aviation engines.  
Aviation, Vol. 12, No. 20 (May 15, 1922), New York, p. 568.
- HOUSER, J. S. Airplane in catalpa sphinx control.  
Ohio Agricultural Experiment Station Bull. 7 (July 1922), Wooster, Ohio, pp. 126-136, ill.

- Houser J. S. *See* Nellie, C. R., and J. S. Houser: Fighting insects with airplanes.
- Hovgaard, William. The longitudinal strength of rigid airships.  
Soc. Nav. Architects and Mar. Engrs., advance paper No. 9 for meeting Nov. 8-9, 1922, New York, pp. 28, ill.
- Howard, R. G. *See* Fage, A., and R. G. Howard: A consideration of air-screw theory in the light of data from an experimental investigation of the distribution over pressure over the entire surface of an air-screw blade.
- Howe, F. B. Teaching balloon control to observers.  
Pop. Mech., Vol. 37 (Feb. 1922), Chicago, pp. 225-226, ill.
- Hudson. Hudson air port.  
Aviation, Vol. 12, No. 21 (May 22, 1922), New York, p. 591.
- Inauguration of Hudson air port. Brilliant demonstration of public air transport furnished by flying boats of Aeromarine Airways.  
Aviation, Vol. 12, No. 21 (May 22, 1922), New York, p. 592.
- Hudson, Fred E. Aviation country club of Detroit.  
U. S. Air Service, Vol. 7, No. 5 (June 1922), Washington, D. C., p. 11, ill.
- Detroit's place in aviation.  
U. S. Air Service, Vol. 7, No. 8 (Sept. 1922), Washington, D. C., pp. 14-15.
- Huff-Daland. The Huff-Daland biplane.  
Flight, Vol. 14, No. 11 (Mar. 16, 1922), London, pp. 153-160, ill.
- The Huff-Daland thick-wing biplanes.  
Aviation, Vol. 12, No. 6 (Feb. 6, 1922), New York, pp. 161-163, ill.
- Huguet, L., and M. Suffrin-Hébert. Calculus aérodynamiques des avions.  
Paris and Liège, C. Béranger, 1922, pp. 120.
- Hugershoff. *See* Gradenwitz, Alfred: The Hugershoff autocartograph. Ingenious apparatus simplifies process of map drawing from aerial photographs.
- Hulbert, A. W. Practical hints on aircraft instruments.  
Aer. Eng. Suppl. The Aeroplane, Vol. 22, Nos. 5, 6, 12, 24 (Feb. 1, 8, Mar. 22, June 14, 1922), London, pp. 88, 104, 210, 428, ill.
- Hull bill. *See* Laws and regulations: Manufacturers oppose Hull bill.
- Hulls. *See* Aeronautical Research Committee. Report No. 780.
- *See* Aeronautical Research Committee. Report No. 785.
- *See* National Advisory Committee for Aeronautics: Report No. 138. The drag of C class airship hull with varying length of cylindric midships.
- Hume, D. C. M. Boats that fly.  
Aeron. Journ., Vol. 26, No. 135 (Mar. 1922), London, pp. 108-114.
- The seaplane's place in aviation.  
Aer. Eng. Suppl. The Aeroplane, Vol. 22, No. 23 (June 7, 1922), London, pp. 407-408.
- Hungary. Hungary and the next war.  
Aer. Eng. Suppl. The Aeroplane, Vol. 23, No. 23 (Dec. 6, 1922), London, p. 438.
- Ungarns Luftfahrt nach dem Kriege.  
Luftweg, Nr. 11 (15. Aug. 1922), Berlin, p. 110.
- Hunt, Franklin L. Aeronautic instruments. Recent developments and outstanding problems.  
National Advisory Committee for Aeronautics, Report No. 132, July 28, 1922, Washington, Government Printing Office, 1922, pp. 1-10.
- Aircraft speed instruments. Part I. Air-speed indicators.  
National Advisory Committee for Aeronautics, Report No. 127, July 14, 1922, Washington, Government Printing Office, 1922, pp. 5-23, ill., diagrs.

- HUNT, FRANKLIN L. Aircraft speed instruments. Part III. Principles of ground speed measurements.  
National Advisory Committee for Aeronautics, Report No. 127, July 14, 1922, Washington, Government Printing Office, 1922, pp. 35-38, diagrs.
- Oxygen instruments.  
National Advisory Committee for Aeronautics, Report No. 130, June 10, 1922, Washington, Government Printing Office, 1922, pp. 3-23, ill. diagrs.
- HURD, A. Sea power and air power; the conflict of claims.  
*Fortnightly Review*, Vol. 117 (May 1922), New York, pp. S13-S26.
- HYDROAVIATION.** Idroaviazione.  
*Gazz. Aviaz.*, 1922, Anno 4, No. 37, Milano, p. 1.
- HYDROGEN.** See Verneuil, Captain: Spontaneous ignition of hydrogen and aero-static accidents.
- HYDROGLIDERS.** See White, H. S.: Speed and comfort on the hydroglider.
- HYDROGRAPHY.** Hydrography of the air.  
*Outlook*, Vol. 131, No. 13 (July 26, 1922), New York, pp. 511-512, ill.
- HYDROPLANES.** The latest in speed boats.  
*Scient. Amer.*, Vol. 126, No. 4 (Apr. 1922), New York, p. 249, ill.
- New hydroplane boat skims waves on cushion of air.  
*Popular Science Monthly*, Vol. 100, No. 4 (Apr. 1922), New York, p. 26, ill.
- See Giuliani, Dino: Sugli idroplani (glisseurs) a redans multipli ed elica aerea.
- I.**
- I. T. Ceux qui disparaissent (De Pischof).  
*L'Aéophile*, 30e année, Nos. 15-16 (1er-15 août 1922), Paris, p. 251.
- Coupe Henry Deutsch de la Meurthe. Les records de vitesse du monde.  
*L'Aéophile*, 30e année, Nos. 17-18 (1er-15 sept. 1922), Paris, pp. 258-259, ill., table.
- L'hélicoptère Berliner.  
*L'Aéophile*, 30e année, Nos. 13-14 (1er-15 juil. 1922), Paris, p. 194, ill.
- Nouvelle méthode d'atterrisseage.  
*L'Aéophile*, 30e année, Nos. 19-20 (1er-15 oct. 1922), Paris, p. 317.
- Le record du monde de vitesse.  
*L'Aéophile*, 30e année, Nos. 19-20 (1er-15 oct. 1922), Paris, p. 297, diagr.
- “ICARUS.” Britain’s future aerial navy.  
*Fortnightly Review*, Vol. 112, n. s., No. 668 (Aug. 1922), New York, pp. 281-298.
- IDRAC, P. Etude expérimentale sur le vol à voile.  
*L'Aéophile*, 30e année, Nos. 1-2, 5-6 (1er-15 janv.-1er-15 mars, 1922), Paris, pp. 4-9, 35-44, 67-76, ill.
- Soaring flight in French Guinea. Careful observation of irregularities of the wind show regions of soaring flight coincide with ascending winds.  
*Aviation*, Vol. 12, No. 19 (May 8, 1922), New York, p. 541.
- IDE, JOHN JAY. The Blériot Spad 45, four-engined air liner. French airplane fitted with four 275-horsepower Hispanos, accommodates 17 passengers and crew of 3.  
*Aviation*, Vol. 12, No. 1 (July 3, 1922), New York, p. 13, ill.
- The Wibault night bombing biplane. French two-seater fitted with 600 horsepower Renault engine has useful load to total weight ratio of 52 per cent.  
*Aviation*, Vol. 12, No. 18 (May 1, 1922), New York, p. 509, ill.
- IGNITION. Aero engine ignition.  
*Electrical Review*, Vol. 89 (Nov. 18, Dec. 16, 30, 1921), London, pp. 692, 835-836, 832-834.

- IMPERIAL.** Imperial airship service.  
     Engineer, Vol. 133, No. 3448 (Jan. 27, 1922), London, p. 97.  
     New Zealand and South Africa will not participate in the scheme.
- INDIA.** Air mail service to India.  
     Flight, Vol. 14, No. 34 (Aug. 24, 1922), London, p. 482, map.
- Airship service to India and Australia.  
     Aviation, Vol. 12, No. 23 (June 5, 1922), New York, p. 667.
- The Royal Air Force in India. Sir John Salmond's mission.  
     Flight, Vol. 14, No. 21 (May 25, 1922), London, p. 299.
- INITIAL motions.** See Aeronautical Research Committee. Report No. 744.
- INSECTS.** Fighting insects with airplanes.  
     The Ace, Vol. 3, No. 4 (Apr. 1922), Los Angeles, pp. 8, 13.  
     Aerial Age, Vol. 15, No. 3 (Mar. 27, 1922), New York, p. 60.
- INSPECTION.** See Pullin, V. E.: Radiological inspection work.
- INSTITUTION of Mechanical Engineers.** Indicators.  
     Engineer, Vol. 135, No. 3503 (Feb. 16, 1923), London, pp. 168-169, 177-178, ill.
- INSTONE** air line. A new air route and a new air record.  
     Engineer, Vol. 133, No. 3462 (May 5, 1922), London, p. 493.
- INSTRUCTION.** See Portal, C. F. A.: Methods of aeroplane flying instruction.
- INSTRUMENT board.** Simplifying the instrument board.  
     Aviation, Vol. 12, No. 13 (Mar. 27, 1922), New York, p. 363.
- INSTRUMENTS.** Instruments and flying.  
     Aviation, Vol. 12, No. 5 (Jan. 30, 1922), New York, p. 127.
- Instruments for use on aircraft.  
     Engineering, Vol. 114, No. 2954 (Aug. 11, 1922), London, pp. 174-175, ill.
- N. A. C. A. multiple manometer.  
     Aerial Age, Vol. 15, No. 21 (Dec. 1922), New York, pp. 585-586, ill., diagr.
- New instrument records airplane stresses.  
     Popular Mechanics, Vol. 38, No. — (Oct. 1922), Chicago, p. 506, ill.
- New recording devices.  
     Aerial Age, Vol. 15, No. 10 (May 15, 1922), New York, pp. 219, 232.
- Rate of climb indicator.  
     Aviation, Vol. 13, No. 10 (Sept. 4, 1922), New York, p. 287
- The Smith petrol level indicator.  
     Aerial Age, Vol. 15, No. 2 (Mar. 20, 1922), New York, p. 40.
- A useful aid to engine timing.  
     Aer. Eng. Suppl. The Aeroplane, Vol. 22, No. 24 (June 14, 1922), London, p. 428, ill.
- Wing-load indicator keeps airplane pilot in safety.  
     Popular Mechanics, Vol. 36, No. — (Dec. 1921), Chicago, p. 825, ill.
- See Blakely, J. H.: The Dugit altimeter and air speed indicator. Instruments based on application of Archimedean spiral give increased precision and a uniform sensitiveness.
- See Hulbert, A. W.: Practical hints on aircraft instruments.
- See National Advisory Committee for Aeronautics: Report No. 125. Aeronautic instruments.
- See National Advisory Committee for Aeronautics: Reports Nos. 125-132. Aeronautic instruments.
- See Royal Dutch Aero Club: Dutch instrument competition for fog flying.

- INSTRUMENTS.** *See* Sperry: The Sperry flight indicator. An instrument built for flying in fog and in clouds which combines the features of turn indicator and inclinometer.  
— *See* Thaden, Herbert V.: Methods of air navigation. Formula and instruments for checking dead reckoning described.  
— *See* Winters, S. R.: Air Service tests new instruments. Rate of climb indicator, bubble statoscopes, and new barograph tested in balloon flights.

- INSURANCE.** Life insurance and aeronautics.  
Aviation, Vol. 12, No. 16 (Apr. 17, 1922), New York, p. 457.  
— Life assurance for Royal Air Force officers.  
Aeroplane, Vol. 23, No. 4 (July 26, 1922), London, p. 62.  
— *See* Blythe, R. R.: Life insurance and aeronautics.  
— *See* Ely, Edmund: The status of aircraft insurance.  
— *See* Martin, E. Stockton: Facts on aircraft insurance.

- INTERNATIONAL AIR CONGRESS.** The International Air Congress, London, 1923.  
Aer. Eng. Suppl. The Aeroplane, Vol. 23, No. 6 (Aug. 9, 1922), London, p. 110.  
Aerial Age, Vol. 15, No. 20 (Nov. 1922), New York, p. 560.  
Flight, Vol. 14, No. 30 (July 27, 1922), London, p. 425.

- INTERNATIONAL AIR CONVENTION.** The International Air Convention.  
Aviation, Vol. 12, No. 3 (Jan. 16, 1922), New York, p. 65; Vol. 13, No. 1 (July 3, 1922), p. 16.

- INTERNATIONAL AIR TRAFFIC ASSOCIATION.** Meeting of the International Air Traffic Association.  
Aviation, Vol. 12, No. 23 (June 5, 1922), New York, p. 666.

- INTERNATIONAL AIRSHIP CONFERENCE.** The International Airship Conference.  
Engineer, Vol. 133, No. 3450 (Feb. 10, 1922), London, p. 151.  
Flight, Vol. 14, No. 8 (Feb. 23, 1922), London, p. 127.

- INTERNATIONAL COMMISSION FOR AIR NAVIGATION.** International Commission for Aerial Navigation.  
Flight, Vol. 14, No. 44 (Nov. 2, 1922), London, p. 644.  
— International Commission for Air Navigation.  
Flight, Vol. 14, No. 28 (July 13, 1922), London, p. 401.  
— The International Commission for Air Navigation held its first meeting in Paris.  
Aeronautical Digest, Vol. 1, No. 6 (Sept. 1922), New York, p. 75.  
— Résumé of proceedings at first session, London, October 27.  
Aviation, Vol. 13, No. 22 (Nov. 27, 1922), New York, p. 718.  
— The second meeting of the International Commission for Air Navigation.  
Aeroplane, Vol. 23, No. 18 (Nov. 1, 1922), London, p. 314.

- INTERNATIONAL CONFERENCE ON STANDARDIZED AIRSHIP FITTINGS AND OPERATION.** Report of international conference on standardized airship fittings and operation.  
Aerial Age, Vol. 15, No. 20 (Nov. 1922), New York, pp. 541-542.

- INVENTIONS.** Perennial "inventions."  
Aviation, Vol. 13, No. 24 (Dec. 11, 1922), New York, p. 771.

- IRON.** The centrifugal process of casting iron.  
Journ. Soc. Aut. Eng., Vol. 11, No. 6 (Dec. 1922), New York, p. 563.

- IRWIN.** The Irwin "Meteorplane."  
Aviation, Vol. 12, No. 21 (May 22, 1922), New York, p. 599, ill.  
Flight, Vol. 14, No. 35 (Aug. 31, 1922), London, p. 496, ill.

- ITALY.** Commenti alla gran coppa d'Italia 1922.  
Ala d'Italia, Anno 1, Num. 5 (Nov. 1922), Milano, pp. 126-128.

- ITALY. La gran coppa d'Italia.  
Gazz. Aviaz., 1922, Anno 4, Nos. 40, 41, 43, 44, 45, ill.
- International aviation races in Italy.  
Aviation, Vol. 12, No. 9 (Feb. 27, 1922), New York, p. 255.
- Italian aeronautical competitions, 1922. Regulations issued by Italian War Department provide for contests of airplanes, seaplanes, balloons, and parachutes.  
Aviation, Vol. 12, No. 13 (Mar. 27, 1922), New York, pp. 369-370.
- Italian aircraft register.  
Aviation, Vol. 12, No. 13 (Mar. 27, 1922), New York, p. 375.
- Italian competition for aviation engines.  
Aviation, Vol. 12, No. 9 (Feb. 27, 1922), New York, p. 255.
- Italian Government tests.  
Aer. Eng. Suppl. The Aeroplane, Vol. 22, No. 20 (May 17, 1922), London, p. 356.
- Italian type O. S. airship.  
Aviation, Vol. 13, No. 24 (Dec. 11, 1922), New York, p. 781, ill.
- The Italian type SCA 1 airship.  
Aviation, Vol. 12, No. 17 (Apr. 24, 1922), New York, p. 486, ill.
- Der italienischen luftfahrtkonzessionen nach dem stande vom 15. November 1921.  
Nachr. Luftf., Nr. 33 (20. Aug. 1922), Berlin, p. 433.
- Italy's air policy.  
Aviation, Vol. 12, No. 10 (Mar. 6, 1922), New York, p. 284.
- Italy's war memorial.  
Flight, Vol. 14, No. 35 (Aug. 31, 1922), London, pp. 502-503, ill.
- See Baciocchi, Alighiero: Brief review of aeronautics in Italy.
- See Knight, William: The aeronautic situation in Italy.

ITFORD. Lessons from Itford.

Aer. Eng. Suppl. The Aeroplane, Vol. 23, No. 18 (Nov. 1, 1922), London, pp. 347-348.

J.

J1's. See Air Service: Air Service to sell standard J1's.

JL6. Equipment of record-breaking JL6.

Aviation, Vol. 12, No. 5 (Jan. 30, 1922), New York, p. 142.

"J. L.-12." The *J. L.-12* attack plane.

Flight, Vol. 14, No. 5 (Feb. 2, 1922), London, p. 73, ill.

JACOB LÉON. De l'organisation des pouvoirs publics en matière aéronautique.

L'Aérophile, 30e année, Nos. 17-18 (1er-15 sept. 1922), Paris, pp. 264-267, ill.

JACQUES SCHNEIDER cup. Regulations of the Jacques Schneider cup. Famous cup, twice won by Aero Club of Italy, will be competed for the last week of August at Naples.

Aviation, Vol. 12, No. 14 (Apr. 3, 1922), New York, pp. 398-399.

JAMBIER, C., and J. AMET. Cours pratique d'aviation.

JAMES, P. Les Câbles-Guides de M. Loth. La direction des aéronefs sans aucune visibilité.

L'Aérophile, 30e année, Nos. 1-2 (1er-15 janv. 1922), Paris, pp. 18-21, ill.

— Collision d'aérobus.

L'Aérophile, 30e année, Nos. 7-8 (1er-15 avril 1922), Paris, p. 110.

— La Coupe Henry Deutsch de la Meurthe (30 sept. 1922).

L'Aérophile, 30e année, Nos. 19-20 (1er-15 oct. 1922), Paris, pp. 290-296, ill.

- JAMES, P. *Le voyage ministériel à Marseille.*  
L'Aérophile, 30e année, Nos. 9-10 (1er-15 mai 1922), Paris, pp. 132-134, ill.
- JANES, Fred T. *All the world's aircraft.*  
London, Sampson, Low, Marston & Co., Ltd., 1922.  
Reviewed in: Ala d'Italia, Anne 1, Num. 3 (sett. 1922), Milano, p. 87.
- JANES, WESLEY LIVSEY. *See* United States Congress. Senate. Committee on Commerce: Bureau of Aeronautics in Department of Commerce.
- JAPAN. *L'aéronautique au Japan.*  
Aéronautique, 4<sup>me</sup> année, No. 33 (fev. 1922), Paris, pp. 47-48.
- The British aviation mission in Japan.  
Aer. Eng. Suppl. The Aeroplane, Vol. 23, No. 22 (Nov. 29, 1922), London, pp. 419-420, ill.
- A new Japanese machine.  
Aer. Eng. Suppl. The Aeroplane, Vol. 23, No. 16 (Oct. 18, 1922), London, p. 308.
- New Japanese military airplanes.  
Aviation, Vol. 13, No. 8 (Aug. 21, 1922), New York, p. 214.
- *See* Tôkyô Teikoku-Daigaku Kôkû-Kenkyûzyo Hôkoku.
- *See* Torahiko Terada, and Tatuo Kobayasi: On the diurnal variation of winds in different coastal stations of Japan.
- JARAY, P. *Die Leistungsberechnung des Motorwagens unter besonderer Berücksichtigung des Luftwiderstandes.*  
Motorwagen, 25. Jahrg., Heft 29 (20. Okt. 1922), Berlin, pp. 551-559.
- Stromlinien-Karosserie.  
Motorwagen, 25. Jahrg., Heft 26 (20. Sept. 1922), Berlin, pp. 505-506.
- JARDINE, FRANK. *See* Jehle, Ferdinand, and Frank Jardine: Aluminum pistons.
- JEHLE, FERDINAND, and FRANK JARDINE. Aluminum pistons.  
Journ. Soc. Aut. Eng., Vol. 11, No. 3 (Sept. 1922), New York, pp. 225-231, ill.
- JESSUP, H. T. *See* Filon, L. N. G. and H. T. Jessup; On the stress-optical effect in transparent solids strained beyond the elastic limit.
- JOEL, KURT. *Die aerodynamische Versuchsanstalt.*  
Luftweg, Nr. 3 (9. Feb. 1922), Berlin, pp. 25-26.
- JOESSEL. *See* Constantin, Joessel and Daloz: L'emploi d'un moteur éolien pour actionner un navire contre le vent.
- JOHNSON, D. Aerial observations of physiographic features; reply to B. Willis.  
Science, n. s., Vol. 54, No. — (Nov. 4, 1921), Garrison, N. Y., pp. 435-436.
- JOHNSON, J. B., and SAMUEL DANIELS. Study of some failures in aircraft plane and engine parts.  
Amer. Soc. for Steel Treating, Trans., Vol. 2, No. 12 (Sept. 1922), Chicago, pp. 1167-1176, ill.
- JOHNSON, V. E. Model aeroplaning; its practice and principles.  
London, E. and F. N. Spon (Ltd.), pp. 265.
- JOHNSTONE-TAYLOR. Venturi tubes and orifices for bulk gas measurement, with special reference to British practice.  
American Gas Journal, Vol. 117, No. 7, whole number 3362 (Aug. 12, 1922), New York, pp.; 139-141, 144, ill.
- JONES, B. Q. Notes on the adjutant.  
U. S. Air Service, Vol. 7, No. 9 (Oct. 1922), Washington, D. C., p. 31.
- Notes on the engineer officer.  
U. S. Air Service, Vol. 7, No. 11 (Dec. 1922), Washington, D. C., pp. 27-28.
- Notes on the organization commander.  
U. S. Air Service, Vol. 7, No. 8 (Sept. 1922), Washington, D. C., pp. 22-24.

- JONES, ERNEST. New Navy airship mooring mast.  
Popular Mechanics, Vol. 38, (Nov. 1922), Chicago, pp. 692-693, ill.
- Thirteen years ago to-day.  
U. S. Air Service, Vol. 7, No. 6 (July 1922), Washington, D. C., pp. 25-26.
- JONES, ERNEST L. Progress in air surveying.  
Engineering News-Record, Vol. 88, No. — (Jan. 19, 1922), New York, p. 110.
- Surveying from the air.  
Journ. Franklin Inst., Vol. 93. (Apr. 1922), Philadelphia, pp. 461-490, ill., diagrs.
- JONES KEITH. Sixth Corps Area reserve pilots go to camp.  
U. S. Air Service, Vol. 7, No. 9 (Oct. 1922), Washington, D. C., pp. 25-26.
- Will Chicago become center of aircraft industry?  
U. S. Air Service, Vol. 7, No. 7 (Aug. 1922), Washington, D. C., p. 23.
- JORDAN, JOHN A. The aerial forest fire patrol.  
Aeronautical Digest, Vol. 1, No. 9 (Dec. 1922), New York, pp. 257-259, ill.
- JOUKOWSKY. See Aeronautical Research Committee. Report No. 788.
- See Roy, Maurice: *Aérodynamique. Remarques sur la théorie de Joukowski*.
- See Roy, Maurice. *Les profils d'aile Joulsowski*.
- JUDGE, ARTHUR W. Automobile and aircraft engines in theory and experiment.  
London, Isaac Pitman & Sons (Ltd.), 1922, pp. 640.
- JUNKERS-LARSEN. Der Dauer-Weltrekordflug des Junkers-Larsen-Flugzeuges am 28., 29. September 1921.  
Luftweg, Nr. 4 (23. Feb. 1922), Berlin, pp. 37-38, ill.
- JUNKERS. A 50-ton flying boat.  
Aer. Eng. Suppl. The Aeroplane, Vol. 22, No. 8 (Feb. 22, 1922), London, p. 136, diagr.
- 4,000 PS Junkers Riesen-Metallflugzeug.  
Flugsport, 14. Jahrg., Nr. 6 (15. März 1922), Frankfurt, pp. 95-96.
- Das neue Junkers-Kleinflugzeug.  
Motorwagen, 25. Jahrg., Heft 22 (10. Aug. 1922), Berlin, pp. 420-421.
- New Junkers monoplane.  
Aviation, Vol. 13, No. 3 (July 17, 1922), New York, pp. 63, 72, ill.
- The new two-seater Junkers monoplane.  
Aer. Eng. Suppl. The Aeroplane, Vol. 22, No. 25 (June 21, 1922), London, p. 448, ill.  
Aerial Age, Vol. 15, No. 17 (Aug. 1922), New York, p. 420, ill.
- See Herman, F. W.: Wind tunnel test of the Junker L-6 monoplane.
- See Meyer, G.: *Ideal-Flugzeug und Junkers'scher Flügel*.
- See Weaver, E. R.: Report of the static test of the Junker L-6 monoplane.
- JUPITER. Bristol "Jupiter" engines in the 0/400 Handley Page.  
Aer. Eng. Suppl. The Aeroplane, Vol. 22, No. 14 (Apr. 5, 1922), London, p. 248, ill.
- The Bristol "Jupiter" in France.  
Flight, Vol. 14, No. 27 (July 6, 1922), London p. 384.
- The Jupiter engine's French test.  
Aer. Eng. Suppl. The Aeroplane, Vol. 23, No. 11 (July 5, 1922), London, p. 8.

**K.**

KANSAS CITY. Kansas City air port.  
Aviation, Vol. 13, No. 8 (Aug. 21, 1922), New York, p. 226.

KARRER, E. Shape assumed by a deformable body immersed in a moving fluid.  
Journ. Franklin Inst., Vol. 192 (Dec. 1921), Philadelphia, pp. 737-756, ill.

- KASINGER, F. Die deutsche Luftfahrt nach dem 5. Mai 1922.  
Zeitschr. Flugt. Motorl., 13. Jahrg., 7. Hft. (13. Apr. 1922), Berlin, pp. 91-92.
- WGL und Industrie.  
Zeitschr. Flugt. Motorl., 13. Jahrg., 11. Hft. (15. Juni 1922), Berlin, p. 159.
- KATZMAYR, RICHARD, and L. KIRSTE. Das aeromechanische Laboratorium der technischen Hochschule in Wien.  
Zeit. Oesterr. Ing. u. Architekten Ver., Bd. 73, No. 38-39 (Sept. 30, 1921), Vienna, pp. 245-247, ill.
- KATZMAYR, RICHARD. Bestimmung der Deformationsgrösse von Schraubenblättern im Marsche.  
Motorwagen, Vol. 25, No. 12 (Apr. 30, 1922), Berlin, pp. 223-225, ill.
- Standardization and aerodynamics.  
Aerial Age, Vol. 15, No. 9 (May 8, 1922), New York, pp. 199-200, 206.
- Ueber das Verhalten von Flügelflächen bei periodischen Änderungen der Geschwindigkeitsrichtung.  
Zeitschr. Flugt. Motorl., 13. Jahrg., 6. Hft. (31. März 1922), München, pp. 80-82; 7. Hft. (13. Apr.), pp. 95-101, ill.
- KEEN, R. Direction and position finding by wireless.  
Wireless Press.
- KELLETT, W. WALLACE. An aerial picnic in France.  
Aviation, Vol. 13, No. 24 (Dec. 11, 1922), New York, p. 782, ill.
- Lessons of the fall flying meets. Experience of Mineola, Kansas City, Omaha, and Baltimore meets teaches value of strong central organization and attention to details.  
Aviation, Vol. 12, No. 7 (Feb. 13, 1922), New York, pp. 192-194.
- KELLY. See Records: T2 makes new duration record. Lieutenants MacReady and Kelly stay up 35 hours 18½ minutes in Army transport plane.
- KELLY FIELD: See Night flying: Night flying at Kelly Field.
- KENTUCKY. Kentucky encourages aviation.  
Aerial Age, Vol. 15, No. 10 (May 15, 1922), New York, p. 220.  
Aviation, Vol. 12, No. 21 (May 22, 1922), New York, p. 604.
- KERR, MARK. Admiral Mark Kerr's ideal air organization.  
Flight, Vol. 14, No. 35 (Aug. 31, 1922), London, p. 492.
- KEULEGAN, G. H. See Eaton, H. N., and G. H. Keulegan: Sylphon diaphragms. A method for predicting their performance for purposes of instrument design.  
— See National Advisory Committee for Aeronautics: Technical Notes No. 90. Sylphon diaphragms, a method for predicting their performance for purposes of instrument design.
- KING'S cup. The circuit of Britain. Race for the King's cup, September 8-9.  
Flight, Vol. 14, No. 36 (Sept. 7, 1922), London, pp. 507-515, ill.
- The King's cup.  
Aer. Eng. Suppl. The Aeroplane, Vol. 23, No. 8 (Aug. 23, 1922), London, p. 150.  
Aeroplane, Vol. 23, Nos. 4, 9 (July 26, Aug. 30, 1922), London, pp. 60, 165-166.
- The King's cup affair.  
Aeroplane, Vol. 23, No. 12 (Sept. 20, 1922), London, pp. 224, 234.
- The King's cup race.  
Flight, Vol. 14, No. 37 (Sept. 17, 1922), London, pp. 525-534, ill.
- On the King's cup race.  
Aeroplane, Vol. 23, No. 11 (Sept. 13, 1922), London, pp. 197-208, ill.

KING'S cup. The race for the King's cup.

Flight, Vol. 14, No. 34 (Aug. 24, 1922), London, p. 483, ill.

— See Clarkson, Christopher: A King's cup log.

KINNER. The new Kinner motor makes its appearance.

The Ace, Vol. 4, No. 2 (Sept. 1922), Los Angeles, pp. 16-17, ill.

KIRSTE, L. See Katzmayr, R., and L. Kirste: Das aeromechanische Laboratorium der technischen Hochschule in Wien.

KITES. Kite flying.

Aerial Age, Vol. 15, No. 7 (Apr. 24, 1922), New York, p. 161.

KLEMPERER. The Klemperer "Ente." An interesting German glider incorporating many novel features.

Flight, Vol. 14, No. 47 (Nov. 23, 1922), London, pp. 685-686, diagr.

— The Klemperer wing load indicator.

Aer. Eng. Suppl. The Aeroplane, Vol. 22, No. 21 (May 24, 1922), London, p. 376, ill.

KLEMPERER, W. Ein einfaches Verfahren zur Auffindung von  $\left(\frac{C_a}{C_w}^3\right)$  max.

Zeitschr. Flugt. Motorl., 13. Jahrg., 6. Hft. (31. März 1922), München, pp. 78-79.

— Das Entenproblem.

Zeitschr. Flugt. Motorl., 13. Jahrg., 19.-20. Hft. (30. Okt. 1922), München, pp. 287-288.

— Luftwiderstands-Untersuchungen an Automobil-Modellen.

Zeitschr. Flugt. Motorl., 13. Jahrg., 14. Hft. (31. Juli 1922), München, pp. 201-206, ill.

— Le pilotage dans le vol à voile.

Aéronautique, 4<sup>me</sup> année, No. 38 (juil. 1922), Paris, pp. 211-213, ill.

— Le vol des avions sans moteur.

L'Aéophile, 30<sup>e</sup> année, Nos. 11-12 (1er-15 juin 1922), Paris, pp. 163-165, ill.

KNAUSS, A. C. See Hein, A. L., A. C. Knauss, and Louis Seutter: Internal stresses in laminated construction.

KNIGHT, WILLIAM. The aeronautical situation in Germany.

Aerial Age, Vol. 15, No. 18 (Sept. 1922), New York, pp. 454-455.

— The aeronautic situation in Italy.

Aerial Age, Vol. 15, No. 20 (Nov. 1922), New York, p. 551, ill.

— An appeal to Congress on the matter of aeronautical appropriations.

Aeronautical Digest, Vol. 1, No. 8 (Nov. 1922), New York, pp. 194-195.

— Aviation developments in Holland.

Aeronautical Digest, Vol. 1, No. 7 (Oct. 1922), New York, p. 116.

— Commercial and military aeronautics.

Aerial Age, Vol. 15, No. 17 (Aug. 1922), New York, pp. 391-392.

— Commercial aviation developments in Europe.

Aerial Age, Vol. 15, Nos. 2, 3, 5, 6 (Mar. 20, 27, Apr. 10, 17, 1922), New York, pp. 30-32, 43, 46, 55-60, 107-109, 133-135.

— Commercial aviation development in the United States.

Aerial Age, Vol. 15, No. 13 (June 5, 1922), New York, pp. 294-296, 311.

— The Rith nonrigid dirigible.

Aerial Age, Vol. 15, No. 3 (Mar. 27, 1922), New York, pp. 54-55, diagr.

— Standardization and aerodynamics.

Aerial Age, Vol. 15, No. 21 (Dec. 1922), New York, pp. 593-598.

KOBAYASI, TATUO. See Tatuo Kobayasi.

- KONINKLIJKE Luchtvaart Maatschappij. Holland: Bericht der Koninklijke Luchtvaart Maatschappij für das Jahr 1921.  
Nachr. Luftf., Jahrg. 3, Nr. 26 (2. Juli 1922), Berlin, pp. 344-346.
- KONINKLIJKE Luchtvaart Maatschappij voor Nederland en Koloniën. Verslag over het jaar 1921.  
Vliegveld, 6de Jaarg., No. 5 (Mei 1922), Amsterdam, pp. 103-106.
- KOPPE, HEINRICH. Messgeräte des Segelfliegers.  
Zeitschr. Flugt. Motorl., 13. Jahrg., 23. Hft. (15. Dez. 1922), München, pp. 331-333, ill.
- Ueber den Rumpler-Preis-Wettbewerb.  
Zeitschr. Flugt. Motorl., 13. Jahrg., 3. Hft. (15. Feb. 1922), Berlin, pp. 32-40.
- See Everling, E., and H. Koppe: Messgeräte für Flugzeuge.
- KORVIN-KROUKOWSKY, B. V. Properties of two aeromarine aerofoils.  
Aviation, Vol. 12, No. 11 (Mar. 13, 1922), New York, pp. 314-315.
- KOTHNY, E. Manufacture of alloy steel for airplane shafts.  
Chem. and Met. Eng., Vol. 27, No. 21 (Nov. 22, 1922), New York, pp. 1020-1024.
- KOTZENBERG-HOCHSCHUL-WANDERPREIS. Ausschreibung für einen alljährlichen Wettbewerb um einen Kotzenberg-Hochschul-Wanderpreis für Segelflüge.  
Zeitschr. Flugt. Motorl., 13. Jahrg., 8. Hft. (29. Apr. 1922), Berlin, p. 111.
- KOUTCHINO. See Bastamov, S.: Institut Aérodynamique de Koutchino.
- KRACKER v. SCHWARTZENFELDT, OTTOKAR. Flugzonenkarte mit Orientierungsmassstab für Luftreisende.  
Hrsg. Deutsche Luft-Reederei, 1922, Heft 1, Berlin-Dresden; Heft 2, Berlin-Hamburg Heft 3, Hamburg-Westerland.  
Zeitschr. Flugt. Motorl., 13. Jahrg., 2. Hft. (31. Jan. 1922), Berlin, pp. 26-27, map.
- KRAFT, H. T. New Goodyear military airship. Nonrigid of 180,000 cubic feet capacity and low aspect ratio to have geared propellers driven by two 135-horse-power Aeromarine model U6D engines.  
Aviation, Vol. 12, No. 4 (Jan. 23, 1922), New York, pp. 101-102, ill.
- KROMER, HUGO H. Die Bausicherheits-Vorschriften für Flugzeuge.  
Zeitschr. Flugt. Motorl., 13. Jahrg., Hft. 5 (15. März 1922), Berlin, pp. 63-84, ill.
- Die Berechnung von Flugzeugen.  
Flugsport, 14. Jahrg., Nrs. 7, 15 (29. März, 26. Juli 1922), Frankfurt, pp. 104-106, 243-245.
- KRUPP, G. Nutzanwendung des Segelfluges.  
Zeitschr. Flugt. Motorl., 13. Jahrg., 8. Hft. (29. Apr. 1922), Berlin, p. 112.
- Stiftungsfest der Wissenschaftlichen Gesellschaft für Luftfahrt E. V. anlässlich des zehnjährigen Bestehens.  
Zeitschr. Flugt. Motorl., 13. Jahrg., 6. Hft. (31. März 1922), München, pp. 107-108.
- KUIPERS, A. Het zweven der vogels en het undulatie beginsel.  
Vliegveld, 6de Jaarg., No. 12 (Dec. 1922), Amsterdam, pp. 296-298.
- KUTZBACH. Problem of fuel for aviation engines.  
Sibley Journ. Eng., Vol. 35 (Nov. 1921), Ithaca, N. Y., pp. 146-151, diagr.
- KWAN-ICHI, TERAZAWA. On the decay of vortical motion in viscous fluid.  
Tōkyō TD. Kōkū Hōkoku, Vol. 1, No. 4 (Nov. 1922), Tōkyō, pp. 87-134, ill., diagrs.
- KYFFHÄUSER. Kyffhäuser-Konstruktionspreise.  
Zeitschr. Flugt. Motorl., 13. Jahrg., 15. Hft. (14. Aug. 1922), Berlin, p. 215.
- L.
- L-59. See Africa: The African cruise of Zeppelin L-59.
- L. F. G. Das L. F. G. Verkehrsflugzeug type V. 13.  
Motorwagen, Vol. 25, No. 6 (Feb. 28, 1922), Berlin, pp. 119-120, ill.

- L. W. F. L. W. F. giant bomber successful in trial flights.  
Aerial Age, Vol. 15, No. 20 (Nov. 1922), New York, pp. 554-555, ill.
- LA VAULX. XI<sup>e</sup> Coupe Gordon-Bennett d'aérostation. Genève, capitale de l'aérostation du monde.  
L'Aéophile, 30e année, Nos. 15-16 (1er-15 août 1922), Paris, pp. 231-232, ill.
- LABOCETTA, LETTERIO. Un nuovo strumento per la navigazione aerea: L'accelero-metro verticale.  
Atti Assoc. Ital. Aerotechn., 1922, Vol. 2, No. 3-4, Roma, pp. 106-115.
- LABORATORIES. See Göttingen: The Göttingen aerodynamical laboratory.
- LACHMANN, G., translator. Das Caproni-Riesen-Flugboot.  
Zeitschr. Flugt. Motorl., 13. Jahrg., 16. Hft. (31. Aug. 1922), München, pp. 227-230.
- LADD, STORY B. Aeronautic charts.  
Aerial Age, Vol. 15, No. 6 (Apr. 17, 1922), New York, pp. 126-127.
- LAFON, C. Etude sur le ballon captif et les aéronefs marins.  
Paris, Gauthier-Villars et Cie., 1922, pp. vi+206.
- LAKEHURST. See Patterson, T. T.: Naval air station at Lakehurst, N. J., points the way to commercial enterprise.
- LALLIER, ROGER. Le prix Aument-Thiéville.  
L'Aéophile, 30e année, Nos. 13-14 (1er-15 juil. 1922), Paris, pp. 215-217, ill., map.
- LAMBLIN. See Pinsard: La coupe Lamblin.
- LAMÉ, M. Les hélices à pas variable.  
L'aéronautique, 4<sup>me</sup> année, No. 38 (juil. 1922), Paris, pp. 215-218, ill.
- LAMINATED construction. See National Advisory Committee for Aeronautics: Report No. 145. Internal stresses in laminated construction.
- LANDING. Airplane landing field layout.  
Aerial Age, Vol. 15, No. 20 (Nov. 1922), New York, p. 555.
- Airplane landing gear dropped in flight.  
Pop. Mechs., Vol. 38 (Nov. 1922), Chicago, p. 695. ill.
- Landing on the water.  
Aviation, Vol. 13, No. 21 (Nov. 20, 1922), New York, p. 695.
- Landing platform which permits a dirigible to land head to the wind.  
Scient. Amer., Vol. 126 (June, 1922), New York, pp. 400-401, ill., diagrs.
- Landing speeds and safety.  
Aer. Eng. Suppl. The Aeroplane, Vol. 22, Nos. 20, 22 (May 17, 31, 1922), London, pp. 351, 388, 390.
- New list of landing fields issued by Hydrographic Office, United States Navy.  
Aviation, Vol. 13, No. 3 (July 17, 1922), New York, pp. 69-71.
- Ocean way stations for airplanes.  
Literary Digest, Vol. 73, No. 4 (Apr. 29, 1922), New York, pp. 20-21, ill.
- Wettbewerb zur Förderung der Sicherheit des Luftverkehrs und Landung im Nebel.  
Zeitschr. Flugt. Motorl., 13. Jahrg., 16. Hft. (31. Aug. 1922), München, pp. 230-231.
- See Black, Archibald: How to lay out and build an airplane landing field.
- See Black, Archibald: Some errors in landing field layout. Widely published sketches of assumedly ideal field layouts shown to be faulty.
- See Catapults: Catapults and short land devices.
- See I. T.: Nouvelle méthode d'atterrisseage.

- LANDING.** *See* Moriarty, Louis P.: Emergency landings from low altitudes—minimum altitude required to turn back into field in case of engine failure after take-off.
- *See* National Advisory Committee for Aeronautics: Report No. 154. A study of taking off and landing an airplane.
- *See* Night flying: New night landing device.
- *See* Ross, Orrin E.: Designing landing gear shock absorbers. Practical method for determining the size of cord, number of loops, tension, etc., for a given service.
- LANDING—Belgium.** Flughafen Brüssel-Haren.  
Nachr. Luftf., Jahrg. 3, Nr. 37 (17. Sept. 1922), Berlin, p. 483, diagr.
- Flughafen Gosselies.  
Nachr. Luftf., Jahrg. 3, Nr. 36 (10. Sept. 1922), Berlin, p. 459, diagr.
- Flughafen Schaffen.  
Nachr. Luftf., Jahrg. 3, Nr. 37 (17. Sept. 1922), Berlin, p. 471, diagr.
- \* **LANDING—England.** Flughafen Lympne (Zollflughafen).  
Nachr. Luftf., Jahrg. 3, Nr. 32 (13. Aug. 1922), Berlin, pp. 409-410, ill.
- LANDING—France.** Die Flughäfen des französischen Luftdienst.  
Nachr. Luftf., Jahrg. 3, Nr. 36 (10. Sept. 1922), Berlin, pp. 453-459.
- Französische Notlandeplätze.  
Nachr. Luftf., Jahrg. 3, Nr. 24 (18. Juni 1922), Berlin, pp. 314-315.
- LANDING—Great Britain:** Britische Gebühren für die Hausung usw. von Zivilluftfahrzeuge auf Regierungs Zivilflughäfen, auf Flughäfen der Luftstreitkräfte und in Seeflugstationen.  
Nachr. Luftf., Jahrg. 3, Nr. 45 (12. Okt. 1922), Berlin, pp. 561-562.
- LANDING—Hungary.** Flughafen Matthiasfeld bei Budapest.  
Nachr. Luftf., Jahrg. 3, Nr. 42 (22. Okt. 1922), Berlin, p. 532.
- LANDING—Italy.** Italienisches Ministerialdekret Nr. 102 vom 19. November 1921 über die Vorschriften für den Flughafendienst.  
Nachr. Luftf., Jahrg. 3, Nr. 30 (30. Juli 1922), Berlin, pp. 381-383; Nr. 31 (6. Aug.), pp. 394-395; Nr. 32 (13. Aug.) pp. 405-407.
- LANDING—Netherlands.** Holländische Flughäfen.  
Nachr. Luftf., Jahrg. 3, Nr. 18 (7. Mai 1922), Berlin, pp. 248-249, ill.
- Holländische Notlandeplätze für Landflugzeuge.  
Nachr. Luftf., Jahrg. 3, Nr. 24 (18. Juni 1922), Berlin, pp. 320-322.
- Niederländische Flughäfen.  
Nachr. Luftf., Jahrg. 3, Nr. 14 (9. Apr. 1922), Berlin, pp. 186-190.
- LANDING—Spain.** Spanische Flughäfen.  
Nachr. Luftf., Jahrg. 3, Nr. 24 (18. Juni 1922), Berlin, pp. 317-318.
- LANDING—Switzerland.** Flughafen Zürich-Dübendorf.  
Nachr. Luftf., Jahrg. 3, Nr. 39 (1. Okt. 1922), Berlin, pp. 494-496, diagr.
- LANDING—United States.** Landing fields in the United States.  
Aerial Age, Vol. 15, Nos. 10-11 (May 15-22, 1922), New York, pp. 222-224, 252-253.
- LANDSDOWNE, ZACHARY.** Helium: An important national asset. Haven't we in the United States been living in a ready-made fool's paradise?  
U. S. Air Service, Vol. 7, No. 1 (Feb. 1922), Washington, D. C., pp. 13-16, ill.
- LANGLEY.** The airplane carrier *Langley*.  
Aerial Age, Vol. 15, No. 21 (Dec. 1922), New York, pp. 582-583, ill.
- Langley airplane.  
World's Work, Vol. 43 (Dec. 1921), New York, pp. 123-130.

- LANGLEY, SAMUEL PIERPONT.** The work of S. P. Langley.  
*Flight*, Vol. 14, No. 41 (Oct. 12, 1922), London, p. 597.
- The Wright-Langley controversy.  
*Aeroplane*, Vol. 22, No. 4 (Jan. 25, 1922), London, p. 75.
- See Bairstow, Leonard: Doctor Bairstow on the work of Langley.
- See Bairstow, Leonard: The work of S. P. Langley.
- See Brewer, Griffith: The Langley machine and the Hammondsport trials.
- See Wright: Wright on Langley?
- LANGLEY Field.** See Bacon, D. L.: Langley Field wind tunnel motor regulator.  
 National Advisory Committee for Aeronautics develops motor regulator which practically solves problems of constant propeller speed in wind tunnel.
- See National Advisory Committee for Aeronautics: Technical Notes No. 81. Langley Field wind tunnel apparatus. Part I. Regulators for speed of wind tunnel drive motor. Part II. A vernier manometer with adjustable sensitivity.
- LANGSDORFF, WERNER V.** Die deutschen Segelflugzeuge.  
*Motorwagen*, 25. Jahrg., Heft 31 (10. Nov. 1922), Berlin, pp. 596-599, ill.
- Neue holländische Flugzeuge.  
*Motorwagen*, Vol. 24, No. 31 (Nov. 10, 1921), Berlin, pp. 688-692, ill.
- Die neuen Segelflugzeuge beim 3. Rhön-Wettbewerb.  
*Motorwagen*, 25. Jahrg., Heft 27 (30. Sept. 1922), Berlin, pp. 519-523.
- Die Segelflugzeuge beim Rhönwettbewerb, 1922.  
*Autom. Flugv.*, Nr. 9, 1922, Berlin, pp. 287-289, ill.
- LARSEN.** The Larsen Air Navigation Co.  
*Aviation*, Vol. 12, No. 22 (May 29, 1922), New York, p. 634.
- LARSON.** The Larson tensiometer.  
*Aerial Age*, Vol. 14, No. 14 (June 12, 1922), New York, pp. 319-320, ill.  
*Flight*, Vol. 14, No. 33 (Aug. 17, 1922), London, p. 473, ill.
- LASNE, FERNAND.** See Blanchet, Georges: Aviateurs contemporains. Fernand Lasne.
- LATERAL control.** See Aeronautical Research Committee Report No. 773.
- See Aeronautical Research Committee Report No. 787.
- LATIN America.** See Bieser, W. P.: Commercial aviation in Latin America.
- LAUNCHING.** Catapult and turntable for airplanes; the Navy's device for launching airplanes into the wind without changing the course of the ship.  
*Scient. Amer.*, Vol. 126 (Jan. 1922), New York, p. 16, ill.
- LAVERGNE, DE.** French progress in civil air transport. In three years French merchant air fleet expanded from 46 airplanes to 258 airplanes, all of which are used on regular transport services.  
*Aviation*, Vol. 12, No. 6 (Feb. 6, 1922), New York, pp. 170-171.
- LAWRANCE engine.** Lawrance engine runs 200-hour test.  
*Aviation*, Vol. 13, No. 26 (Dec. 25, 1922), New York, p. 838.
- Lawrance model J1 air-cooled engine. Details of power plant used in TR1 seaplane, which won Curtiss marine trophy.  
*Aviation*, Vol. 13, No. 16 (Oct. 16, 1922), New York, pp. 494-495, 517, ill.
- LAWS and regulations.** Abkommen über die Luftfahrt zwischen der argentinischen Republik und der Republik östlich des Uruguay vom 18. Mai 1922.  
*Nachr. Luftf.*, Jahrg. 3, Nr. 42 (22. Okt. 1922), Berlin, pp. 525-527.

- LAWS and regulations. Aerial laws and survey of safety in flight urged by Aeronautical Chamber of Commerce.  
Aerial Age, Vol. 15, No. 11 (May 22, 1922), New York, pp. 246-247.
- Aerial trespassers exonerated.  
Aviation, Vol. 13, No. 6 (Aug. 7, 1922), New York, p. 155.
- Air legislation 100 years ago. Congress petitioned to give monopoly of air to inventor.  
Aviation, Vol. 13, No. 9 (Aug. 28, 1922), New York, p. 251.
- The air navigation order, 1922.  
Aeronautical Digest, Vol. 1, No. 7 (Oct. 1922), New York, p. 154.  
Flight, Vol. 14, No. 28 (July 13, 1922), London, p. 401.
- Air trespass.  
Aviation, Vol. 13, No. 5 (July 31, 1922), New York, p. 119.
- Aviation and the law. American Bar Association and commissioners on uniform State laws consider proposed Federal and State aeronautical laws.  
Aviation, Vol. 12, No. 12 (Mar. 20, 1922), New York, p. 344.
- Bar association favors air code.  
Aviation, Vol. 13, No. 10 (Sept. 4, 1922), New York, p. 287.
- Britische Luftpostvorschriften.  
Nachr. Luftf., Jahrg. 3, Nr. 42 (22. Okt. 1922), Berlin, pp. 527-530.
- Convention for the regulation of aerial navigation, Paris, October 13, 1919.  
Treaty ser., 1922, No. 2, Great Britain Foreign Office, London, 1922, pp. 110. \*
- Deutsches Luftverkehrsgesetz.  
Nachr. Luftf., Jahrg. 3, Nr. 33 (20. Aug. 1922), Berlin, pp. 417-420; Nr. 34 (27. Aug.) pp. 429-431.
- Englische Luftfahrtbestimmungen (Untersuchung von Anfällen) vom 28. Juni 1922.  
Nachr. Luftf., Jahrg. 3, Nr. 43 (29. Okt. 1922), Berlin, pp. 537-540.
- Forty countries have national air laws regulating the operation of civilian aircraft.  
Aeronautical Digest, Vol. 1, No. 9 (Dec. 1922), New York, p. 261.
- Französische Verordnung über die Regelung des Luftverkehrs auf amtlich anerkannten Wegen.  
Nachr. Luftf., Jahrg. 3, Nr. 40 (3. Okt. 1922), Berlin, pp. 501-502.
- Italienische Verordnung betreffend den Verkehr mit Luftfahrzeugen vom 19. November 1921.  
Nachr. Luftf., Jahrg. 3, Nr. 22 (4. Juni 1922), Berlin, pp. 239-291.
- Italienisches Ministerialdekrete (Nr. 103) über die Eintragung von Luftfahrzeugen in das nationale Luftfahrtregister und über die vorschriftsmässigen Erkennungszeichen einheimischer Luftfahrzeuge vom 19. November 1921.  
Nachr. Luftf., Jahrg. 3, Nr. 25 (25. Juni 1922), Berlin, pp. 329-332. \*
- The lack of air regulation.  
Aviation, Vol. 13, No. 11 (Sept. 11, 1922), New York, p. 313.
- Manufacturers oppose Hull bill.  
Aviation, Vol. 13, No. 24 (Dec. 11, 1922), New York, p. 784.
- The need for legislation.  
Aviation, Vol. 13, No. 7 (Aug. 14, 1922), New York, p. 185.
- New air navigation regulations.  
Aer. Eng. Suppl., The Aeroplane, Vol. 23, No. 3 (July 19, 1922), London, p. 48.
- Norwegische Luftfahrtvorschriften.  
Nachr. Luftf., Jahrg. 3, Nr. 35 (3. Sept. 1922), Berlin, pp. 441-443; Nr. 36 (10. Sept.) pp. 453-456.

- LAWs and regulations. On Federal air legislation.  
 Aviation, Vol. 12, No. 3 (Jan. 16, 1922), New York, p. 79.
- Schwedisches Luftfahrtahftpflichtgesetz vom 26. Mai 1922.  
 Nachr. Luftf., Jahrg. 3, Nr. 37 (17. Sept. 1922), Berlin, pp. 465-466; Nr. 38 (24. Sept.), pp. 477-480; Nr. 39 (1. Okt.), pp. 489-492.
- Senate passes Bureau of Aeronautics bill.  
 Aviation, Vol. 12, No. 9 (Feb. 27, 1922), New York, p. 261.
- Spanien: Der neue spanische Zolltarif für Luftfahrtgerät.  
 Nachr. Luftf., Jahrg. 3, Nr. 29 (23. Juli 1923), Berlin, pp. 372-373.
- State v. Federal air legislation.  
 Aviation, Vol. 12, No. 13 (Mar. 27, 1922), New York, p. 363.
- Statuten der International Air Traffic Association.  
 Nachr. Luftf., Jahrg. 3, Nr. 14 (9. Apr. 1922), Berlin, pp. 181-190.
- Uruguayisches Dekret betr.: Ueberfliegen des Staatsgebietes.  
 Nachr. Luftf., Jahrg. 3, Nr. 26 (2. Juli 1922), Berlin, pp. 341-342.
- Verordnung über Aufhebung der Beschlagnahme von Luftfahrzeuggerät. Vom 11. Mai 1922.  
 Nachr. Luftf., Jahrg. 3, Nr. 20 (21. Mai 1922), Berlin, pp. 265-266.
- Verordnung über Luftfahrzeugbau. Vom 5. Mai 1922.  
 Nachr. Luftf., Jahrg. 3, Nr. 18 (7. Mai 1922), Berlin, pp. 241-242.
- Vorläufige Vereinbarung über den Luftverkehr zwischen den Niederlanden und Belgien vom 8. Juli 1922.  
 Nachr. Luftf., Jahrg. 3, Nr. 46 (19. Nov. 1922), Berlin, pp. 573-574.
- What happened to the Wadsworth bill?  
 Aviation, Vol. 13, No. 21 (Nov. 20, 1922), New York, p. 683.
- See Allied and associated powers: Convention for the regulation of aerial navigation. Paris, October 13, 1919.
- See Annet-Badel: La responsabilité des compagnies de transports aériens.
- See Chamber of Commerce: U. S. Chamber of Commerce on air legislation.
- See Davis, W. Jefferson: Air laws and air lanes.
- See Europe: European air line requirements. Combine of German, Dutch, and Scandinavian air lines issues technical requirements for commercial aviation.
- See Manisty, Herbert Francis: Aerial warfare and the laws of war.
- See Mecozzi, Amedeo: In tema di legislazione aerea.
- See Ripert, Georges: Proposed air traffic laws.
- See Warner, E. P.: The new Massachusetts aircraft law.
- See Zoppi, C. Berliri: Legislazione nationale ed internazionale.
- LAWSON, ALFRED W. See Faunce, C. Q.: Airliner and its inventor, Alfred W. Lawson.
- LE BAILLY. Coefficients de sécurité et indices d'essais statiques.  
 L'Aérophile, 30e année, Nos. 23-24 (1er-15 déc. 1922), Paris, pp. 361-363.
- LEBLANC, ALFRED. See R. L.: La coupe Leblanc des sphériques.
- LE BOURGET. The Le Bourget aviation meeting.  
 Aeroplane, Vol. 22, No. 22 (May 31, 1922), London, pp. 383-384.
- Le Bourget meeting.  
 Flight, Vol. 14, No. 22 (June 1, 1922), London, pp. 310-314, ill.

- LECOINTE. L'aviation sanitaire au Congrès de Santé de Marseille.  
L'Aérophile, 30e année, Nos. 19-20 (1er-15 oct. 1922), Paris, p. 315.
- LEE, STEPHEN M. See National Advisory Committee for Aeronautics: Technical Notes No. 101. Comparing maximum pressures in internal-combustion engines.
- LEFÈVRE, D. L'aviation dans la Russie Soviétique.  
L'Aérophile, 30e année, Nos. 11-12 (1er-15 juin 1922), Paris, pp. 175-177.
- LEFORT, R. Le bréviaire de l'aviateur.  
Paris, Libr. Dunod, 1922, pp. xi+763, ill.  
Reviewed in: Ala d'Italia, Anno 1, Num. 5 (nov. 1922), Milano, p. 151.
- LEFRANC, JEAN ABEL. L'avenir est-il au monoplan?  
Nature, Nos. 2474 and 2479 (Sept. 3 and Oct. 8, 1921), Paris, pp. 148-159, 229-235, ill.
- Les avions.  
Bibliothèque des Merveilles, Paris, Hachette et Cie., 1922, pp. 192.
- Le dernier salon de l'aéronautique.  
La Nature, 50e année, 1er sem., No. 2502 (18 mars 1922), Paris, pp. 165-172, ill.
- Nouveaux monoplans de transport.  
La Nature, 50e année, 1er Sem., No. 2490 (4 fév. 1922), Paris, pp. 69-73, ill.
- Les ports aériens.  
La Nature, 50e année, 1er Sem., No. 2515 (17 juin 1922), Paris, pp. 375-383, ill.
- LEMOINE, SIFFER. Radiopejling.  
Teknisk Tidskrift, Vol. 52, Nos. 30 and 33 (July 29, Aug. 19, 1922), Stockholm, pp. 481-484, 529-533, ill.
- LENOUVEL, LEON. La photographie aérienne appliquée à la cartographie.  
Aéronautique, 4me année, No. 37 (juin 1922), Paris, pp. 91-195, ill.
- LENT, L. B. Commercial operation of airplanes; analysis of the records of air mail service for the year ending Sept. 30, 1921.  
Mechanical Engineering, Vol. 44, No. 1 (Jan. 1922), New York, pp. 33-37.  
Engineering and Contracting, Vol. 57 (Jan. 18, 1922), Chicago, pp. 70-72.
- LE PERE. See Engines: Cooling system test of Le Pere P-70, equipped with side radiators.
- LEPERE, G. La construction des surfaces portantes.  
Techn. Aér., 13e année, n. s., No. 7 (15 mai 1922), Paris, pp. 209-214, ill.
- LESAGE, ANDRÉ. Les essais en vol des avions nouveaux au service technique de l'aéronautique.  
Génie Civil, Vol. 81, (July 15-22, 1922), Paris, pp. 53-59, 83-87, ill., diagrs.
- LESAGE, ANDRÉ, and J. MICHAUT. Premier Congrès international de la navigation aérienne (Paris, 15-25 novembre 1921).  
Génie Civil, Vol. 80, (Jan. 21, 1922), Paris, pp. 62-64.
- La II<sup>e</sup> conférence de l'air (Londres, février 1922).  
Génie Civil, Vol. 80, (fév. 25-mars 4, 1922), Paris, pp. 185-187, 211-213.
- LESAGE, ANDRÉ. VII<sup>e</sup> exposition internationale de locomotion aérienne.  
Génie Civil, Vol. 79, Nos. 22-24 (nov. 26, déc. 3, 10, 1921), Paris, pp. 464-468, 477-485, 510-515, ill.
- VIII<sup>e</sup> exposition internationale de locomotion aérienne (Paris, 12-27 novembre 1921).  
Génie Civil, Vol. 79, (nov. 26-déc. 10, 1921), Paris, pp. 464-468, 477-485, 510-515.
- Le vol à voile.  
Génie Civil, Vol. 1, Nos. 15-17 (oct. 7-21, 1922), Paris, pp. 309-315, 343-346, 367-370, ill.
- LESLEY, E. P. See Durand, William Frederick, and E. P. Lesley: Experimental research on air propellers. V.

- LEVASSEUR.** Ceux qui disparaissent (Levasseur).  
L'Aérophile, 30e année, Nos. 5-6 (1er-15 mars 1922), Paris, p. 84, ill.
- LEVASSEUR, PIERRE.** On a great pioneer.  
Aeroplane, Vol. 22, No. 13 (Mar. 29, 1922), London, pp. 221-222.
- LEWES.** The British sail plane meet at Lewes.  
Aviation, Vol. 13, No. 21 (Nov. 20, 1922), New York, pp. 684-686, diagr.
- LEWIS, OLLIE L.** See Blakemore, T. L., and Ollie L. Lewis: Investigation of the aerodynamic properties of streamline forms with a view of possible improvements in the carrying capacity and speed of airships.
- LHOSTE, FRÉDÉRIC.** Frédéric Lhoste.  
L'Aérophile, 30e année, Nos. 21-22 (1er-15 nov. 1922), Paris, p. 344.
- LIBERTY engines.** The improved Army-Liberty engine.  
Aviation, Vol. 13, No. 20 (Nov. 13, 1922), New York, p. 663.
- The improved Liberty engine.  
Aviation, Vol. 13, No. 8 (Aug. 21, 1922), New York, p. 227.
- Liberty engine builders' trophy race. Event No. 4, Friday, October 13.  
Aviation, Vol. 13, No. 15 (Oct. 9, 1922), New York, pp. 449-450.
- New changes in Liberty motor responsible for improvement in Navy plane operations.  
Aerial Age, Vol. 15, No. 18 (Sept. 1922), New York, pp. 455, 478.
- LIEGEROT, LEO E.** Petroleum production in the mid-continent field.  
Automotive Manufacturer, Vol. 63, No. 11 (Feb. 1922), New York, pp. 26-28.
- LIFT.** See Aeronautical Research Committee. Report 762.
- See National Advisory Committee for Aeronautics: Technical Notes No. 92. Full-scale determination of the lift and drag of a seaplane.
- LIGHT.** See Blandy, L. F.: Use of light as an aid to aerial navigation.
- LIGHTHOUSES.** Aerial lighthouses, 1,000,000,000-candlepower lighthouse.  
Flight, Vol. 14, No. 4 (Jan. 26, 1922), London, pp. 52-54, ill., diagr.
- Leuchttürme für den Luftverkehr.  
Flugsport, 14. Jahrg., Nr. 4-5 (15. März 1922), Frankfurt a. M., pp. 59-60.
- Lighthouse developed for night flying.  
Aerial Age, Vol. 15, No. 20 (Nov. 1922), New York, pp. 538-539.
- Lights as aid to aerial navigation: British practice and British design.  
Scient. Amer., Vol. 127 (Sept. 1922), New York, p. 168, ill.
- Navy's aerial lighthouses.  
Aerial Age, Vol. 15, No. 21 (Dec. 1922), New York, pp. 589-590, ill.
- A new combined lighthouse and aerodrome landing light.  
Aeronautical Digest, Vol. 1, No. 9 (Dec. 1922), New York, p. 294.
- Powerful aerial lighthouses.  
Engineer, Vol. 133, No. 3449 (Feb. 3, 1922), London, p. 125.
- See Blandy, L. F.: Aerial lighthouses.
- See Dantin, C.: Phare électrique très puissant pour la navigation aérienne.
- See College Point: Aerial lighthouse, College Point.
- See Collins: F. A.: Land lighthouses.
- See Marcotte, Edmond: Pour la navigation aérienne nocturne. Organisation économique du balisage lumineux.
- LIGHTNING.** Aircraft and lightning.  
Engineer, Vol. 133, No. 3464 (May 19, 1922), London, p. 549.

- LILIENTHAL, OTTO. *See* Reyneker, F. H.: *Uit het leven van Otto Lilienthal.*
- LIMOUSINE Ae 10. A new Czecho-Slovak commercial biplane.  
Flight, Vol. 14, No. 24 (June 15, 1922), London, pp. 343-344, ill., diagr.
- LINDEN, C. L. Building a demountable-rim wire wheel.  
Automotive Manufacturer, Vol. 63, No. 11 (Feb. 1922), New York, pp. 22-25, ill.
- LINDENBERG. Die Arbeiten des Preussischen Aeronautischen Observatoriums bei Lindenberg. XIV. Band, wissenschaftliche Abhandlungen. Herausgegeben von Dr. Hugo Hergesell, Director.  
Braunschweig, Druck von Friedr. Vieweg & Sohn Akt.-Ges., 1922, pp. 167, ill.
- Die Flugstelle Adlershof des Aeronaut. Observatoriums Lindenberg.  
Luftweg, Nr. 7 (15. April 1922), Berlin, pp. 75-76.
- *See* Hergesell, Hugo: Die Arbeiten des Preussischen Aeronautischen Observatoriums bei Lindenberg.
- LINKE, F. Die Messung der Vertikal-Komponente des Windes an Berghängen.  
Zeitschr. Flugt. Motorl., 13. Jahrg., 19-20. Hft. (30. Okt. 1922), München, pp. 285-286.
- LISBON to Rio de Janeiro. First aerial flight from Lisbon to Rio.  
Bull. Pan American Union, Vol. 55, No. — (Oct. 1922), Washington, D. C., pp. 381-383, ill.
- LITTAUER, K. P. Problems of militia aviation.  
Aviation, Vol. 13, No. 2 (July 10, 1922), New York, pp. 43-44.
- LITTLEDALE, H. A. What are the aces doing?  
North American Review, Vol. 215, (May 1922), New York, pp. 678-682.
- LIURETTE, HENRI. Le vol à voile.  
La Nature, No. 2533 (Oct. 21, 1922), Paris, pp. 259-263, ill.
- LIVEING, E. Progress of civil aviation.  
Discovery, Vol. 3, No. 33 (Sept. 1922), London, p. 247.
- LOAD factors. *See* Aeronautical Research Committee. Report No. 776.
- LOCATI, FRANCO. Macchine e uomini italiani riconfermano il primato motoristico di tutto il mondo.  
Ala d'Italia, Anno 1, Num. 3 (sett. 1922), Milano, pp. 70-71, ill.
- LOCKWOOD, E. H. Zur Frage der Kraftverluste bei Luftreisen.  
Motorwagen, 25. Jahrg., Heft 22 (10. Aug. 1922), Berlin, pp. 413-418, ill.
- LOENING. Remarkable performance of the Loening air yacht.  
Aerial Age, Vol. 15, No. 17 (Aug. 1922), New York, p. 392.
- LOENING, ALBERT P. The Loening claim for the Collier trophy. Principal features of document submitted to contest committee, Aero Club of America claiming outstanding achievement during 1921.  
Aviation, Vol. 12, No. 5 (Jan. 30, 1922), New York, p. 139.
- LOENING, GROVER C. The significance of the early work of the Wright Bros.  
U. S. Air Service, Vol. 7, No. 11 (Dec. 1922), Washington, D. C., pp. 16-17.
- LÖSSEL, ERNST v. Praktische Erfahrungen im dynamischen Segelflug.  
Zeitschr. Flugt. Motorl., 13. Jahrg., 23. Hft. (15. Dez. 1922), München, pp. 333-334, ill.
- LOGAN, FLOYD J. Aviation needs viewed by the producer.  
U. S. Air Service, Vol. 7, No. 7 (Aug. 1922), Washington, D. C., p. 9.
- LOHMAN, E. A. Army Air Service observation school. Its aim is to graduate officers competent to act either as pilot or observer.  
U. S. Air Service, Vol. 7, No. 5 (June 1922), Washington, D. C., pp. 24-27.
- LONDON. Goods air express service.  
Engineer, Vol. 133, No. 3454 (Mar. 10, 1922), London, p. 267.

- LONDON. London's air defenses.  
Engineer, Vol. 134, No. 3476 (Aug. 11, 1922), London, p. 139.
- Second air conference, London, Feb. 7-8.  
Engineering, Vol. 113 (Feb. 10-17, 1922), London, pp. 173-175, 187-189.  
Engineer, Vol. 133 (Feb. 10-17, 1922), London, pp. 150, 176-177.  
Electrical Review, Vol. 90 (Mar. 24, 1922), London, pp. 427-428.
- Who takes the plane from London to Paris?  
Literary Digest, Vol. 74 No. 9 (Aug. 26, 1922), New York, pp. 52-54.
- LONGONI, ATTILIO. L'inizio ricostruttivo.  
Gazz. Aviaz., 1922, Anno 4, No. 47, Milano, p. 1.
- See Pensuti, Mario: Attilio Longoni.
- LONGREN. The Longren two-seater biplane.  
Flight, Vol. 14, No. 23 (June 8, 1922), London, pp. 331-332, ill.
- LORING, E. J. Bombing and bombing sights.  
Scient. Amer., Vol. 126 (Jan. 1922), New York, pp. 49-51, ill., diagrs.
- LOS ANGELES. Aviation in Los Angeles 11 years ago. Excerpts from Van M. Griffith's magazine, Aviation, published in Los Angeles during 1911.  
The Ace, Vol. 3, No. 7, Vol. 4, No. 1 (July-Aug. 1922), Los Angeles, pp. 14, 16.
- A Los Angeles field.  
The Ace, Vol. 3, No. 5 (May 1922), Los Angeles, pp. 5
- See Richards, C. H.: Los Angeles mapped from air to aid traffic studies.
- LOTH, ARTHUR WILLIAM. The Loth guide cable. An interesting French aid to air navigation.  
Flight, Vol. 14, No. 11 (Mar. 16, 1922), London, pp. 163-164.
- The Loth guide cable for flying in fog. French invention for guiding aircraft through fog described. System functions in preliminary trial.  
Aviation, Vol. 12, No. 15 (Apr. 10, 1922), New York, pp. 422-423, ill., diagr.
- See Blanchet, Georges: L'inventeur Arthur-William Loth.
- See James, P.: Les câbles-guides de M. Loth.
- LOVETT, E. J. Guiding the air liner into port.  
Pop. Mech., Vol. 37 (May 1922), Chicago, pp. 670-673, ill.
- LOW, A. R. Units in aeronautics.  
Nature, Vol. 109, No. 2727 (Feb. 2, 1922), London, p. 139.
- LOWRY, FRANK. By rail, boat, or aeroplane? That's what they ask you when you want to travel in Europe.  
The Ace, Vol. 3, No. 5 (May 1922), Los Angeles, pp. 7, 10-11, ill.
- LUBRICATION. See Bull, A. A.: Oil consumption.
- See Parish, William F.: The crank-case oil dilution problem and its solution.
- See Round, George A.: Oil pumping.
- See Wilson, Robert E., and Daniel P. Barnard: The mechanism of lubrication.
- See Wilson, Robert E., and Daniel P. Barnard: The measurement of the property of oiliness.
- LUCANUS, FRIEDRICH V. Die Rätsel des Vogelzuges.  
Langensalza, Hermann Beyer & Söhne, 1921, pp. viii, 216, ill.
- Reviewed in: Zeitschr. Flugt. Motorl., 13. Jahrg., 3. Hft. (15. Feb. 1922), München, p. 42.
- LUCKIESCH, MATTHEW. The book of the sky.  
New York, E. P. Dutton & Co., 1922, pp. xi, 236.

LUDINGTON, C. T. "Par Avion!"

U. S. Air Service, Vol. 7, No. 6 (July 1922), Washington, D. C., pp. 17-22.

LUKE, G. F. The awakening of Great Britain.

Aeronautical Digest, Vol. 1, No. 6 (Sept. 1922), New York, pp. 56-57, ill.

LUPBERGER, E. Luftverkehrsfragen.

Autom. Flugv., Nr. 2, 1922, Berlin, pp. 58-60, diagrs.

## M.

MCCARTHY, CHARLES J. Notes on the design of latticed columns subject to lateral loads.

National Advisory Committee for Aeronautics, Technical Notes No. 98, May 1922 (Mimeograph), Washington, p. 18, diagrs.

MCCLELLAND, H. S. The aerial journey from London to Paris.

The Ace, Vol. 3, No. 4 (Apr. 1922), Los Angeles, pp. 5-6.

McCOOK FIELD. *See* Bane, T. H.: Work of McCook Field in 1921. Engineering Division, Army Air Service, developed and tested several new types of airplanes, engines, and equipment.

MACDONOGH, G. M. W. The work of the Intelligence Service.

U. S. Air Service, Vol. 7, No. 3 (April 1922), Washington, D. C., pp. 15-18.

MCDEWELL, H. S. Supplementary report of oil scraper piston rings.

National Advisory Committee for Aeronautics, Technical Notes No. 114, Oct. 1922 (Mimeo-graph), Washington, pp. 6, ill.

— Test of oil scraper piston ring and piston fitted with oil drain holes.

National Advisory Committee for Aeronautics, Technical Notes No. 88, Aug. 1922 (Mimeo-graph), Washington, pp. 10, ill.

MCKEE, RALPH H. Gasoline from oil shale.

Automotive Manufacturer, Vol. 44, Nos. 1-2 (Apr.-May 1922), New York, pp. 26-27, 19-22, ill.

MACLEOD, THOMAS. Maj. Thomas Macleod, a commissioner of the World's Board of Aeronautical Commissioners for Australia.

Aeronautical Digest, Vol. 1, No. 7 (Oct. 1922), New York, pp. 148-149, ill.

MACMILLAN. *See* World flight: The flight around the world. Major Blake's and Captain Macmillan's attempt.

MACMILLAN, NORMAN. Captain Macmillan's progress.

Aeroplane, Vol. 23, No. 3 (July 19, 1922), London, p. 40.

MACREADY. *See* Records: T2 makes new duration record. Lieutenants MacReady and Kelly stay up 35 hours 18½ minutes in Army transport plane.

MACREADY, JOHN A. *See* Superchargers: Functioning of supercharger in altitude flight. Experience of Lieut. John A. MacReady on record-breaking altitude flight shows difficulties met in exceeding 40,000 feet.

MAGALDI, GIULIO. Idrovolanti a grandissima autonomia.

Ala d'Italia, Anno 1, Num. 6 (dic. 1922), Milano, pp. 160-165, diagrs.

MAGEE, JOHN. Piston rings.

Journ. Soc. Aut. Eng., Vol. 11, No. 3 (Sept. 1922), New York, pp. 273-274.

MAGNAN. Recherches expérimentales sur le vol à voile.

Techn. Aér., 13e année, n. s., Nos. 12-14 (15 oct.-déc. 1922), Paris, pp. 367-377, 386-392, 424-441, ill.

MANNETOS. *See* Bairsto, G. E.: On the synchronism of the spark of a magneto as affected by the method of coupling.

— *See* Paterson, C., and N. R. Campbell: An investigation of certain spark gaps for magnetics.

- MAGNI, PIERO. Per il progresso dell' aviazione.  
Ala d'Italia, Anno 1, Num. 1 (Giugno 1922), Milano, pp. 11-14.
- MAIER, G. Flugboot und Schwimmerflugzeug.  
Motorwagen, 25. Jahrg., Heft 30 (31. Okt. 1922), Berlin, pp. 581-583.
- MAIL. The aerial-mail appropriation.  
Aerial Age, Vol. 15, No. 1 (Mar. 13, 1922), New York, p. 3.
- . Aerial-mail night flying.  
Aerial Age, Vol. 15, No. 11 (May 22, 1922), New York, pp. 243, 263.
- . The air mail before the Senate.  
Aviation, Vol. 12, No. 10 (Mar. 6, 1922), New York, p. 288.
- . Air-mail service. Consolidated statement of performance from May 15, 1918, to December 31, 1921.  
Aviation, Vol. 12, No. 11 (Mar. 13, 1922), New York, p. 316.
- . Air-mail service flying records of certain pilots from date of appointment to September 30, 1922.  
Aeronautical Digest, Vol. 1, No. 9 (Dec. 1922), New York, pp. 272-279, ill.
- . Air-mail service schedule.  
Aerial Age, Vol. 15, No. 13 (June 5, 1922), New York, pp. 297-298.
- . Bids asked for air-mail route. To carry 500 pounds of mail by aircraft between New Orleans and Pilottown, La.  
Aviation, Vol. 13, No. 23 (Dec. 4, 1922), New York, pp. 743-744.
- . Congress hits the air mail.  
Literary Digest, Vol. 72, No. 6 (Feb. 11, 1922), New York, p. 14.
- . Existence of air-mail service threatened. Director of Budget recommended air-mail appropriation of \$2,200,000; House Appropriations Committee eliminated it.  
Aviation, Vol. 12, No. 5 (Jan. 30, 1922), New York, p. 133.
- . Federal air-mail service is mounting in importance.  
Current Opinion, Vol. 73 (July 1922), New York, pp. 116-117, map.
- . Flying the air mail is still a temperamental job.  
Literary Digest, Vol. 72 (Jan. 14, 1922), New York, pp. 50-52.
- . Imperial air-mail services. First report of Civil Aviation Advisory Board.  
Flight, Vol. 14 No. 33 (Aug. 17, 1922), London, pp. 469-472.
- . An improved United States mail plane.  
Flight, Vol. 14, No. 46 (Nov. 16, 1922), London, p. 674, ill.
- . Luftpostdienst der Vereinigten Staaten vom 15. Mai 1918 bis 31. Dezember 1921.  
Nachr. Luftf., Jahrg. 3, Nr. 20 (21. Mai 1922), Berlin, pp. 234-235.
- . New mail plane shows increased efficiency.  
Aviation, Vol. 13, No. 17 (Oct. 23, 1922) New York, p. 560, ill.
- . The night air mail.  
Aviation, Vol. 13, No. 5 (July 31, 1922), New York, p. 119.
- . Night air-mail experiments.  
Aviation, Vol. 13, No. 9 (Aug. 28, 1922), New York, p. 253.
- . Night air mail planned.  
Aviation, Vol. 13, No. 5 (July 31, 1922), New York, p. 123.
- . Preparing for the night air mail.  
Aviation, Vol. 13, No. 7 (Aug. 14, 1922), New York, p. 192.
- . Profitable air-mail service.  
Aviation, Vol. 13, No. 9 (Aug. 28, 1922), New York, p. 257.

- MAIL. The record of the air-mail service.  
 Aviation, Vol. 12 No. 5 (Jan. 30 1922), New York, p. 127.
- Safety record of air mail.  
 Aviation, Vol. 13, No. 5 (July 31, 1922), New York, p. 128.
- Some facts regarding the air-mail service.  
 Aviation, Vol. 12, No. 21 (May 22, 1922), New York, p. 592.
- Ueber Entwicklung und Erfahrungen der Flugpost in den Vereinigten Staaten.  
 Luftweg, Nr. 5 (Feb. 9, 1922), Berlin, pp. 30-31.
- With the night mail.  
 Literary Digest, Vol. 75, No. 5 (Nov. 4, 1922), New York, pp. 27-28, ill.
- See Australia: The Australian air-mail service.
- See Australia: Civil air-mail services in Australia. Australian Government accepts tenders of private enterprises for the operation of three air-mail routes totaling 2,255 miles.
- See Claudio, C. H.: Why the mail plane?
- See Commercial aeronautics: New York-Chicago air-mail and merchandise service.
- See Henderson, Paul: Achievements and projects of the air mail.
- See Henderson, Paul: The air-mail service in the United States.
- See India: Air-mail service to India.
- See Morgan, E. M.: Transcontinental air mail.
- See Night flying: Chicago is to be the laboratory for night flying experiments of the Post Office Department.
- See Peterson, C. G.: Advantages of aerial mail.
- See Praeger, Otto: Success of air-mail service. An unparalleled service record maintained at comparatively low cost.
- See Shaughnessy, E. H.: The present status of the air-mail service.
- MALGORN, G. Lexique technique Anglais-Français.  
 Paris, Gauthier-Villars et Cie., 1922, p. 216.
- MANCE, F. A. The control of operating tool and supply cost.  
 Journ. Soc. Aut. Eng., Vol. 11, No. 5 (Nov. 1922), New York, pp. 407-408.
- MANDEVILLE, J. B. Aerial photography as applied to surveying.  
 Proc. Engineers' Soc. Western Pa., Vol. 37 (May 1921), Pittsburgh, pp. 189-220, ill.
- MANES, C. R. Piston rings and ring grooves.  
 Journ. Soc. Aut. Eng., Vol. 11, No. 3 (Sept. 1922), New York, pp. 262-264.
- MANEYROL. See Peyriller, E.: Aviateurs contemporains. Maneyrol.
- MANILA BAY. Unusual balloon flight over Manila Bay. Sailing across Manila Bay in half-submerged basket of partly deflated kite balloon teaches several valuable lessons.  
 Aviation, Vol. 12, No. 4 (Jan. 23, 1922), New York, p. 100.
- MANISTY, HERBERT FRANCIS. Aerial warfare and the laws of war.  
 Grotius Society. Problems of the war. London, 1916-1919, Vol. 7, 1922, pp. 33-41.
- MANOMETERS: See Bacon, D. L.: Vernier manometer with adjustable sensitivity.
- MANUFACTURE. L'emploi des alliages légers en aéronautique.  
 Génie Civil, Vol. 80, (May 6, 1922), Paris, pp. 404-407.

- MANUFACTURE.** Getting airplane details on a manufacturing basis.  
 American Machinist, Vol. 55, (Dec. 1, 1921), New York, pp. 886-887, ill.
- Metal aeroplane construction.  
 Engineer, Vol. 134, (Nov. 3, 1922), London, pp. 458-460, ill., diagrs.
- MAP making.** How mosaic air maps are made.  
 Literary Digest, Vol. 73, No. 2 (Apr. 8, 1922), New York, pp. 26-27, ill.
- Mosaic maps by air photography.  
 Literary Digest, Vol. 71, (Nov. 19, 1921), New York, p. 22, ill.
- Mosaic maps of cities; aerial maps taken vertically or obliquely serve many purposes in municipal administration and publicity work.  
 American City, Vol. 27, (Sept. 1922), New York, pp. 253-255, ill.
- Three-dimension weather maps made for airmen.  
 Pop. Mech., Vol. 37, (Mar. 1922), Chicago, p. 411.
- See Bagley, James Warren: Concerning aerial photographic mapping.
- See Duval, A.: Maps and navigation methods.
- See Gradenwitz, Alfred: The Hugershoff autocartograph. Ingenious apparatus simplifies process of map drawing from aerial photographs.
- See Photography: Map making and aerial photography. Canada's use of the new method.
- MARCEL BESSON.** L'hydravion de haute mer "Marcel Besson" aux essais.  
 L'Aérophile, 30e année, Nos. 13-14 (1er-15 juil. 1922), Paris, p. 195, ill.
- The Marcel Besson quadruplane.  
 Aer. Eng. Suppl. The Aeroplane, Vol. 23, No. 20 (Nov. 15, 1922), London, p. 380, diagr.
- The Marcel Besson quadruplane flying boat. An interesting French development in large flying-boat construction.  
 Aviation, Vol. 13, No. 19 (Nov. 6, 1922), New York, p. 635, diagr.
- MARCHIS, M.** Revue industrielle: La navigation aérienne commerciale.  
 Revue Scientifique, 60e année, No. 9 (13. mai 1922), Paris, pp. 299-306.
- MARCOTTE, EDMOND.** Le balisage lumineux aérien.  
 Mémoires et Compte Rendu des Travaux de la Société des Ingénieurs Civils de France.  
 Bull. 75, (Apr. 1922), Paris, pp. 148-172.
- Pour la navigation aérienne nocturne. Organisation économique du balisage lumineux.  
 L'Aérophile, 30e année, Nos. 9-10 (1er-15 mai 1922), Paris, pp. 148-153, ill.
- MARGARIT, AD.** Dirigibles semirrigidos.  
 Ibérica, No. 434 (1 julio 1922), Tortosa, pp. 9-12, ill.
- MARGOULIS, W.** Les abaques à transparent orienté.  
 C. R. Acad. Sci., T. 174, No. 26 (26 juin 1922), Paris, pp. 1684-1686. Comment in Ala d'Italia,  
 Anno 1, Num. 4 (ott. 1922), Milano, pp. 103-106.
- Les hélicoptères. Recherches expérimentales sur le fonctionnement le plus général des hélices. Etude sur la mécanique de l'hélicoptère.  
 Paris, Gauthier-Villars et Cie., 1922, pp. xi, 91, ill.  
 Aéronautique, 4<sup>me</sup> année, No. 34 (mars 1922), Paris, pp. 1-16. (Suppement technique au No. 34 de l'aéronautique).
- Le pilotage du planeure.  
 Aéronautique, 4<sup>me</sup> année, No. 39 (août 1922), Paris, p. 242, ill.
- MARINO, ALGERI.** Sulle antenne radiotelegrafiche dei veicoli aerei.  
 Elettrotecnica, Vol. 9, No. 11 (Apr. 15, 1922), Milan, pp. 242-247, ill.
- MARKING.** Nationality and registry marks for aircraft.  
 Pop. Mech. Vol. 38, (Sept. 1922), Chicago, p. 358, ill.

- MARKS, L.** The airplane engine.  
 New York and London, McGraw-Hill Book Co. (Inc.), 1922, pp. ix, 454.  
 Reviewed in: Engineering, Vol. 113, No. 2947 (June 23, 1922), London, p. 791.
- MARSEILLE.** La section aéronautique à l'Exposition Coloniale de Marseille.  
 L'Aérophile, 30e année, Nos. 11-12 (1er-15 juin 1922), Paris, p. 185.
- MARSH, W. LOCKWOOD.** See Vivian, E. C., and W. Lockwood Marsh: A history of aeronautics.
- MARSHALL, HAROLD F.** The market for commercial aircraft in 1922. A practical program for developing the aircraft market—aviation a transport industry—convincing the public.  
 Aviation, Vol. 12, No. 2 (Jan. 9, 1922), New York, pp. 43-44.
- Present and possible markets for aircraft.  
 Automotive Manufacturer, Vol. 63, No. 10 (Jan. 1922), New York, pp. 21-22.
- MARTIN.** The Martin observation airplane.  
 Aviation, Vol. 13, No. 24 (Dec. 11, 1922), New York, pp. 772-773, ill.
- Manufacturers' bids for the construction of Martin bombers.  
 Aviation, Vol. 12, No. 7 (Feb. 13, 1922), New York, p. 198.
- Official performance test of Martin bomber *N. B. S-1* equipped with two 400-horsepower Liberty "12" engines.  
 Air Service Information Circular, Vol. 3, No. 290 (Oct. 1, 1921), Washington, D. C., p. 10, ill.
- MARTIN, E. STOCKTON.** Facts on aircraft insurance.  
 Aviation, Vol. 12, No. 1 (Jan. 2, 1922), New York, p. 10.
- MARTIN, F. L.** The Air Service mechanics school Its function and operation.  
 U. S. Air Service, Vol. 7, No. 10 (Nov. 1922), Washington, D. C., pp. 25-29, ill.
- MARTIN, GLENN L.** The Glenn L. Martin flying field.  
 Aviation, Vol. 12, No. 25 (June 19, 1922), New York, p. 724, ill.
- MARTINI.** Das "Isherwood-system."  
 Voss, 7. Januar 1922, Berlin, p. 15.
- MARTINOT-LAGARDE.** Les moteurs d'aviation. Desiderata actuels—orientation des recherches.  
 L'Aérophile, 30e année, Nos. 9-14 (1er mai-15 juil. 1922), Paris, pp. 135-139, 171-174, 196-200, ill.
- Les moteurs d'aviation, évolution, tendances actuelles.  
 Bull. Soc. Enc. Ind. Nat., 121 année, T. 134, No. 3 (mars 1922), Paris, pp. 187-222, ill.
- Note au sujet des moteurs d'aviation.  
 Aéronautique, 4me année, No. 32 (janv. 1922), Paris, pp. 17-20, ill.
- MARTINSYDE.** A Martinsyde for Newfoundland. The type A, Mark II, sold to the Aerial Survey Co.  
 Flight, Vol. 14, No. 33 (Aug. 17, 1922), London, pp. 463-465, ill., diagr.
- MASETTI, ROMANO.** Cleptografia al dirigenti l'aviazione militare.  
 Gazz. Aviaz., Anno 4, 1922, No. 35, Milano, p. 3.
- MASSACHUSETTS.** Aviation activities in Massachusetts.  
 Aerial Age, Vol. 15, No. 10 (May 15, 1922), New York, p. 231.
- Massachusetts falls in line.  
 Aviation, Vol. 12, No. 22 (May 29, 1922), New York, p. 623.
- See Warner, E. P.: The new Massachusetts aircraft law.
- MASSACHUSETTS Institute of Technology.** See Gentry, Frank M.: Description of the Massachusetts Institute of Technology sail plane. Product of Aeronautical Engineering Society of Massachusetts Institute of Technology embodies many interesting features.

- MASSACHUSETTS Institute of Technology. *See* Gentry, Frank M.: The Massachusetts Institute of Technology soaring machine.
- *See* Gliders: Massachusetts Institute of Technology builds glider.
- *See* Gliders: Massachusetts Institute of Technology glider has flown.
- *See* Gliders: Massachusetts Institute of Technology gliders at French competition. American team sails with two machines entered in French gliding competition at Puy-de-Combegrasse.
- *See* Warner, Edward P.: The aerodynamical laboratory of the Massachusetts Institute of Technology. Recent additions to two new wind tunnels greatly increase operating capacity of America's oldest research establishment.
- MASTERY of the air. By the author of *The triumph of man*.  
Pitman's Mastery Series, New York, Sir Isaac Pitman & Sons, 1922, pp. vii, 184.
- MATTIOLI, GUIDO. *L'aeronautica civile in Italia*.  
Gazz. Aviaz., 1922, Anno 4, No. 37, Milano, p. 3.
- MAXWELL, HAMILTON. *Aerial photography*.  
Aeronautical Digest, Vol. 1, No. 7 (Nov. 1922), New York, pp. 117-121, ill.
- MAY, O. J., and HOWARD COOPER. Tests of aeroplane motor with different gasolines.  
Sci. Lubrication, Vol. — (July 1921), Chicago, pp. 9-13, ill.
- MAYBACH. *See* National Advisory Committee for Aeronautics: Report No. 134. Performance of Maybach 300-horsepower airplane engine. By S. W. Maybach.
- MAYDELL, WILHELM V. *Die Rolle Deutschlands im internationalen Flugverkehr*.  
Luftweg, Hft. 14 (12. Nov. 1922), Berlin, p. 138.
- MAYENBERGER. *The Mayenberger sporting amphibian*.  
Flight, Vol. 14, No. 30 (July 27, 1922), London, p. 421, diagr.
- MAYER, G. *Drei neue kleine L. F. G. Flugzeuge*.  
Motorwagen, 25. Jahrg., Heft 32 (20. Nov. 1922), Berlin, pp. 614-617.
- *Motorwagen mit Luftschaubenantrieb*.  
Motorwagen, 25. Jahrg., Heft 21 (31. Juli 1922), Berlin, pp. 402-405.
- MAYO, R. H. *Paris aeronautical exhibition, 1921*.  
Engineering, Vol. 112, (Dec. 9, 23, 1921), London, pp. 795-797, 862.
- MEAD, GEORGE J. *The Wright dirigible engine and its development for the Navy*.  
Aerial Age, Vol. 15, No. 15 (June 19, 1922), New York, pp. 342-343.
- MEADOWCROFT, M. *Report on goldbeaters' skins for ZR 1*.  
Aviation, Vol. 13, No. 20 (Nov. 13, 1922), New York, pp. 662-663.
- MEARS, ATHERTON H. *Altitude instruments. Part III. Statoscopes and rate-of-climb indicators*.  
National Advisory Committee for Aeronautics, Report No. 126, Aug. 4, 1922, Washington, Government Printing Office, 1922, pp. 38-53, ill.
- MEARS, ATHERTON H., H. B. HENNICKSON, and W. G. BROMBACHER. *Altitude instruments. Part I. Altimeters and barographs*.  
National Advisory Committee for Aeronautics, Report No. 126, Aug. 4, 1922, Washington, Government Printing Office, 1922, pp. 5-27, ill.
- MECHANICS. *American Airways mechanics' course*.  
Aviation, Vol. 12, No. 3 (Jan. 16, 1922), New York, p. 78.
- MECOZZI, AMEDEO. *Comincia la vita nuova*.  
Gazz. Aviaz., 1922, Anno 4, No. 48, Milano, p. 1.
- *Commenti alla gran coppa d'Italia 1922*.  
Ala d'Italia, Anno 1, Num. 5 (nov. 1922), Milano, pp. 126-128.

- MECOZZI, AMEDEO. *Divagazione sulle meteore (a proposito della coppa Baracca 1922).*  
*Gazz. Aviaz.*, 1922, Anno 4, No. 36, Milano, p. 1.
- In tema di legislazione aerea: *Il pelo (professionale) nell'ovo (legislativo).*  
*Gazz. Aviaz.*, 1922, Anno 4, No. 42, Milano, p. 2.
- Il paracadute e le gare dell' 8 ottobre 1922.  
*Ala d'Italia*, Anno 1, Num. 3 (sett. 1922), Milano, pp. 59-62.
- La potenza delle patrole.  
*Gazz. Aviaz.*, 1922, Anno 4, No. 35, Milano, p. 2.
- MEISINGER, C. LEROY. Interpretation of meteorological maps. Free air conditions may be deduced from proper interpretation of surface conditions.  
*Aviation*, Vol. 13, No. 24 (Dec. 11, 1922), New York, pp. 774-776, charts.
- MEISSNER, WALTHER. Entfernung- und Höhenmessung in der Luftfahrt.  
Reviewed in: *Luftweg*, Nr. 11 (15. Aug. 1922), Berlin, p. 114.
- MERCANTON, P. L. Voyages d'étude sur Paris-Lausanne. I. Observations météorologique.  
*Aéronautique*, 4<sup>me</sup> année, No. 33 (fév. 1922), Paris, pp. 49-51, ill.
- MESSENGER airplane. Performance test of Messenger airplane equipped with 3-cylinder 60-horsepower Lawrence engine.  
*Air Service Information Circular*, Vol. 3, No. 280 (Oct. 15, 1921), Washington, D. C., pp. 7, ill.
- METAL airplane. First all-metal trans-Atlantic plane will carry 20.  
*Pop. Sci. Month.*, Vol. 100, No. 4 (Apr. 1922), New York, p. 34, ill.
- Metal aeroplane construction.  
*Engineer*, Vol. 134, No. 3488 (Nov. 3, 1922), London, pp. 458-460, ill.
- Parliament and metal aircraft.  
*Aer. Eng. Suppl. The Aeroplane*, Vol. 23, No. 3 (July 19, 1922), London, p. 48.
- See Hanriot: The Hanriot two-seater fighter, type H 15. An interesting French all-metal machine.
- See Wibault: The Wibault night bomber. An interesting French all-metal aeroplane.
- METAL construction. The development of metal aircraft.  
*Aviation*, Vol. 12, No. 22 (May 29, 1922), New York, p. 636.
- The metal construction of aeroplanes.  
*Aer. Eng. Suppl. The Aeroplane*, Vol. 23, No. 19 (Nov. 8, 1922), London, p. 368.
- See North, John D.: The case for metal construction.
- See Verduzio, Rodolfo: Metal construction.
- METALS. Properties of metals and alloys at low temperatures.  
*Aviation*, Vol. 12, No. 18 (May 1, 1922), New York, p. 511.
- METEOROLOGY. Airships in bad weather.  
*Aviation*, Vol. 12, No. 1 (Jan. 2, 1922), New York, p. 5.
- Weather forecasts.  
*Aerial Age*, Vol. 15, No. 17 (Aug. 1922), New York, p. 407.
- What is above the air we breathe?  
*Aeronautical Digest*, Vol. 1, No. 6 (Sept. 1922), New York, p. 72.
- See B., A.: Les variations de l'air atmosphérique.
- See Blair, William R.: Note on the planetary system of circulation.
- See Cannegieter, H. C.: De toestand van den dampkring boven Soesterberg.
- See Meisinger, C. LeRoy: Interpretation of meteorological maps. Free air conditions may be deduced from proper interpretation of surface conditions.

- METEOROLOGY. *See* Pick, W. H.: A short course in elementary meteorology.
- *See* Reed, William F., jr.: Aviation weather for military operations. Importance of correct weather forecasting for aircraft has caused wider investigation of the upper atmosphere.
- *See* Renard, Paul: Le prix Bernard-Dubos pour la météorologie appliquée à l'aéronautique.
- *See* Rouch, J.: Etude sur la haute atmosphère en France. Le vent en altitude à Bayonne.
- *See* Schmauss, A.: Meteorological advice for the air traffic.
- *See* National Advisory Committee for Aeronautics: Report, No. 147, Standard atmosphere.
- *See* Wentworth, R. Preston: Suggestion for aerial meteorological research.
- MEXICO. Airway plans of Mexico.  
Aviation, Vol. 12, No. 14 (Apr. 3, 1922), New York, p. 404.
- Mexican cantilever monoplane.  
Aviation, Vol. 12, No. 25 (June 19, 1922), New York, p. 726.
- *See* Haslett, Elmer: United States of Mexico alive to aviation. Chief of air service is a young man whose dreams come true.
- MEYER, E. Grossflugzeuge der Zeppelinwerke Staaken.  
Schweizerische Bauzeitung, Vol. 78, Nos. 24 and 26 (Dec. 10, 24, 1921), pp. 283-286, 307-309, ill.
- Das neue Zweimotoren-Verkehrsflugboot Dornier—"Wal."  
Motorwagen, 25. Jahrg., Heft 17 (20. Juni 1922), Berlin, pp. 337-339.
- Persönliche Eindrücke vom ersten englischen Segelflug-Wettbewerb.  
Zeitschr. Flugt. Motorl., 13. Jahrg., 23. Hft. (15. Dez. 1922), München, pp. 321-322.
- MEYER, G. Die Dornier-Zweimotorenanlage für Grossflugboote.  
Motorwagen, 25. Jahrg., Heft 28 (10. Okt. 1922), Berlin, pp. 531-533.
- Ideal-Flugzeug und Junkersscher Flügel.  
Motorwagen, 25. Jahrg., Heft 23 (20. Aug. 1922), Berlin, pp. 436-439.
- Das neue Albatros-Verkehrsflugzeug "L 58."  
Motorwagen, 25. Jahrg., Heft 34 (10. Dez. 1922), Berlin, pp. 648-650.
- Neue Verkehrsflugzeuge.  
Motorwagen, 25. Jahrg., Heft 23 (20. Aug. 1922), Berlin, pp. 442-443, ill.
- MEYER, P. Het hoogtevliegtuig van Boerner.  
Vliegveld, 6de Jaarg., No. 3 (Maart 1922), Amsterdam, p. 59.
- MEYER, WILLY. Flugplatz-Totalisator.  
Flugsport, 14. Jahrg., Nr. 3 (1. Feb. 1922), Frankfurt, pp. 46-49.
- MICHAUT, J. *See* Lesage, A., and J. Michaut: Premier Congrès international de la navigation aérienne (Paris, 15-25 novembre 1921).
- *See* Lesage, A., and J. Michaut: La II<sup>e</sup> conférence de l'air (Londres, février 1922).
- MIDGELEY, THOMAS, and T. A. BOYD. Detonation characteristics of some blended motor fuels.  
Journ. Soc. Aut. Eng., Vol. 11, No. 3 (Sept. 1922), New York, pp. 247.
- MIDGELEY, THOMAS, jr., and W. K. GELKEY. Spectroscopic investigation of internal combustion.  
Journ. Soc. Aut. Eng., Vol. 10, No. 3 (Mar. 1922), New York, pp. 218-219, 222.

- MIDWESTERN flying meet. The midwestern flying meet. Highly successful meeting at Monmouth, Ill., marked by appearance of new Bellanca commercial monoplane.  
Aviation, Vol. 13, No. 2 (July 10, 1922), New York, pp. 38-40, ill.
- MILITARY aeronautics. Aerial navies and armies of chemists.  
Literary Digest, Vol. 71, No. 7 (Nov. 12, 1921), New York, p. 28, ill.
- The Air Service reduced in Army reorganization.  
Aviation, Vol. 9 (Aug. 28, 1922), New York, pp. 261-262
- Air strength of the great powers. Tables prepared by subcommittee on aircraft of Washington conference give authorized and actual air strength data for United States, France, Great Britain, Italy, and Japan.  
Aviation, Vol. 12, No. 6 (Feb. 6, 1922), New York, pp. 164-166.
- Airships, aeroplanes, and the Navy.  
Aer. Eng. Suppl. The Aeroplane, Vol. 23, No. 8 (Aug. 23, 1922), London, pp. 149-150.
- America's lead in war aviation.  
Literary Digest, Vol. 72, No. 2 (Jan. 14, 1922), New York pp. 45-49.
- Anti-infantry airplane carries 30 guns.  
Pop. Mech., Vol. 36 (Dec. 1921), Chicago, p. 817, ill.
- Armament conference decides against limitation of aircraft.  
Commercial and Financial Chronicle, Vol. 114 (Jan. 14, 1922), New York, pp. 149-156.
- Armored fighting airplanes.  
Aviation, Vol. 12, No. 12 (Mar. 20, 1922), New York, p. 335.
- Aviation—first line in war.  
Aerial Age, Vol. 15, No. 6 (Apr. 17, 1922), New York, pp. 123, 142.
- Bombs *v.* battleships. Some astounding misstatements.  
Aeroplane, Vol. 22, No. 14 (Apr. 5, 1922), London, pp. 238-240, 251.
- Capital ships and aircraft.  
Outlook, Vol. 130, No. — (Jan. 11, 1922), New York, pp. 60-63, ill.
- Coast Artillery *v.* aircraft.  
Aviation, Vol. 12, No. 15 (Apr. 10, 1922), New York, p. 419.
- The first torpedo plane practice.  
Aeronautical Digest, Vol. 1, No. 8 (Dec. 1922), New York, pp. 245-247, ill.
- The function of air power.  
Aviation, Vol. 12, No. 26 (June 26, 1922), New York, p. 745.
- General requirements for eligibility for appointment as flying cadet and other information pertaining thereto.  
U. S. Air Service, Vol. 7, No. 11 (Dec. 1922), Washington, D. C., p. 33.
- General rules for air combat.  
Aerial Age, Vol. 15, No. 21 (Dec. 1922), New York, p. 599.
- Grim disarmament argument.  
Literary Digest, Vol. 71 (Nov. 26, 1921), New York, pp. 13-14.
- Gross-Britannien: "Our paper air force."  
Nachr. Luftf., Jahrg. 3, Nr. 32 (13. Aug. 1922), Berlin, pp. 408-409.
- How Air Service reserve officers may achieve promotion.  
U. S. Air Service, Vol. 7, No. 6 (July 1922), Washington, D. C., pp. 7-8.
- On our first line of defense.  
Aeroplane, Vol. 22, No. 2 (Jan. 11, 1922), London, pp. 21-24.
- On the Navy, and the Royal Air Force, and the press again.  
Aeroplane, Vol. 23, No. 3 (July 19, 1922), London, pp. 37-40.
- Sea and air power.  
Aerial Age, Vol. 15, No. 14 (June 12, 1922), New York, p. 315.

- MILITARY aeronautics. *See* Green, F. M.: Development of the fighting aeroplane.  
— *See* Littauer, K. P.: Problems of militia aviation.  
— *See* Payriller, E.: De la préparation militaire et de l'organisation des services aériens de l'armée.  
— *See* Raleigh, Walter: The war in the air (official history of the air).
- MILLER, R. A. Reserve bending strength of struts.  
Air Service Information Circular, Vol. 4, No. 353 (June 1, 1922), Washington, D. C., pp. 5, ill.
- MILLER, J. W. An explanation of soaring flight. Condensed outline of a series of lectures delivered before the Northwest Aeronautical Society, Seattle, Wash.  
Aviation, Vol. 13, No. 5 (July 31, 1922), New York, pp. 121-123, diagr.
- MILLER, ROY G., and F. E. SEILER, jr. Improved method for designing aircraft parts.  
Aviation, Vol. 12, No. 13 (Mar. 27, 1922), New York, pp. 366-367, diagr.
- Propulsion efficiency *v.* performance. Influence of propulsion efficiency on the performance of airplanes demonstrated by some well-known examples.  
Aviation, Vol. 12, No. 25 (June 19, 1922), New York, pp. 717-719, ill.
- MILLER, WILLIAM H. The prediction of propeller characteristics from the blade element analysis.  
Aerial Age, Vol. 15, Nos. 19, 21 (Oct., Dec. 1922), New York, pp. 500-502, 590-592, 598.
- MILLIKAN, Robert Andrews. Facts bearing on the structure of atoms, particularly of the helium atom.  
Physical Review, Vol. 18 (Dec. 1921), Ithaca, N. Y., pp. 456-460, diagrs.
- MINER, V. S., and T. CARROLD. How to lay out a practical air route. Practical hints based upon map of air route between Washington, D. C., and Langley Field.  
Aviation, Vol. 13, No. 12 (Sept. 18, 1922), New York, pp. 349-350, map.
- MINGOS, H. Airplane racing and what it means; the immediate lessons to be drawn from the Pulitzer race at Omaha.  
Scient. Amer., Vol. 126 (Feb. 1922), New York, p. 101, ill.
- MISSISSIPPI Delta. *See* Winters, S. R.: Aerial survey of the Mississippi Delta. One of the biggest undertakings of civil aerial photography recently brought to successful conclusion.
- MITCHELL. *See* Records: General Mitchell sets new world's speed record. Averages 224 miles per hour over 1-kilometer course.  
— *See* Russell, Frank H.: General Mitchell flies officially at 224 miles an hour.
- MITCHELL, R. K. Standard versus special machine tools for automotive production.  
Journ. Soc. Aut. Eng., Vol. 11, No. 6 (Dec. 1922), New York, pp. 472-473.
- MITCHELL, WILLIAM. Air power has come to stay.  
Aviation, Vol. 13, No. 6 (Aug. 7, 1922), New York, p. 182.
- General Mitchell's maximum speed record. How the great performance was officially observed.  
Aviation, Vol. 13, No. 22 (Nov. 27, 1922), New York, p. 717.
- Safety in flight.  
Review of Reviews, Vol. 65 (Feb. 1922), New York, pp. 166-172, ill., diagrs.
- What's the matter with flying in America? Europe outstrips us at our own game.  
Pop. Sci. Monthly, Vol. 100, No. 4 (Apr. 1922), New York, pp. 24-26, ill.
- MOCK, F. C., and M. E. CHANDLER. The hot-spot method of heavy-fuel preparation.  
Journ. Soc. Aut. Eng., Vol. 11, Nos. 1 and 6 (July and Dec. 1922), New York, pp. 27-32, 48, 474-476, 490, diagr.

**MODEL surface.** *See* National Advisory Committee for Aeronautics: Report No. 139. Influence of model surface and air flow texture on resistance of aerodynamic bodies. By A. F. Zahm.

**MODELS.** The co-relation of model and full-scale work.

Aer. Eng. Suppl. The Aeroplane, Vol. 23, No. 22 (Nov. 29, 1922), London, pp. 415-416, ill.  
Flight, Vol. 14, No. 47 (Nov. 23, 1922), London, pp. 692-693.

— Construction of the Navy racer model trophy.

Aerial Age, Vol. 15, No. 9 (May 8, 1922), New York, p. 209, ill.

— Hydro models giving good performance.

Aerial Age, Vol. 15, No. 10 (May 15, 1922), New York, p. 233, diagr.

— Rubber elastic motive power for models.

Aerial Age, Vol. 15, No. 18 (Sept. 1922), New York, p. 470.

— *See* Clark, D. W.: How to build model airplanes.

— *See* Johnson, V. E.: Model aeroplaning.

— *See* National Advisory Committee for Aeronautics: Technical Notes No. 82. Notes on the construction and testing of model airplanes.

— *See* National Advisory Committee for Aeronautics: Technical Notes No. 87. Hydrostatic test of an airship model.

— *See* Wood, McKinnon: The co-relation of model and full-scale work.

**MOFFAT, R. C.** Boston airport.

Boston Soc. Civ. Engrs. Journ., Vol. 9, No. 10 (Dec. 1922), Boston, pp. 303-308, ill.

**MOFFETT, WILLIAM A.** Admiral Moffett's report on naval aviation. Summary of last year's progress gives comprehensive outline of organization.

Aviation, Vol. 13, No. 25 (Dec. 18, 1922), New York, pp. 800-804.

— Lessons of the Curtiss marine flying trophy race.

Aviation, Vol. 13, No. 17 (Oct. 23, 1922), New York, p. 559.

— Naval aviation and commerce.

Aeronautical Digest, Vol. 1, No. 6 (Sept. 1922), New York, pp. 51-53, ill.

— Naval aviation developments.

Aeronautical Digest, Vol. 1, No. 9 (Dec. 1922), New York, pp. 254-256, ill.

— Navy opposes single air force. Admiral Moffett gives his reasons for this attitude.

Aviation, Vol. 13, No. 9 (Aug. 28, 1922), New York, p. 252.

— Organization and function of naval aviation. First thorough survey of the work and duties of the Bureau of Aeronautics.

Aviation, Vol. 13, No. 9 (Aug. 28, 1922), New York, pp. 248-251.

**MOIR, S.** Airplane—watchdog of Canada's forest resources.

American Forestry, Vol. 28 (Sept. 1922), Washington, D. C., pp. 526-528, ill.

**MONOPLANES.** *See* Lefranc, Jean Abel: L'avenir est-il au monoplan?

**MONTANA.** Aviation in Montana.

Aerial Age, Vol. 15, No. 8 (May 1, 1922), New York, p. 179.

**MONTEITH, C. N.** Airplane design and performance improvements since the armistice.

Journ. Soc. Aut. Eng., Vol. 11, No. 4 (Oct. 1922), New York, pp. 320-322.

**MOORE, JOHN C.** *See* Ricker, Chester S., and John C. Moore: Valve actions in relation to internal-combustion engine design.

**MOORE, R. B.** Helium.

Aerial Age, Vol. 15, No. 18 (Sept. 1922), New York, pp. 446-447.

Brass World and Platers' Guide, Vol. 17 (Nov. 1921), New York, pp. 327-328.

- MOORE, R. B. A study of the elastic properties of small-size wire cable.  
Mech. Eng., Vol. 44, No. 2 (Feb. 1922), New York, pp. 105-106, ill.
- MOORE-BRABAZON, J. T. C. The early days of aviation.  
Aer. Eng. Suppl. The Aeroplane, Vol. 22, Nos. 9-10 (Mar. 18, 1922), London, pp. 160, 176.
- The new president of the Institution of Aeronautical Engineers.  
Aeroplane, Vol. 22, No. 6 (Feb. 8, 1922), London, p. 108.
- MOORING. Problem of mooring airships.  
Scien. Amer., Vol. 126 (June 1922), New York, pp. 400-401, ill., diagrs.
- MOORING masts. The United States Navy airship mooring mast. Interesting details of a greatly perfected appliance for mooring airships in the open.  
Aviation, Vol. 13, No. 20 (Nov. 13, 1922), New York, pp. 661-662, ill.
- See Phillips, S. H.: Why the mooring mast?
- MORGAN, E. M. Transcontinental air mail.  
Aeronautical Digest, Vol. 1, No. 6 (Sept. 1922), New York, pp. 76-80.
- MORIARTY, LOUIS P. Emergency landings from low altitudes—minimum altitude required to turn back into field in case of engine failure after take-off.  
Air Service Information Circular, Vol. 4, No. 366 (Sept. 1, 1922), Washington, D. C., pp. 8, ill.
- MORITZ, A. J. L. Het tegenwoordige vliegtuigkompass.  
Vliegveld, 6de Jaarg., No. 9 (Sept. 1922), Amsterdam, pp. 229-230.
- MORRIS, J. The vibration of airscrew blades.  
Aeron. Journ., Vol. 26, No. 144 (Dec. 1922), London, pp. 472-475.
- MORSE, C. L. Report of wind-tunnel test of DH-4B model.  
Air Service Information Circular, Vol. 4, No. 355 (June 15, 1922), Washington, D. C., pp. 8, ill.
- MORSE, H. G. Variation in performance of a Hispano-Suiza (Model E) engine with degree of throttle opening.  
Air Service Information Circular, Vol. 4, No. 354 (July 15, 1922), Washington, D. C., pp. 7, ill.
- MORSE, J. L. History and development of internal-combustion motors.  
Automotive Manufacturer, Vol. 63, Nos. 11-12 (Feb.-Mar. 1922), New York, pp. 19-21, 19-20.
- MOTORLESS flight. Le Congrès d'Avions expérimental sans moteur.  
Aéronautique, 4<sup>e</sup> année, No. 40 (sept. 1922), Paris, pp. 274-279, ill.
- The "First experimental congress for motorless flight." French soaring and gliding competition.  
Flight, Vol. 14, No. 19 (May 11, 1922), London, pp. 273-274, ill.
- See Soaring.
- MOYER, AMOS F. New principles in rotative balance.  
Journ. Soc. Aut. Eng. Vol. 11, No. 4 (Oct. 1922), New York, pp. 368-372, ill.
- MUELLER, E. F., and R. M. WILHELM. Power plant instruments. Part III. Thermometers for aircraft engines.  
National Advisory Committee for Aeronautics, Report No. 129, Sept. 30, 1922, Washington Government Printing Office, 1922, pp. 49-55, ill.
- MÜLLER, FRIEDRICH. Ueber den Einfluss der Flughöhe auf das Verhalten der Flugmotoren.  
Berichte u. Abhandlungen d. Wiss. Gesellschaft f. Luftfahrt, 8. Hft., 1922, Berlin, pp. 170-182, ill.
- MULDAUR, G. B. Licensing and inspection of commercial aircraft.  
Outlook, Vol. 130 (Feb. 8, 1922), New York, pp. 230-231.
- MULVIHILL, BERNARD H. Commercial aeronautics.  
Aeronautical Digest, Vol. 1, No. 9 (Dec. 1922), New York, pp. 251-252.
- MUMMERT. The Mummert "Baby Vamp" sport plane.  
Flight, Vol. 14, No. 3 (Jan. 19, 1922), London, pp. 40-41, ill.

- MUNK, MAX. M. Das Caproni-Riesen-Flugboot.  
Zeitschr. Flugt. Motorl., 13. Jahrg., 16. Hft. (31. Aug. 1922), München, pp. 227-230.
- The choice of the speed of an airship.  
National Advisory Committee for Aeronautics, Technical Notes No. 89, Mar. 1922 (Mimeograph), Washington, pp. 8, diagr.
- Full-scale determination of the lift and drag of a seaplane.  
National Advisory Committee for Aeronautics, Technical Notes No. 92, Apr. 1922 (Mimeograph), Washington, pp. 5, diagr., ill.  
Aerial Age, Vol. 15, No. 6 (Apr. 17, 1922), New York, pp. 130-131, diagr.
- Full-scale seaplane coefficients. Lift and drag coefficients of Brandenburg seaplane determined in free flight test.  
Aviation, Vol. 12, No. 17 (Apr. 24, 1922), New York, pp. 482-483, diagr.
- General theory of thin wing sections.  
National Advisory Committee for Aeronautics, Report No. 142, Apr. 29, 1922, Washington, Government Printing Office, 1922, pp. 19, tables.
- Notes on aerodynamic forces.  
National Advisory Committee for Aeronautics, Technical Notes Nos. 104, 105, and 106, July 1922 (Mimeograph), Washington, pp. 30, table, diagrs.
- Notes on propeller design.  
National Advisory Committee for Aeronautics, Technical Notes Nos. 91, 94, 95, 96, Apr.-May 1922 (Mimeograph), Washington, pp. 38, diagr.
- Notes on propeller design. The energy losses of the propeller—I.  
Aerial Age, Vol. 15, No. 8 (May 1, 1922), New York, pp. 178-179.
- Notes on propeller design—II. The distribution of thrust over a propeller blade.  
Aerial Age, Vol. 15, No. 10 (May 15, 1922), New York, pp. 225-226.
- Notes on propeller design—III. The aerodynamic equations of the propeller blade elements.  
Aerial Age, Vol. 15, No. 12 (May 29, 1922), New York, pp. 274-275.
- Notes on propeller design—IV. General proceeding in design.  
Aerial Age, Vol. 15, No. 13 (June 5, 1922), New York, pp. 298-299.
- Stresses produced on an airship flying through gusty air.  
National Advisory Committee for Aeronautics, Technical Notes No. 111, Sept. 1922 (Mimeograph), Washington, pp. 5.
- The tail plane.  
National Advisory Committee for Aeronautics, Report No. 133, May 11, 1922, Washington, Government Printing Office, 1922, pp. 37.
- The twisted wing with elliptic plan form.  
National Advisory Committee for Aeronautics, Technical Notes No. 109, Aug. 1922 (Mimeograph), Washington, pp. 7.
- MUTTRAY, H., and R. SEIFERTH. Segelflüge im Erzgebirge.  
Zeitschr. Flugt. Motorl., 13. Jahrg., 14. Hft. (14. Aug. 1922), Berlin, p. 214.
- MUYTER. See Gordon-Bennett: Gordon-Bennett balloon race. De Muyter declared the winner.
- MUYTER, ERNEST DE. See Gordon-Bennett: De Muyter wins Gordon-Bennett cup.
- MYERS, CORNELIUS T. Protective values of coatings for wood.  
Automotive Manufacturer, Vol. 64, No. 6 (Sept. 1922), New York, pp. 28-29.
- N.
- NAOZO SAZO. See Toyotarō Suhara, and Naozo Sato: On the distribution and variation of temperature in the cylinder and piston of an aircraft engine.
- NAPIER. Harnessing 1,000 horsepower. A visit to the Napier works.  
Flight, Vol. 14, No. 8 (Feb. 23, 1922), London, pp. 118-119, ill.

- NAPIER. The Napier "Cub."  
 Aer. Eng. Suppl. The Aeroplane, Vol. 22, No. 17 (Apr. 26, 1922), London, p. 304.  
*Aeroplane*, Vol. 23, No. 25 (Dec. 20, 1922), London, p. 482, ill.  
*Aviation*, Vol. 12, No. 22 (May 29, 1922), New York, p. 634, ill.  
*Flight*, Vol. 14, No. 51 (Dec. 21, 1922), London, pp. 770-771, ill.
- Der 1,000 PS-Napier-Cub-Flugmotor.  
*Luftweg*, Nr. 9 (15. Juni 1922), Berlin, p. 89, ill.
- The test of the Napier Lion engine.  
 Aer. Eng. Suppl. The Aeroplane, Vol. 23, No. 6 (Aug. 9, 1922), London, p. 104.
- NAPIER engine. The 1,000-horsepower Napier aero engine. Some additional particulars.  
*Flight*, Vol. 14, No. 13 (Mar. 30, 1922), London, p. 189.
- NAPLES. See Baciocchi, Alighiero: The Naples aviation meeting. Junkers monoplane carries off Tyrrhenian cup. Supermarine *Sea Lion II* wins Schneider cup.
- Gli insegnamenti della sconfitta di Napoli.  
*Gazz. Aviaz.*, 1922, Anno 4, No. 36, Milano, p. 2.
- See Hirschauer, Louis: La semaine d'hydraviation de Naples et la coupe Jacques Schneider.
- See Schneider cup: The British victory at Naples. Supermarine wins the Schneider cup race.
- NATIONAL Advisory Committee for Aeronautics. Aeronautics. Eighth annual report of the National Advisory Committee for Aeronautics, 1922. Administrative report without technical reports.  
 Washington, Government Printing Office, 1922, pp. 52.
- Eighth Annual Report of National Advisory Committee for Aeronautics. President Harding endorses recommendations for a national aeronautical policy.  
*Aviation*, Vol. 13, No. 25 (Dec. 18, 1922), New York, pp. 810.
- National Advisory Committee for Aeronautics for national air policy.  
*Aviation*, Vol. 13, No. 20 (Nov. 13, 1922), New York, pp. 665.
- A national aeronautic policy.  
*Aviation*, Vol. 13, No. 26, (Dec. 25, 1922), New York, pp. 827.
- Publications and technical notes of the National Advisory Committee for Aeronautics.  
*Aerial Age*, Vol. 15, No. 20 (Nov. 1922), New York, pp. 564-566, 571.
- Report No. 125. Aeronautical instruments. Section I: General classification of instruments and problems, including bibliography.  
 National Advisory Committee for Aeronautics, June 3, 1922, Washington, Government Printing Office, 1922, pp. 22.
- Report No. 126. Aeronautic instruments. Section II: Altitude instruments in four parts. Part I. Altimeters and barographs. Part II. Precision altimeter design. Part III. Statoscopes and rate-of-climb indicators. Part IV. Aerographs and strut thermometers.  
 National Advisory Committee for Aeronautics, Aug. 4, 1922, Washington, Government Printing Office, 1922, pp. 64, ill.
- Report No. 127. Aeronautic instruments. Section III: Aircraft speed instruments in three parts. Part I. Air-speed indicators. Part II. Testing of air-speed meters. Part III. Principles of ground speed measurement.  
 National Advisory Committee for Aeronautics, July 14, 1922, Washington, Government Printing Office, 1922, pp. 38, ill., diagrs.

NATIONAL Advisory Committee for Aeronautics. Report No. 128. Aeronautic instruments. Section IV: Direction instruments in four parts. Part I. Inclinometers and banking indicators. Part II. The testing and use of magnetic compasses for airplanes. Part III. Aircraft compasses—description and classification. Part IV. Turn indicators.

National Advisory Committee for Aeronautics, Sept. 1, 1922, Washington, Government Printing Office, 1922, pp. 67, ill.

— Report No. 129. Aeronautic instruments. Section V: Power plant instruments in five parts. Part I. Airplane tachometers. Part II. Testing of airplane tachometers. Part III. Thermometers for aircraft engines. Part IV. Air pressure and oil pressure gauges. Part V. Gasoline depth gauges and flow meters for aircraft.

National Advisory Committee for Aeronautics, Sept. 30, 1922, Washington, Government Printing Office, 1922, pp. 72, ill.

— Report No. 130. Aeronautic instruments. Section VI: Oxygen instruments. National Advisory Committee for Aeronautics, June 10, 1922, Washington, Government Printing Office, 1922, pp. 23, ill., diagrs.

— Report No. 131. Aeronautic instruments. Section VII: Aerial navigation and navigating instruments.

National Advisory Committee for Aeronautics, June 21, 1922, Washington, Government Printing Office, 1922, pp. 44, ill., diagrs.

— Report No. 132. Aeronautic instruments. Section VIII: Recent developments and outstanding problems.

National Advisory Committee for Aeronautics, July 28, 1922, Washington, Government Printing Office, 1922, pp. 10.

— Report No. 133. The tail plane. By Max M. Muuk.

National Advisory Committee for Aeronautics, May 11, 1922, Washington, Government Printing Office, 1922, pp. 37.

— Report No. 134. Performance of Maybach 300-horsepower airplane engine. By S. W. Sparrow.

National Advisory Committee for Aeronautics, May 18, 1922, Washington, Government Printing Office, 1922, pp. 11, diagrs.

— Report No. 135. Performance of B. M. W. 185-horsepower airplane engine. By S. W. Sparrow.

National Advisory Committee for Aeronautics, Apr. 13, 1922, Washington, Government Printing Office, 1922, pp. 10, diagrs.

— Report No. 136. Damping coefficients due to tail surfaces in aircraft. By Linn Chu. Condensed and modified by Edward P. Warner.

National Advisory Committee for Aeronautics, Dec. 22, 1922, Washington, Government Printing Office, 1922, pp. 14, diagrs.

— Report No. 137. Point drag and total drag of Navy struts No. 1 modified.

National Advisory Committee for Aeronautics, May 18, 1922, Washington, Government Printing Office, 1922, pp. 15, ill., diagrs., tables.

— Report No. 138. The drag of C class airship hull with varying length of cylindrical midships. By A. F. Zahm, R. H. Smith, and G. C. Hill.

National Advisory Committee for Aeronautics, Apr. 3, 1922, Washington, Government Printing Office, 1922, pp. 10, diagrs.

— Report No. 139. Influence of model surface and air flow texture on resistance of aerodynamic bodies. By A. F. Zahm.

National Advisory Committee for Aeronautics, Mar. 19, 1922, Washington, Government Printing Office, 1922, pp. 6.

— Report No. 140. Lift and drag effects of wing-tip rake. By A. F. Zahm, R. M. Bear, and G. C. Hill.

National Advisory Committee for Aeronautics, May 3, 1922, Washington, Government Printing Office, 1922, pp. 9, diagrs., table.

- NATIONAL Advisory Committee for Aeronautics. Report No. 141. Experimental research on air propellers V. By W. F. Durand and E. P. Lesley.  
 National Advisory Committee for Aeronautics, Sept. 16, 1922, Washington, Government Printing Office, 1922, pp. 82, ill., diagrs., table.
- Report No. 142. General theory of thin wing sections. By Max M. Munk.  
 National Advisory Committee for Aeronautics, Apr. 29, 1922, Washington, Government Printing Office, 1922, pp. 19, tables.
- Report No. 143. Analysis of stresses in German airplanes. By Wilhelm Hoff.  
 National Advisory Committee for Aeronautics, Jan. 6, 1922, Washington, Government Printing Office, 1922, pp. 52, ill.
- Report No. 144. The decay of a simple eddy. By H. Bateman.  
 National Advisory Committee for Aeronautics, May 27, 1922, Washington, Government Printing Office, 1922, pp. 7.
- Report No. 145. Internal stresses in laminated construction. By A. L. Hein, A. C. Knauss, and Louis Seutter.  
 National Advisory Committee for Aeronautics, Nov. 15, 1922, Washington, Government Printing Office, 1922, pp. 56, ill.
- Report No. 146. The six-component wind balance. By A. F. Zahm.  
 National Advisory Committee for Aeronautics, Aug. 18, 1922, Washington, Government Printing Office, 1922, pp. 12, ill., diagrs.
- Report No. 147. Standard atmosphere. By William Ray Gregg.  
 National Advisory Committee for Aeronautics, June 30, 1922, Washington, Government Printing Office, 1922, pp. 1, diagrs., tables.
- Report No. 148. The pressure distribution over the horizontal tail surfaces of an airplane III. By F. H. Norton and W. G. Brown.  
 National Advisory Committee for Aeronautics, Aug. 11, 1922, Washington, Government Printing Office, 1922, pp. 25, ill., diagrs., tables.
- Report No. 149. Pressure distribution over the rudder and fin of an airplane in flight. By F. H. Norton and W. G. Brown.  
 National Advisory Committee for Aeronautics, June 7, 1922, Washington, Government Printing Office, 1922, pp. 9, ill., diagrs.
- Report No. 150. Pressure distribution over thick aerofoils—model tests. By F. H. Norton and D. L. Bacon.  
 National Advisory Committee for Aeronautics, Oct. 23, 1922, Washington, Government Printing Office, 1922, pp. 22, ill., diagrs.
- Report No. 152. The aerodynamic properties of thick aerofoils, II. By F. H. Norton and D. L. Bacon.  
 National Advisory Committee for Aeronautics, Nov. 26, 1922, Washington, Government Printing Office, 1922, pp. 15, diagrs.
- Report No. 153. Controllability and maneuverability of airplanes. By F. H. Norton and W. G. Brown.  
 National Advisory Committee for Aeronautics, Dec. 5, 1922, Washington, Government Printing Office, 1922, pp. 18, ill., diagrs.
- Report No. 154. A study of taking off and landing an airplane. By T. Carroll.  
 National Advisory Committee for Aeronautics, Oct. 9, 1922, Washington, Government Printing Office, 1922, pp. 7, ill.
- Report No. 155. A study of airplane maneuvers with special reference to angular velocities. By H. J. E. Reid.  
 National Advisory Committee for Aeronautics, Oct. 9, 1922, Washington, Government Printing Office, 1922, pp. 9, ill., diagrs.
- Technical Notes No. 1. Notes on longitudinal stability and balance. By E. P. Warner.  
 National Advisory Committee for Aeronautics, Apr. 1920 (Mimeograph), Washington, pp. 13, graphs.

- NATIONAL Advisory Committee for Aeronautics. Technical Notes No. 2. Airplane performance as influenced by the use of a supercharged engine. By George de Bothezat.  
 National Advisory Committee for Aeronautics, May 1920 (Mimeograph), Washington, pp. 7, graph.
- Technical Notes No. 3. Notes on the theory of the accelerometer. By E. P. Warner.  
 National Advisory Committee for Aeronautics, May 1920 (Mimeograph), Washington, pp. 13.
- Technical Notes No. 4. The problem of the helicopter. By E. P. Warner.  
 National Advisory Committee for Aeronautics, May 1920 (Mimeograph), Washington, pp. 18, graphs.
- Technical Notes No. 5. Relation of rib spacing to stress in wing planes. By A. F. Zahm.  
 National Advisory Committee for Aeronautics, May 1920 (Mimeograph), Washington, pp. 5, graphs.
- Technical Notes No. 6. Static testing and proposed standard specifications. By E. P. Warner.  
 National Advisory Committee for Aeronautics, July 1920 (Mimeograph), Washington, pp. 17, ill.
- Technical Notes No. 7. Notes on the design of supercharged and over dimensioned aircraft engines. By Schwager.  
 National Advisory Committee for Aeronautics, July 1920 (Mimeographed), Washington, pp. 6, graphs.  
 Translated from Technische Berichte, Vol. III, Sec. 5, by George de Bothezat.
- Technical Notes No. 8. Duralumin. E. Unger and E. Schmidt.  
 National Advisory Committee for Aeronautics, July 1920 (Mimeograph), Washington, pp. 10,  
 graphs.  
 Translated from Technische Berichte Vol. III, Sec. 6, by Starr Truscott.
- Technical Notes Nos. 9 and 10. Theory of lifting surfaces. Part I and II. By L. Prandtl.  
 National Advisory Committee for Aeronautics, Part I, July 1920 (Mimeograph), Washington, pp. 11; Part II, Aug. 1920 (Mimeograph), pp. 10.  
 Translated from the German and abstracted by W. Margoulis.
- Technical Notes No. 11. The problem of the turbo-compressor. By René Devillers.  
 National Advisory Committee for Aeronautics, Aug. 1920 (Mimeograph) Washington, pp. 28.  
 Extract from "The internal combustion engine." Translated from the French by Paris Office, N. A. C. A.
- Technical Notes No. 12. Recent efforts and experiments in the construction of aviation engines. By Schwager.  
 National Advisory Committee for Aeronautics, Sept. 1920 (Mimeograph), Washington, pp. 14, graphs.  
 Translated from Technische Berichte, Vol. III, Sec. 5.
- Technical Notes No. 13. Soaring flight in Guinea. By P. Idrac.  
 National Advisory Committee for Aeronautics, Aug. 1920 (Mimeograph), Washington, pp. 5.  
 Translated from the French by D. L. Bacon.
- Technical Notes No. 14. Increase in maximum pressures produced by preignition in internal combustion engines. By S. W. Sparrow.  
 National Advisory Committee for Aeronautics, Aug. 1920 (Mimeograph), Washington, pp. 4, graph, ill.

- NATIONAL Advisory Committee for Aeronautics. Technical Notes No. 15. Tests of the Daimler D-IVa engine at a high altitude test bench. By W. G. Noack.  
National Advisory Committee for Aeronautics, Oct. 1920, Washington, pp. 16, graphs (Mimeograph.)  
Translated from Technische Berichte, Vol. III, Sec. 1.
- Technical Notes No. 16. Experience with geared propeller drives for aviation engines. By K. Kutzbach.  
National Advisory Committee for Aeronautics, Sept. 1920 (Mimeograph), Washington, pp. 13, ill., tabl.  
Translated from Technische Berichte, Vol. III, Sec. 3, by Starr Truscott.
- Technical Notes No. 17. Italian and French experiments on wind tunnels. By Wm. Knight.  
National Advisory Committee for Aeronautics, Nov. 1920 (Mimeograph), Washington, pp. 8, ill., tabls.
- Technical Notes No. 18. The dynamometer hub. By W. Stieber.  
National Advisory Committee for Aeronautics, Sept. 1920 (Mimeograph), Washington, pp. 11, ill.  
Translated from Technische Berichte, Vol. III, Sec. 6.
- Technical Notes No. 19. The steadiness factor in engine sets. By W. Margoulis.  
National Advisory Committee for Aeronautics, Dec. 1920 (Mimeograph), Washington, pp. 10, ill.
- Technical Notes No. 20. Notes on specifications for French airplane competition. By W. Margoulis.  
National Advisory Committee for Aeronautics, Oct. 1920 (Mimeograph), Washington, pp. 16.
- Technical Notes No. 21. Drag or negative traction of geared-down supporting propellers in the downward vertical glide of a helicopter. By A. Toussaint.  
National Advisory Committee for Aeronautics, Sept. 1920 (Mimeograph), Washington, pp. 5.
- Technical Notes No. 22. The photographic recording of small motions. By F. H. Norton.  
National Advisory Committee for Aeronautics, Nov. 1920 (Mimeograph), Washington, pp. 9, ill.
- Technical Notes No. 23. Horizontal buoyancy in wind tunnels. By A. F. Zahm.  
National Advisory Committee for Aeronautics, Nov. 1920 (Mimeograph), Washington, pp. 3.
- Technical Notes No. 24. Development of the inflow theory of the propeller. By A. Betz.  
National Advisory Committee for Aeronautics, Nov. 1920 (Mimeograph), Washington, pp. 4, graphs.
- Technical Notes No. 25. Center of pressure coefficients for aerofoils at high speeds. By W. S. Diehl.  
National Advisory Committee for Aeronautics, Apr. 1922 (Mimeograph), Washington, pp. 2, ill.
- Technical Notes No. 26. A variable speed fan dynamometer. By Karl D. Wood.  
National Advisory Committee for Aeronautics, Dec. 1920 (Mimeograph), Washington, pp. 9, ill.

- NATIONAL Advisory Committee for Aeronautics. Technical Notes No. 27. Instrument for measuring engine clearance volumes. By S. W. Sparrow. National Advisory Committee for Aeronautics, Dec. 1920 (Mimeograph), Washington, pp. 4, ill.
- Technical Notes No. 28. Loads and calculations of army airplanes. By Ing. Stelmachowski. National Advisory Committee for Aeronautics, Feb. 1921 (Mimeograph), Washington, pp. 11, ill. Translated from *Technische Berichte*, Vol. III, Sec. 6.
- Technical Notes No. 29. Progress made in the construction of giant airplanes in Germany during the war. By A. Bauman. National Advisory Committee for Aeronautics, Dec. 1920 (Mimeograph), Washington, pp. 11. Résumé translated from the German.
- Technical Notes No. 30. Design of recording wind tunnel balances. By F. H. Norton. National Advisory Committee for Aeronautics, Dec. 1920 (Mimeograph), Washington, pp. 6, ill.
- Technical Notes No. 31. Crippling strength of axially loaded rods. By Fr. Natalis. National Advisory Committee for Aeronautics, Oct. 1921 (Mimeograph), Washington, pp. 34, graphs. Translated from *Technische Berichte*, Vol. III, No. 6, by F. W. Pawlowski.
- Technical Notes No. 32. Causes of cracking of ignition cable. By F. B. Silsbee. National Advisory Committee for Aeronautics, Feb. 1921 (Mimeograph), Washington, pp. 14, ill.
- Technical Notes No. 33. The effect of the nature of surfaces on resistance, as tested by struts. By Dr. Ing. C. Wieselsberger. National Advisory Committee for Aeronautics, Feb. 1921 (Mimeograph), Washington, pp. 11, ill. Translated from *Zeitschrift für Flugtechnik und Motorluftschiffahrt*, Feb. 28, 1920.
- Technical Notes No. 34. The 300 horsepower Benz aircraft engine. By Dr. A. Heller. National Advisory Committee for Aeronautics, Jan. 1921 (Mimeograph), Washington, pp. 10, ill.
- Technical Notes No. 35. The optical wing aligning device of the Langley Field tunnel. By F. H. Norton and D. L. Bacon. National Advisory Committee for Aeronautics, Jan. 1921 (Mimeograph), Washington, pp. 3, ill.
- Technical Notes No. 36. N. A. C. A. Langley Field wind tunnel apparatus. The tilting manometer. By F. H. Norton and D. L. Bacon. National Advisory Committee for Aeronautics, Jan. 1921 (Mimeograph), Washington, pp. 3, ill.
- Technical Notes No. 37. The determination of the effective resistance of a spindle supporting a model aerofoil. By W. E. Davidson and D. L. Bacon. National Advisory Committee for Aeronautics, Jan. 1921 (Mimeograph), Washington, pp. 4, ill., graphs.
- Technical Notes No. 38. Measurements of rudder moments on an airplane during flight. By Ing. v. Heidelberg. National Advisory Committee for Aeronautics, Jan. 1921 (Mimeograph), Washington, pp. 23, ill., tabs. Translated from *Zeitschrift für Flugtechnik und Motorluftschiffahrt*, Vols. 21 and 22.

- NATIONAL Advisory Committee for Aeronautics. Technical Notes No. 39. High thermal efficiency in airplane service. By S. W. Sparrow.  
National Advisory Committee for Aeronautics, Dec. 1920 (Mimeograph), Washington, pp. 5, ill.
- Technical Notes No. 40. Effect of the reversal of air flow upon the discharge coefficient of Durley orifices. By Marsden Ware.  
National Advisory Committee for Aeronautics, Feh. 1921 (Mimeograph), Washington, pp. 12, ill.
- Technical Notes No. 41. Influence of span and load per square meter on the air forces of the supporting surface. By A. Betz.  
National Advisory Committee for Aeronautics, Mar. 1921 (Mimeograph), Washington, pp. 7, ill.  
Translated from Technische Berichte, Vol. I, Sec. 4, by Walter S. Diehl.
- Technical Notes No. 42. The determination of downwash. By Lieut. Walter S. Diehl.  
National Advisory Committee for Aeronautics, Jan., 1921 (Mimeograph), Washington, pp. 8, graphs.
- Technical Notes No. 43. Note on the resistance of polished cylinders (and cylindrical wires) with generatrices perpendicular to the airstream. By A. Toussaint.  
National Advisory Committee for Aeronautics, Feb. 1921 (Mimeograph), Washington, pp. 9, graphs.
- Technical Notes No. 44. On the resistance of spheres and ellipsoids in wind tunnels. By D. P. Riabouchinsky.  
National Advisory Committee for Aeronautics, Jan. 1921 (Mimeograph), Washington, pp. 9, graphs, ill.  
Translated from Bulletin of the Aerodynamical Institute of Koutchino.
- Technical Notes No. 45. Extract from a report on the resistance of spheres of small diameter in an airstream of high velocity. By Capt. Toussaint and Lieut. Hayar.  
National Advisory Committee for Aeronautics, Mar. 1921 (Mimeograph), Washington, pp. 9, ill., graph.
- Technical Notes No. 46. Theory of the ideal windmill. By Wilhelm Hoff.  
National Advisory Committee for Aeronautics, July 1921 (Mimeograph), Washington, pp. 15, graphs.
- Technical Notes No. 47. Recent European developments in helicopters.  
National Advisory Committee for Aeronautics, Apr. 1921 (Mimeograph), Washington, pp. 14, ill.
- Technical Notes No. 48. Airplane superchargers. By W. G. Noack.  
National Advisory Committee for Aeronautics, May 1921 (Mimeograph), Washington, pp. 17, ill.
- Technical Notes No. 49. On the resistance of the air at high speeds and on the automatic rotation of projectiles. By D. Riabouchinsky.  
National Advisory Committee for Aeronautics, Apr. 1921 (Mimeograph), Washington, pp. 8, ill., diagr.
- Technical Notes No. 50. The Gordon Bennett airplane cup. 1920. By W. Margoulis.  
National Advisory Committee for Aeronautics, Apr. 1921 (Mimeograph), Washington, pp. 13, ill., diagrs.
- Technical Notes No. 51. Airplane balance. By L. Huguet.  
National Advisory Committee for Aeronautics, June 1921 (Mimeograph), Washington, pp. 28, ill., diagrs.

- NATIONAL Advisory Committee for Aeronautics. Technical Notes No. 52. A new method of testing models in wind tunnels. By W. Margoulis. National Advisory Committee for Aeronautics, Aug. 1921 (Mimeograph), Washington, pp. 19, diagrs.
- Technical Notes No. 53. Similitude tests on wing sections. By H. Kumbruch. National Advisory Committee for Aeronautics, Apr. 1921 (Mimeograph), Washington, pp. 17, ill., diagrs. Translated from the German by D. L. Bacon.
- Technical Notes No. 54. The factors that determine the minimum speed of an airplane. By F. H. Norton. National Advisory Committee for Aeronautics, Mar. 1921 (Mimeograph), Washington, pp. 9, diagrs.
- Technical Notes No. 55. "Airplane crashes: Engine troubles." A possible explanation. By Stanwood W. Sparrow. National Advisory Committee for Aeronautics, Mar. 1921 (Mimeograph), Washington, pp. 6.
- Technical Notes No. 56. The development of German army airplanes during the war. By Wilhelm Hoff. National Advisory Committee for Aeronautics, June 1921 (Mimeograph), Washington, pp. 23, ill.
- Technical Notes No. 57. The Caproni seaplane. By Max Munk. National Advisory Committee for Aeronautics, July 1921 (Mimeograph), Washington, pp. 14, ill.
- Technical Notes No. 58. Absolute coefficients and the graphical representation of aerofoil characteristics. By Max Munk. National Advisory Committee for Aeronautics, June 1921 (Mimeograph), Washington, pp. 11, graph.
- Technical Notes No. 59. The dynamometer hub for testing propellers and engines during flight. By O. Enoch. National Advisory Committee for Aeronautics, July 1921 (Mimeograph), Washington, pp. 18, ill.
- Technical Notes No. 60. On a new type of wind tunnel. By Max Munk. National Advisory Committee for Aeronautics, May 1921 (Mimeograph), Washington, pp. 19.
- Technical Notes No. 61. Performance of a vane driven-gear pump. By R. H. Heald. National Advisory Committee for Aeronautics, Sept. 1921 (Mimeograph), Washington, pp. 10, ill.
- Technical Notes No. 62. The problem of fuel for aviation engines. By Kutzbach. National Advisory Committee for Aeronautics, July 1921 (Mimeograph), Washington, pp. 21, graphs.
- Technical Notes No. 63. The employment of airships for the transport of passengers. Indications on the maximum limits of their useful load, distance covered, altitude and speed. By Umberto Nobile. National Advisory Committee for Aeronautics, Aug. 1921 (Mimeograph), Washington, pp. 37, graphs.
- Technical Notes No. 64. N. A. C. A. recording air speed meter. By F. H. Norton. National Advisory Committee for Aeronautics, Oct. 1921, (Mimeograph), Washington, pp. 5, ill.

- NATIONAL Advisory Committee for Aeronautics. Technical Notes No. 65. Langley Field wind tunnel apparatus. By D. L. Bacon. National Advisory Committee for Aeronautics, 1921 (Mimeograph), Washington, pp. 4, ill.
- Technical Notes No. 66. Göttingen wind tunnel for testing aircraft models. By L. Prandtl. National Advisory Committee for Aeronautics, Nov. 1920 (Mimeograph), Washington, pp. 20, ill.
- Technical Notes No. 67. Ground influence on aerofoils. By Arthur E. Raymond. National Advisory Committee for Aeronautics, Dec. 1921 (Mimeograph), Washington, pp. 8, ill.
- Technical Notes No. 68. Vortices and the related principles of hydrodynamics. By A. Betz. National Advisory Committee for Aeronautics, Nov. 1921 (Mimeograph), Washington, pp. 22, ill. Translated from "Zeitschrift für Flugtechnik und Motorluftschiffahrt" July 15, 1921.
- Technical Notes No. 69. An investigation on the effect of raked wing tips. By F. H. Norton. National Advisory Committee for Aeronautics, Nov. 1921 (Mimeograph), Washington, pp. 2, ill.
- Technical Notes No. 70. The effect of staggering a biplane. By F. H. Norton. National Advisory Committee for Aeronautics, Sept. 1921 (Mimeograph), Washington, pp. 3, graphs.
- Technical Notes No. 71. Experiments with slotted wings. National Advisory Committee for Aeronautics, Nov. 1921 (Mimeograph), Washington, pp. 32, ill. Translated from "Zeitschrift für Flugtechnik und Motorluftschiffahrt" June 15, 1921.
- Technical Notes No. 72. Aneroid investigations in Germany. Prepared by M. D. Hersey. National Advisory Committee for Aeronautics, Oct. 1921 (Mimeograph), Washington, pp. 9. Abstract of paper entitled "Über Aneroide," by E. Warburg and W. Heuse.
- Technical Notes No. 73. The choice of wing sections for airplane. By Edward P. Warner. National Advisory Committee for Aeronautics, Nov. 1921 (Mimeograph), Washington, pp. 30, graphs.
- Technical Notes No. 74. Mutual influence of wings and propeller. By L. Prandtl. National Advisory Committee for Aeronautics, Dec. 1921 (Mimeograph), Washington, pp. 6, ill. Extract from the first report of the Göttingen Aerodynamic Laboratory, Chap. IV, Sec. 6.
- Technical Notes No. 75. Effects of varying the relative vertical position of wing and fuselage. By L. Prandtl. National Advisory Committee for Aeronautics, Dec. 1921 (Mimeograph), Washington, pp. 4, ill.
- Technical Notes No. 76. A mechanical device for illustrating airplane stability. By F. H. Norton. National Advisory Committee for Aeronautics, Dec. 1921 (Mimeograph), Washington, pp. 5, ill.
- Technical Notes No. 77. A preliminary investigation of a new method for testing aerofoils in free flight. By F. H. Norton. National Advisory Committee for Aeronautics, Jan. 1922, (Mimeograph), Washington, pp. 11, ill.

- NATIONAL Advisory Committee for Aeronautics. Technical Notes No. 78. Impact tests for woods. Bureau of Standards.  
 National Advisory Committee for Aeronautics, Feb. 1922 (Mimeograph), Washington, pp. 17, ill., tables.
- Technical Notes No. 79. Effect of aerofoil aspect ratio on the slope of the lift curve. By Walter S. Diehl.  
 National Advisory Committee for Aeronautics, Jan. 1922 (Mimeograph), Washington, pp. 4, diagrs.  
 From Trans. Aer. Exper. Inst., Rome, Italy, Sept. 1920.
- Technical Notes No. 80. The dead weight of the airship and the number of passengers that can be carried. By Colonel Crocce.  
 National Advisory Committee for Aeronautics, Jan. 1922 (Mimeograph), Washington, pp. 20, diagr., table.
- Technical Notes No. 81. Langley Field wind tunnel apparatus: Part I. Regulators for speed of wind-tunnel drive motor. Part II. A vernier manometer with adjustable sensitivity. By D. L. Bacon.  
 National Advisory Committee for Aeronautics, Jan. 1922 (Mimeograph), Washington, pp. 9, ill.
- Technical Notes No. 82. Notes on the construction and testing of model airplanes. By Walter S. Diehl.  
 National Advisory Committee for Aeronautics, Jan. 1922 (Mimeograph), Washington, pp. 6, ill., diagr.
- Technical Notes No. 83. The theory of the screw propeller. By A. Betz.  
 National Advisory Committee for Aeronautics, Feb. 1922 (Mimeograph), Washington, pp. 18, ill.  
 From Die Naturwissenschaften, 1921, No. 18.
- Technical Notes No. 84. New data on the laws of fluid resistance. By C. Wieselsberger.  
 National Advisory Committee for Aeronautics, Mar. 1922 (Mimeograph), Washington, pp. 12, ill.  
 From Physikalische Zeitschrift, 1921, Vol. 22.
- Technical Notes No. 85. Air force and three moments for F-5-L seaplane.  
 National Advisory Committee for Aeronautics, Feb. 1922 (Mimeograph), Washington, pp. 13, ill.
- Technical Notes No. 86. Surface area coefficients for airship envelopes. By W. S. Diehl.  
 National Advisory Committee for Aeronautics, Feb. 1922 (Mimeograph), Washington, pp. 5, diagr.
- Technical Notes No. 87. Hydrostatic test of an airship model.  
 National Advisory Committee for Aeronautics, Mar. 1922 (Mimeograph), Washington, pp. 15, ill.
- Technical Notes No. 88. Test of oil scraper piston ring and piston fitted with oil drain holes. By H. S. McDowell.  
 National Advisory Committee for Aeronautics, Aug. 1922 (Mimeograph), Washington, pp. 10, ill.
- Technical Notes No. 89. The choice of the speed of an airship. By Max M. Munk.  
 National Advisory Committee for Aeronautics, Mar. 1922 (Mimeograph), Washington, pp. 8, diagr.
- Technical Notes No. 90. Sylphon diaphragms, a method for predicting their performance for purposes of instrument design. By H. N. Eaton and G. H. Keulegan.  
 National Advisory Committee for Aeronautics, May 1922 (Mimeograph), Washington, pp. 14, ill., diagr.

- NATIONAL Advisory Committee for Aeronautics. Mechanical Notes Nos. 91, 94, 95, 96. Notes on propeller design. I. The energy losses of the propeller. II. Distribution of thrust over a propeller blade. III. The aerodynamical equations of propeller-blade elements. IV. General proceedings in design. By Max M. Munk.  
National Advisory Committee for Aeronautics, Apr.-May 1922 (Mimeograph), Washington, pp. 10, 9, 10, 9, ill.
- Technical Notes No. 92. Full scale determination of the lift and drag of a seaplane. By Max M. Munk.  
National Advisory Committee for Aeronautics, Apr. 1922 (Mimeograph), Washington, pp. 5, diagr., ill.
- Technical Notes No. 93. The background of detonation. By Stanwood W. Sparrow.  
National Advisory Committee for Aeronautics, Apr. 1922 (Mimeograph), Washington, pp. 17, diagr.
- Technical Notes, No. 97. National Advisory Committee for Aeronautics control position recorder. By F. H. Norton.  
National Advisory Committee for Aeronautics, May 1922 (Mimeograph), Washington, pp. 3, ill.
- Technical Notes No. 98. Notes on the design of latticed columns subject to lateral loads. By Charles J. McCarthy.  
National Advisory Committee for Aeronautics, May 1922 (Mimeograph), Washington, pp. 18, diagrs.
- Technical Notes No. 99. Notes on the standard atmosphere. By Walter S. Diehl.  
National Advisory Committee for Aeronautics, June 1922 (Mimeograph), Washington, pp. 9, tables.
- Technical Notes No. 100. Theory of the slotted wing. By A. Betz.  
National Advisory Committee for Aeronautics, June 1922 (Mimeograph), Washington, pp. 13, ill.
- Technical Notes No. 101. Comparing maximum pressures in internal-combustion engines. By Stanwood W. Sparrow and Stephen M. Lee.  
National Advisory Committee for Aeronautics, June 1922 (Mimeograph), Washington, pp. 3, ill.
- Technical Notes No. 102. Skin frictional resistance of plane surfaces in air; abstract of recent German tests, with notes. By W. S. Diehl.  
National Advisory Committee for Aerouautics, July 1922 (Mimeograph), Washington, pp. 4, diagrs.
- Technical Notes No. 103. Simple formula for estimating airplane ceiling. By Walter S. Diehl.  
National Advisory Committee for Aeronautics, June 1922 (Mimeograph), Washington, pp. 4, diagr.
- Technical Notes Nos. 104, 105, and 106. Notes on aerodynamic forces. I. Rectilinear motion. II. Curvilinear motion. III. The aerodynamic forces of airships. By Max M. Munk.  
National Advisory Committee for Aeronautics, July 1922 (Mimeograph), Washington, pp. 12, 10, 8, table, diagrs.
- Technical Notes No. 107. Structural safety during curved flight. By Adolf Rohrbach.  
National Advisory Committee for Aeronautics, Aug. 1922 (Mimeograph), Washington, pp. 18, diagrs.
- Technical Notes No. 108. The use of multiplied pressures for automatic altitude adjustments. By Stanwood W. Sparrow.  
National Advisory Committee for Aeronautics, Aug. 1922 (Mimeograph), Washington, pp. 8, ill.

- NATIONAL Advisory Committee for Aeronautics. Technical Notes No. 109. The twisted wing with elliptic plan form. By Max M. Munk.  
 National Advisory Committee for Aeronautics, Aug. 1922 (Mimeograph), Washington, pp. 7.
- Technical Notes No. 110. The effect on rudder control of slip stream body and ground interference. By H. I. Hoot and D. L. Bacon.  
 National Advisory Committee for Aeronautics, Sept. 1922 (Mimeograph, Washington, pp. 7, tables, diagrs., ill.
- Technical Notes No. 111. Stresses produced on an airship flying through gusty air. By Max M. Munk.  
 National Advisory Committee for Aeronautics, Sept. 1922 (Mimeograph), Washington, pp. 5.
- Technical Notes No. 112. The National Advisory Committee for Aeronautics three-component accelerometer. By H. J. E. Reid.  
 National Advisory Committee for Aeronautics, Oct. 1922 (Mimeograph), Washington, pp. 6, ill.
- Technical Notes No. 113. Report on the general design of commercial aircraft. By Edward P. Warner.  
 National Advisory Committee for Aeronautics, Sept. 1922 (Mimeograph), Washington, pp. 19, ill.
- Technical Notes No. 114. Supplementary report of oil scraper piston rings. By H. S. McDowell.  
 National Advisory Committee for Aeronautics, Sept. 1922 (Mimeograph), Washington, pp. 8.
- Technical Notes No. 115. The effect of longitudinal moment of inertia upon dynamic stability. By F. H. Norton and T. Carroll.  
 National Advisory Committee for Aeronautics, Oct. 1922 (Mimeograph), Washington, pp. 3, ill.
- Technical Notes No. 116. F-5-L boat seaplane comparative performance with direct-drive and geared engines. By W. S. Diehl.  
 National Advisory Committee for Aeronautics, Oct. 1922 (Mimeograph), Washington, pp. 12, tables.
- Technical Notes No. 117. The synchronization of National Advisory Committee for Aeronautics flight records. By W. G. Brown.  
 National Advisory Committee for Aeronautics, Oct. 1922 (Mimeograph), Washington, pp. 3, ill.
- Technical Notes No. 118. F-5-L seaplane—performance characteristics. By W. S. Diehl.  
 National Advisory Committee for Aeronautics, Oct. 1922 (Mimeograph), Washington, pp. 8, diagrs.
- Technical Notes No. 119. The elimination of dead center in the controls of airplanes with thick sections. By Thomas Carroll.  
 National Advisory Committee for Aeronautics, Nov. 1922 (Mimeograph), Washington, pp. 3, ill.
- Technical Notes No. 120. A preliminary study of airplane performance. By F. H. Norton and W. G. Brown.  
 National Advisory Committee for Aeronautics, Nov. 1922 (Mimeograph), Washington, pp. 7, diagrs., ill.
- Technical Notes No. 121. Further information of the laws of fluid resistance.  
 National Advisory Committee for Aeronautics, Dec. 1922 (Mimeograph), Washington pp. 8, diagrs.  
 From *Physikalische Zeitschrift*, 1922, Vol. 23.
- Research problems under investigation for the subcommittee on aerodynamics of the National Advisory Committee for Aeronautics.  
*Aerial Age*, Vol. 15, No. 11 (May 22, 1922), New York, pp. 248-249.

NATIONAL Advisory Committee for Aeronautics. Seaplane facilities on the Atlantic coast. Thirty-nine landing places for seaplanes listed in survey issued by National Advisory Committee.

Aviation, Vol. 12, No. 18 (May 1, 1922), New York, pp. 506-507.

— A sound policy.

Aviation, Vol. 13, No. 25 (Dec. 18, 1922), New York, p. 799.

— Staff of National Advisory Committee for Aeronautics.

Aviation, Vol. 12, No. 3 (Jan. 16, 1922), New York, p. 78.

— Technical Notes of the National Advisory Committee for Aeronautics.

Aerial Age, Vol. 15, No. 21 (Dec. 1922), New York, pp. 610-611.

— See Instruments: National Advisory Committee for Aeronautics multiple manometer.

— See Norton, F. H.: National Advisory Committee for Aeronautics control position recorder.

— See Victory, J. F.: National Advisory Committee for Aeronautics meets.

NATIONAL Aeronautic Association. Fifth National Aeronautic Association district convention. Fifth district of National Aeronautic Association organized by convention at Cedar Point, Ohio.

Aviation, Vol. 13, No. 11 (Sept. 11, 1922), New York, p. 316.

— National Aeronautic Association.

Aerial Age, Vol. 15, No. 20 (Nov. 1922), New York, p. 553.

Aeronautical Digest, Vol. 1, No. 8 (Nov. 1922), New York, p. 192.

Journ. Soc. Aut. Eng., Vol. 11, No. 5 (Nov. 1922), New York, pp. 413-414.

— National Aeronautic Association of U. S. A. (Inc.). Articles of association.

By-laws. Minutes of first meeting of governors.

Washington, D. C., 26 Jackson Place, Nov. 8, 1922, pp. 19.

— National Aeronautic Association organized for the advancement of American aeronautics.

Aerial Age, Vol. 15, No. 21 (Dec. 1922), New York, pp. 583-585.

— New body will be powerful unit for development of aeronautics.

U. S. Air Service, Vol. 7, No. 10 (Nov. 1922), Washington, D. C., pp. 19-20.

— Organization plans of the National Aeronautic Association. Admiral Fullam is touring country organizing districts of National Aeronautic Association.

Aviation, Vol. 12, No. 21 (May 22, 1922), New York, p. 593.

— Progress of National Aeronautic Association. Progress report issued by advance committee of National Aeronautic Association shows organization progressing steadily.

Aviation, Vol. 13, No. 2 (July 10, 1922), New York, pp. 36-37.

NATIONAL Air Institute. First National Air Institute.

Aeronautical Digest, Vol. 1, No. 8 (Nov. 1922), New York, pp. 185-186.

NATIONAL balloon race. Experiences in the national balloon race. Interesting accounts by Major Westover, Ralph Upson, Lieutenant Reed, and Commander Norfleet.

Aviation, Vol. 12, No. 26 (June 26, 1922), New York, pp. 746-749, ill.

— The national balloon race.

The Ace, Vol. 3, No. 7 (July 1922), Los Angeles, p. 16.

Aviation, Vol. 12, No. 16 (Apr. 17, 1922), New York, p. 447.

NAVAL aeronautics. Aircraft and the Navy.

Flight, Vol. 14, No. 30 (July 27, 1922), London, pp. 426-427.

NAVAL aeronautics. Arresting gear for naval aircraft carriers. Experiments now being made at Hampton Naval Air Station to develop arresting gear for flying deck of the U. S. S. *Langley*.

Aviation, Vol. 12, No. 7 (Feb. 13, 1922), New York, pp. 201-202, ill.

- The battle cruiser airplane carriers.  
Aviation, Vol. 12, No. 12 (Mar. 20, 1922), New York, p. 338.
  - Battle cruisers as aircraft carriers.  
Aviation, Vol. 12, No. 10 (Mar. 6, 1922), New York, p. 290.
  - Luftschiffleistungen und Verluste der deutschen Marine im Kriege 1914-1918.  
Nachr. Luftf., Jahrg. 3, Nr. 36 (10. Sept. 1922), Berlin, pp. 461-464.
  - The naval air appropriation, 1922-23.  
Aviation, Vol. 12, No. 17 (Apr. 24, 1922), New York, pp. 476-477.
  - Navy to use metal seaplanes.  
Aerial Age, Vol. 15, No. 10 (May 15, 1922), New York, p. 219.
  - Navy TS and TR planes.  
Aerial Age, Vol. 15, No. 20 (Nov. 1922), New York, pp. 557-558.
  - The Navy's record in aeronautics. Statement of Admiral Moffett before the Naval Appropriation Committee regarding post-war development of naval aircraft.  
Aviation, Vol. 12, No. 25 (June 10, 1922), New York, pp. 720-722.
  - New organization of naval aircraft units.  
Aviation, Vol. 13, No. 23 (Dec. 4, 1922), New York, pp. 753-754.
  - A new torpedo seaplane for the United States Navy. Curtiss cantilever monoplane driven by twin engines represents notable advance in aeronautical engineering.  
Aviation, Vol. 12, No. 5 (Jan. 30, 1922), New York, p. 141, ill.
  - Nuevos aparatos para nuestra aeronáutica naval.  
Iberica, No. 441 (2 sept. 1922), Tortosa, pp. 115-116.
  - The past year in naval aeronautics.  
Aviation, Vol. 12, No. 12 (Mar. 20, 1922), New York, pp. 336-338, ill.
  - Pay of naval flying officers.  
Aviation, Vol. 12, No. 8 (Feb. 20, 1922), New York, p. 233.
  - Torpedo planes hit Atlantic Fleet.  
Aerial Age, Vol. 15, No. 20 (Nov. 1922), New York, pp. 540-541, ill.
  - United States naval aviation program, 1923.  
Aviation, Vol. 12, No. 13 (Mar. 27, 1922), New York, pp. 364-365, ill.
- NEILLIE, C. R., and J. S. Houser. Fighting insects with airplanes.  
National Geographic Magazine, Vol. 41 (Mar. 1922), Washington, D. C., pp. 333-338, ill.  
Current Opinion, Vol. 72 (May 1922), New York, pp. 656-657.  
Journal Economic Entomology, Vol. 15 (Feb. 1922), Geneva, N. Y., pp. 85-87.
- NETHERLANDS. Aviation in the Netherlands.  
Aviation, Vol. 12, No. 16 (Apr. 17, 1922), New York, p. 451.
- NEUMANN, GEORG PAUL. The German air force in the Great War. Translated by J. E. Gurdon.  
New York, George H. Doran Co., 1922, pp. 297.
- NEUMANN-NEANDER, ERNST. Stromlinienkarosserie.  
Motorwagen, 25. Jahrg., Heft 22 (10. Aug. 1922), Berlin, pp. 418-420.
- NEW YORK. New York aerial police.  
Aviation, Vol. 12, No. 21 (May 22, 1922), New York, p. 602.
- New York City was the first metropolis in the world to establish an aviation division in connection with its police department.  
Aeronautical Digest, Vol. 1, No. 6 (Sept. 1922), New York, p. 69, ill.

- NEW YORK.** New York National Guard air service.  
     Aviation, Vol. 13, No. 21 (Nov. 20, 1922), New York, p. 695.
- New York to Detroit via the air-water route.  
     Aerial Age, Vol. 15, No. 21 (Dec. 1922), New York, pp. 581-582, ill.
- See Wilson, L. J.: Mapping New York City from the air.
- NEWELL, WILLIAM.** Mr. Newell.  
     Aeroplane, Vol. 23, No. 21 (Nov. 22, 1922), London, p. 396.
- NEWFOUNDLAND.** Aircraft in Newfoundland.  
     Flight, Vol. 14, No. 46 (Nov. 16, 1922), London, p. 677.
- Aviation in Newfoundland and Labrador. A practical demonstration of the value of aerial mail and passenger transport in Arctic countries.  
     Aviation, Vol. 13, No. 2 (July 10, 1922), New York, pp. 41-42, ill.
- Flying in Newfoundland.  
     Aer. Eng. Suppl. The Aeroplane, Vol. 22, No. 18 (May 3, 1922), London, pp. 320-322, ill.
- NICE.** Le meeting d'aviation de Nice.  
     L'Aérophile, 30e année, Nos. 7-8 (1er-15 avril 1922), Paris, pp. 103-104, ill.
- The Nice meeting.  
     Aer. Eng. Suppl. The Aeroplane, Vol. 22, No. 16 (Apr. 19, 1922), London, pp. 283-285, ill.
- See Thorburn, D. W.: An aviation week at Nice.
- NICKEL.** See Aeronautical Research Committee. Report No. 789.
- NICOLAUS, FR.** Der Gleiter 1921 der Akad. Fliegertruppe Darmstadt.  
     Flugsport, 14. Jahrg., Nr. 3 (1. Feb. 1922), Frankfurt, pp. 39-42.
- NIEDNER, J.** Die wichtigsten Prüfmethoden, Ballonstoffe auf Gasdurchlässigkeit zu untersuchen, und der Vergleich der mit ihnen gewonnenen Resultate.  
     Zeitschr. Flugt. Motorl., 13. Jahrg., 12. Hft. (30. Juni 1922), München, pp. 172-176, ill.
- NIEUWENHUIS, H.** Het vliegwezen in de koloniën.  
     Vliegveld, 6de Jaarg., No. 12 (Dec. 1922), Amsterdam, pp. 299-301, ill.
- On our first line of defense.  
     Vliegveld, 6de Jaarg., No. 5 (Mei 1922), Amsterdam, p. 106; (Nov.) pp. 275-276.
- NIGHT flying.** Beacons and wind indicators for night flying. Improved aerial light-houses make night flying possible.  
     Aviation, Vol. 13, No. 21 (Nov. 20, 1922), New York, pp. 688-689, ill.
- Chicago is to be the laboratory for night flying experiments of the Post Office Department.  
     Aeronautical Digest, Vol. 1, No. 8 (Nov. 1922), New York, p. 208.
- Lichtzeichen für den Nachtflugverkehr.  
     Flugsport, 14. Jahrg., Nr. 14 (12. Juli 1922), Frankfurt, pp. 226-230.
- Luces para la navegación aérea nocturna.  
     Ibérica, No. 446 (7 octubre 1922), Tortosa, pp. 193-199, ill.
- Nachtflugverkehr und Befeuerung von Flugzeugen und Flugplätzen.  
     Luftweg, Nr. 11 (15. Aug. 1922), Berlin, pp. 109-110.
- New night landing device.  
     Aviation, Vol. 12, No. 14 (Apr. 3, 1922), New York, p. 394.
- Night flying.  
     Aeronautical Digest, Vol. 1, No. 5 (Aug. 1922), New York, pp. 9-10, ill.
- Night flying at Kelly Field.  
     Aviation, Vol. 12, No. 1 (Jan. 2, 1922), New York, p. 14.
- Night-flying experiments.  
     Engineer, Vol. 135, No. 3503 (Feb. 16, 1923), London, p. 171.

NIGHT flying. *See* Mail: Night air mail experiments.

— See Marcotte, Edmond: Pour la navigation aérienne nocturne. Organisation économique du balisage lumineux.

NIMFÜHR. Dr. Nimführ's soaring airplane.  
Scienc. Amer., Vol. 127 (July 1922), New York, p. 29.

NIMFÜHR, RAIMUND. Der segelnde Flug nach Vogelart.  
Luftweg, Nr. 1 (12. Januar 1922), Berlin, pp. 1-5, diagrs.

1921. American airplane achievements in 1921.  
Automotive Manufacturer, Vol. 63, No. 10, Jan. 1922), New York, p. 13.

— The review of the year.  
Aeroplane, Vol. 22, Nos. 1, 3, 4 (Jan. 4, 18, 25, 1922), London, pp. 1-4, 15, 41-42, 58-59.

1922. On the problem of 1922.  
Aeroplane, Vol. 22, Nos. 4-5 (Jan. 25, Feb. 1, 1922), London, pp. 57, 77-79.

NOBILE, UMBERTO. Semirigid v. rigid airships.  
Flight, Vol. 14, No. 4 (Jan. 26, 1922), London, pp. 49-50, ill., diagr.

NOLTENIUS, FRIEDRICH. Die Raumempfindung im Fluge.  
Zeitschr. Flugt. Motorl., 13. Jahrg., 3. Hft. (15. Feb. 1922), Berlin, pp. 31-33.

NOMENCLATURE. Aeronautical nomenclature.  
Aviation, Vol. 12, No. 13 (Mar. 27, 1922), New York, p. 363.

NOORDUYN, R. B. C. Air lines and some of their problems.  
Mech. Eng., Vol. 44, No. 2 (Feb. 1922), New York, pp. 107-109, ill.

NORDEN, HERMANN. From jungleland into skyland.  
Aerial Age, Vol. 15, No. 3 (Mar. 27, 1922), New York, pp. 56-57, ill.

NORDMAN, H. J. A study of the vulture and golden eagle.  
Aerial Age, Vol. 15, Nos. 4, 5, 8 (Apr. 3, 10, May 1, 1922), New York, pp. 89, 112, 134.

NORFLEET. *See* National balloon race: Experiences in the national balloon race.  
Interesting accounts by Major Westover, Ralph Upson, Lieutenant Reed, and Commander Norfleet.

NORTH, JOHN D. The case for metal construction.  
Flight, Vol. 14, Nos. 43-45 (Oct. 26-Nov. 9, 1922), London, pp. 632-633, 649-651, 662-663.

— Stability calculations in the process of design.  
Aeron. Journ., Vol. 26, No. 142 (Oct. 1922), London, pp. 408-412, diagr.

NORTH POLE. Curtiss Oriole to the North Pole.  
Aviation, Vol. 12, No. 25 (June 19, 1922), New York, p. 722, ill.

— Flying across the North Pole.  
Aviation, Vol. 13, No. 3 (July 17, 1922), New York, pp. 63, 72.

— To the pole by plane.  
Literary Digest, Vol. 73, No. 10 (June 3, 1922), New York, pp. 27-28, ill.

— *See* Amundsen, Roald: Amundsen to fly over North Pole.

— *See* Arctic: The Arctic air route.

— *See* Stefansson, V.: Arctic as an air route of the future.

NORMAN, C. A. Internal-combustion engine fuels.  
Journ. Soc. Aut. Eng., Vol. 10, No. 3 (Mar. 1922), New York, 187-192, 203.

NORTHCLIFFE. *See* Harmsworth, Alfred: The Viscount Northcliffe.

NORTON, FREDERICK HARWOOD and D. L. BACON. The aerodynamic properties of thick aerofoils, II.

National Advisory Committee for Aeronautics, Report No. 152, Nov. 26, 1922, Washington, Government Printing Office, 1922, pp. 15, diagrs.

- NORTON, FREDERICK HARWOOD. The designer, research man, and the pilot. These three should combine, as far as possible, in producing a new machine.  
U. S. Air Service, Vol. 7, No. 3 (Apr. 1922), Washington, D. C., pp. 23-24.
- NORTON, FREDERICK HARWOOD, and W. G. BROWN. Controllability and maneuverability of airplanes.  
National Advisory Committee for Aeronautics, Report No. 153, Dec. 5, 1922, Washington, Government Printing Office, 1922, pp. 18, ill., diagrs.
- NORTON, FREDERICK HARWOOD, and T. CARROLL. The effect of longitudinal moment of inertia upon dynamic stability.  
National Advisory Committee for Aeronautics, Technical Notes No. 115, Oct. 1922 (Mimeograph), Washington, pp. 3, ill.
- NORTON, FREDERICK HARWOOD. National Advisory Committee for Aeronautics control position recorder.  
National Advisory Committee for Aeronautics, Technical Notes No. 97, May 1922 (Mimeograph), Washington, pp. 3, ill.  
*Aerial Age*, Vol. 15, No. 12 (May 29, 1922), New York, p. 270, ill.  
*Flight*, Vol. 14, No. 36 (Sept. 7, 1922), London, pp. 518-519, ill.
- New method for testing aerofoils in flight. Consisting in suspending an aerofoil from an airplane and measuring the resultant force by tension in wires.  
*Aviation*, Vol. 12, No. 5 (Jan. 30, 1922), New York, pp. 134-136, ill.
- A new method for testing aerofoils in free flight.  
*Flight*, Vol. 14, No. 10 (Mar. 9, 1922), London, pp. 146-148.
- A preliminary investigation of a new method for testing aerofoils in free flight.  
National Advisory Committee for Aeronautics, Technical Notes No. 77, Jan. 1922 (Mimeograph), Washington, pp. 11, ill.
- NORTON, FREDERICK HARWOOD, and W. G. BROWN. The pressure distribution over the horizontal tail surfaces of an airplane, III.  
National Advisory Committee for Aeronautics, Report No. 148, Aug. 11, 1922, Washington, Government Printing Office, 1922, pp. 25, ill., diagrs., tables.
- Pressure distribution over the rudder and fin of an airplane in flight.  
National Advisory Committee for Aeronautics, Report No. 149, June 7, 1922, Washington, Government Printing Office, 1922, pp. 9, ill., diagrs.
- NORTON, FREDERICK HARWOOD, and D. L. BACON. Pressure distribution over thick aerofoils—model tests.  
National Advisory Committee for Aeronautics, Report No. 150, Oct. 23, 1922, Washington, Government Printing Office, 1922, pp. 22, ill., diagrs.
- NORTON, FREDERICK HARWOOD, and W. G. BROWN. A preliminary study of airplane performance.  
National Advisory Committee for Aeronautics, Technical Notes No. 120, Nov. 1922 (Mimeograph), Washington, pp. 7, diagrs., ill.
- NORTON, FREDERICK HARWOOD. Research with full-sized airplanes.  
*Tech. Eng. News*, Vol. 2, No. 9 (Mar. 1922), Cambridge, Mass., pp. 240-241, ill.
- NORWAY. Norwegische einstweilige Bestimmungen über die Kennzeichnung von Zivilluftfahrzeugen.  
*Nachr. Luftf., Jahrg. 3, Nr. 22 (18. Juni 1922)*, Berlin, pp. 313-314.
- NOYES, A. H. Lubrication and its importance to industry.  
*Automotive Manufacturer*, Vol. 63, No. 10 (Jan. 1922), New York, pp. 24-25.
- NUSSBAUM, B. M. Increased efficiency through foremen training.  
*Automotive Manufacturer*, Vol. 64, No. 8 (Nov. 1922), New York, pp. 19-21.
- NUSSELT, WILHELM. Die Selbstenzündung ausströmenden Wasserstoffes.  
*Zeitschr. Flugt. Motorl.*, 13. Jahrg., 9. Hft. (15. Mai 1922), Berlin, pp. 120-123, ill.
- NUTT, ARTHUR. Curtiss model D12 aeronautical engine. New 400-horsepower motor presents many refinements of design.  
*Aviation*, Vol. 13, No. 16 (Oct. 16, 1922), New York, pp. 496-498, ill.

## O.

- OBERMAYER, HENRY, and ARTHUR L. GREENE. Taking the air in England.  
American Machinist, Vol. 57, No. 16 (Oct. 19, 1922), New York, pp. 613-616, ill.
- ODIER, A. Les voilures logarithmique.  
L'Aéophile, 30e année, Nos. 21-22 (1er-15 nov. 1922), Paris, pp. 336-337, ill.
- OFFERMANN, E. Aufgaben des Rhön - Segelflug-Wettbewerbes 1922 und seiner Sonderpreise.  
Zeitschr. Flugt. Motorl., 13. Jahrg., 19-20 Hft. (30. Okt. 1922), München, pp. 281-284.
- Rechenhilfsmittel zur Ermittlung und laufenden Kontrolle der Selbkosten in Luftverkehrsbetrieben.  
Zeitschr. Flugt. Motorl., 13. Jahrg., 24. Hft. (30. Dez. 1922), München, pp. 343-345, ill.
- Technik und Oekonomik im Luftverkehr mit Flugzeugen.  
Zeit. Flugt. Motorl., Vol. 12, Nos. 19-20 (Oct. 15-31, 1921), Berlin, pp. 289-298, 301-302.
- OGLIVIE, ALEC. Gliders and their value in aeronautical progress.  
Engineer, Vol. 135, No. 3503 (Feb. 16, 1923), London, p. 184.
- Some aspects of aeronautical research.  
Aer. Eng. Suppl. The Aeroplane, Vol. 22, No. 25 (June 21, 1922), London, pp. 443-446.
- Wilbur Wright lecture. Some aspects of aeronautical research.  
Aeron. Journ., Vol. 26, No. 142 (Oct. 1922), London, pp. 381-389, tables.
- OIL. See Bradshaw, Granville: Oil cooling.
- OLDOFREDI, G. Discussioni sui progetti per l'aeroporto di Genova.  
Gazz. Aviaz., 1922, Anno 4, No. 47, Milano, p. 1.
- OLDROYD, C. A. How airship accidents lead to airship progress.  
Scien. Amer. Vol. 127 (July 1922), New York, pp. 40-41, ill., diagrs.
- OLIVIER, J. Reorganisatie van den M. L. D.  
Vliegveld, 6de Jaarg., No. 11 (Nov. 1922), Amsterdam, pp. 271-272.
- OLMEDA, F. BERTOZZI. L'impianto idrodinamico dell'Istituto sperimentale aeronautico ed i suoi caratteri sperimentalii.  
Rend. Istituto Sper. Aer., Anno 10-Ser. 2<sup>a</sup>, N. 1 (15 feb. 1922), Roma, pp. 23-44, ill.
- Ricerche sperimentalii idrodinamiche sul comportamento di un modello di dirigibile M in evoluzione di regime.  
Rend. Istituto Sper. Aer., Anno 10-Ser. 2<sup>a</sup>, N. 2 (15 aprile, 1922), Roma, pp. 71-106, diagrs
- OLMSTED, ROBERTS. How the Army will use the airship Roma. First large airship to fly under the American flag. We need more like her.  
U. S. Air Service, Vol. 6, No. 6 (Jan. 1922), Washington, D. C., pp. 17-20, ill.
- OLSTEN, E. P. Singalong Sanderson, W. A. S. P.  
Illustrated World, Vol. 37 (June-July, 1922), pp. 573-576, 733-736, ill.
- ORCY, LADISLAS d'. The Curtiss marine flying trophy race. Flown in boisterous weather the race was won by Lieut. A. W. Gorton, United States Navy, on a Navy TR1 plane.  
Aviation, Vol. 13, No. 16 (Oct. 16, 1922), New York, pp. 490-492, ill.
- Is transport by air a success?  
Outlook, Vol. 129, No. — (Dec. 7, 1921), New York, pp. 556-558, ill.
- The preliminary land plane races at Detroit.  
Aviation, Vol. 13, No. 17 (Oct. 23, 1922), New York, pp. 542-544, ill.
- Revival of the monoplane.  
Scien. Amer., Vol. 125 (Dec. 1921), New York, pp. 111-112, ill.
- Soaring birdmen: A study of soaring birds and a review of recent glider experiments in Germany.  
Scien. Amer., Vol. 126 (Apr. 1922), New York, pp. 235-237, ill., maps.

- ORCY, LADISLAS D'.** The third Pulitzer trophy race.  
Aviation, Vol. 13, No. 17 (Oct. 23, 1922), New York, pp. 544-548, ill.
- ORIENTATION.** See Sluiters, A. van: Dreadlooze orienteering van vliegtuigen.
- OSBORNE, H. C.** The Bellows (Sylphon) fuel pump for Liberty "12" and Wright model "H" engines.  
Air Service Information Circular, Vol. 4, No. 369 (Sept. 15, 1922), Washington, D. C., pp. 5, ill.
- OTTO, R.** Het nieuwe Albatros verkeersvliegtuig L 57.  
Vliegveld, 6de Jaarg., No. 12 (Dec. 1922), Amsterdam, p. 302.
- OVENS.** The rôle of the oven in automotive manufacturing. How modern parts and body manufacturers have come to lean upon the oven for drying, enameling, japanning, lacquering, and other processes.  
Automotive Manufacturer, Vol. 64, Nos. 3, 4 (June, July 1922), New York, pp. 7-11, 26-28, ill.
- OVERSEAS flight.** Seaplanes in overseas flight.  
Aviation, Vol. 12, No. 19 (May 8, 1922), New York, p. 545.
- OXYGEN.** Oxygen and commercial flying at high altitudes.  
Aerial Age, Vol. 15, No. 21 (Dec. 1922), New York, pp. 600, 611.
- OXYGEN instruments.** See National Advisory Committee for Aeronautics: Report No. 130, Aeronautic instruments. Section VI: Oxygen instruments.
- P.**
- P. J.** Les avions sans moteurs. Le premier Congrès de l'Aviation sans Moteur.  
L'Aérophile, 30e année, Nos. 19-20 (1er-15 oct. 1922), Paris, pp. 307-310, ill.
- Le grand prix des avions de transport.  
L'Aérophile, 30e année, Nos. 21-22 (1er-15 nov. 1922), Paris, pp. 340-342, ill.
- Première réunion de la Commission Internationale de Navigation Aérienne.  
L'Aérophile, 30e année, Nos. 15-16 (1er-15 août 1922), Paris, pp. 250-251.
- PL 27.** The 18-ton Parseval semirigid airship *PL 27*. A German experiment of promise.  
Flight, Vol. 14, No. 25 (June 22, 1922), London, pp. 354-357, ill.
- PACKARD.** The Packard model 2025 engine; 600-horsepower engine which will furnish the power for several Pulitzer race entries.  
Aviation, Vol. 13, No. 16 (Oct. 16, 1922), New York, p. 503, ill.
- Record Packard engine performance.  
Aviation, Vol. 13, No. 9 (Aug. 28, 1922), New York, p. 259.
- PAGE, CHARLES B.** The Winslow automotive boiler.  
Journ. Soc. Aut. Eng., Vol. 11, No. 3 (Sept. 1922), New York, pp. 265-272, 274, ill.
- PAOE, RAY.** Ray Page takes over Nebraska Aircraft Corporation.  
The Ace, Vol. 3, No. 6 (June 1922), Los Angeles, p. 16, ill.
- PAINT.** A nonburning exhaust manifold paint.  
Automotive Manufacturer, Vol. 64, No. 7 (Oct. 1922), New York, p. 27.
- PALTHE, P. M. VAN WULFTEN.** Vliegongevallen en hunne oorzaken in 1921.  
Vliegveld, 6de Jaarg., No. 2 (Feb. 1922), Amsterdam, pp. 22-24, diagrs.
- PANNELL, I. R.** Notes on French and Italian aeronautical practice with particular regard to airships.  
Aeronautical Research Committee Report R. and M. 692, London, 1922.
- PARACHUTES.** Greater safety for the parachute jumper.  
Aviation, Vol. 13, No. 25 (Dec. 18, 1922), New York, p. 811, diagr.

**PARACHUTES.** Parachutes on lighter-than-air craft. Use not required on free balloons of Air Service; only employed on kite balloons and airships.

Aviation, Vol. 12, No. 20 (May 15, 1922), New York, p. 567.

— Parachuting from 24,000 feet.

Aviation, Vol. 13, No. 12 (Sept. 18, 1922), New York, p. 350.

— See Calthrop: Calthrop parachute tests at Croydon.

— See Stevens, A. W.: Parachuting from 24,000 feet.

**PARAGON.** Paragon adjustable and reversible propeller.

Aerial Age, Vol. 15, No. 21 (Dec. 1922), New York, pp. 537-539, ill., diagr.

— The Paragon adjustable and reversible air screw.

Flight, Vol. 14, No. 45 (Nov. 9, 1922), London, pp. 657-658, ill., diagr.

— See Propellers: Paragon reversible propeller.

**PARIS.** Engines at the Paris aero show. Some novel features, but few new designs.

Flight, Vol. 14, No. 5 (Feb. 2, 1922), London, pp. 64-68, ill., diagr.

— The Grand Prix de Paris.

Aeroplane, Vol. 23, No. 21 (Nov. 22, 1922), London, p. 396.

Flight, Vol. 14, No. 46 (Nov. 16, 1922), London, p. 673.

— The grand prize of Paris. Farman F90 wins French air transport competition.

Aviation, Vol. 13, No. 24 (Dec. 11, 1922), New York, pp. 780-781.

— On the Paris aero show.

Aeroplane, Vol. 23, Nos. 25-26 (Dec. 20-27, 1922), London, pp. 465, 485.

— The Paris aero show, 1922.

Flight, Vol. 14, Nos. 51, 52 (Dec. 21, 28, 1922), London, pp. 761-768, 781-786, ill., diagr.

— The Paris show, alphabetical report.

Aeroplane, Vol. 23, Nos. 25-26 (Dec. 20-27, 1922), London, pp. 456-480, 488-500, ill., diagr.

— See Lesage André: VIIe Exposition internationale de locomotion aérienne.

— See Mayo, R. H.: Paris aeronautical exhibition, 1921.

**PARISH, WILLIAM F.** The crank case oil dilution problem and its solution.

Journ. Soc. Aut. Eng., Vol. 11, No. 1 (July 1922), New York, pp. 35-47, ill., diagr.

**PARK, WHYRILL E.** A treatise on air screws

London, 1920, Chapman & Hall (Ltd.), pp. 308.

Reviewed in: Zeitschr. Flugt. Motorl., 13. Jahrg., 24. Hft. (30. Dez. 1922), München, p. 347.

**PARSEVAL.** The 18-ton Parseval semirigid airship *PL 27*.

Aerial Age, Vol. 15, No. 17 (Aug. 1922), New York, pp. 402-404, ill.

**PARSEVAL, AUGUST V.** Die Bedeutung des motorlosen Segelflugs.

Zeitschr. Flugt. Motorl., 13. Jahrg., 19-20. Hft. (30. Okt. 1922), Berlin, pp. 280-281.

— Motorluftschiffahrt nach dem Krieg.

Motorwagen, 25. Jahrg., Heft 15 (31. Mai 1922), Berlin, pp. 287-289.

— Ueber die Entwicklung der Motorluftschiffahrt.

Schiffbau, Vol. 24, Nos. 1-2 (Oct. 4-11, 1922), Berlin, pp. 5-7, ill.

— Ueber die Entwicklung der WGL.

Zeitschr. Flugt. Motorl., 13. Jahrg., 11. Hft. (15. Juni 1922), München, p. 158.

— Vorschläge für einen Wettbewerb von Segelflugzeugen um die geringste Sinkgeschwindigkeit.

Zeitschr. Flugt. Motorl., 13. Jahrg., 1. Hft. (14. Jan. 1922), München, pp. 7-8.

**PARSONS, S. R., and D. R. HARPER.** Radiators for aircraft engines.

U. S. Bureau of Standards, Tech. Papers, Vol. 16, No. 211 (May 26, 1922), Washington, D. C., pp. 247-430, ill.

- PASSENGERS. *See* National Advisory Committee for Aeronautics: Technical Notes No. 80. The dead weight of the airship and the number of passengers that can be carried.
- PATENTS—Germany. Nennung des Erfinders in der Patentschrift.  
Zeitschr. Flugt. Motorl., 13. Jahrg., 9. Hft. (15. Mai 1922), Berlin, p. 127.
- PATERSON, C., and N. R. CAMPBELL. An investigation of certain spark gaps for magnetos.  
Aeronautical Research Committee Report I. C. E. No. 14, London, 1922.
- PATRICK, MASON M. The Army Air Service.  
Aviation, Vol. 13, Nos. 23-24 (Dec. 4-11, 1922), New York, pp. 740-742, 777-779.
- General Patrick on inspection tour.  
Aerial Age, Vol. 15, No. 6 (Apr. 17, 1922), New York, pp. 134-135.
- A message from the chief.  
U. S. Air Service, Vol. 7, No. 10 (Nov. 1922), Washington, D. C., pp. 7-8, ill.
- PATTERSON, T. T. Detroit gets world's best pilots and planes. Scores of entries promise brilliant performances unprecedented in the air.  
U. S. Air Service, Vol. 7, No. 9 (Oct. 1922), Washington, D. C., pp. 15-18, ill.
- Million goldbeaters' skins in Navy's new dirigibles. Handed down to us by the ancients. Goldbeaters' skins now find their most important use in construction of airships.  
U. S. Air Service, Vol. 7, No. 7 (Aug. 1922), Washington, D. C., pp. 13-14.
- Naval air station at Lakehurst, N. J., points the way to commercial enterprise.  
Aeronautical Digest, Vol. 1, No. 7 (Oct. 1922), New York, pp. 122-123, ill.
- PAUL, G. F. Mooring mast for airships.  
St. Nicholas, Vol. 49, No. 12 (Oct. 1922), New York, pp. 1329-1330, ill.
- Wind tunnel for testing tiny planes.  
St. Nicholas, Vol. 49, No. 11 (Sept. 1922), New York, pp. 1218-1219, ill.
- PEARCE, J. G. *See* Fleming, A. P. M., and J. G. Pearce: Research in industry.
- PEATFIELD, I. L. *See* Glauert, H., and I. L. Peatfield: Experimental determination of tail-plane characteristics.
- PEGNA, GIOVANNI. In tema di motori ed apparecchi.  
Gazz. Aviaz., 1922 Anno 4, No. 47, Milano, p. 2.
- PEGNA-ROSSI. The Pegna-Rossi-Bastianelli seaplane.  
Aer. Eng. Suppl. The Aeroplane, Vol. 22, No. 24 (June 14, 1922), London, p. 426, ill.
- PENNOYER, R. G. Rigid airships in the United States Navy.  
U. S. Naval Inst. Proc., Vol. 48, No. 4 (Apr. 1922), Annapolis, Md., pp. 517-529.
- PENSUTI, MARIO. Attilio Longoni.  
Ala d'Italia, Anno 1, Num. 5 (Nov. 1922), Milano, pp. 123-124.
- PERFORMANCE. *See* Booth, H.: Aeroplane performance calculations.
- PERSHING, JOHN J. General Pershing on air power.  
Aviation, Vol. 13, No. 25 (Dec. 18, 1922), New York, p. 799.
- “PERSINSECT.” De onthullingen van schiphol.  
Vliegveld, 6de Jaarg., No. 3 (Maart 1922), Amsterdam, p. 63.
- Van de Rotterdamsche vliegweide.  
Vliegveld, 6de Jaarg., No. 6 (Juni 1922), Amsterdam, pp. 133-139, ill.; No. 7 (Juli), pp. 171-172; No. 8 (Aug.), p. 234; No. 11 (Nov.), pp. 283-284.
- PERU. Commercial aviation in Peru.  
Aerial Age, Vol. 15, No. 14 (June 12, 1922), New York, p. 328.

- PESCARA, R. PATERAS. Les derniers essais de l'hélicoptère Pescara. Quel nouvel appareil perfectionné d'aviation en naîtra-t-il?  
*L'Aérophile*, 30e année, Nos. 5-6 (1er-15 mars 1922), Paris, pp. 77-79, ill.
- PETERSON, C. G. Advantages of aerial mail.  
*Aerial Age*, Vol. 15, No. 11 (May 22, 1922), New York, pp. 250-251.
- If private contractors carry mail by air. The most hopeful sign of the present time for commercial aviation.  
*U. S. Air Service*, Vol. 7, No. 5 (June 1922), Washington, D. C., pp. 15-17.
- Prospects of contract air mail services.  
*Aviation*, Vol. 12, No. 23 (June 5, 1922), New York, pp. 656-657.
- PETERSON, JOHN B., and JOHN R. FREEMAN, Jr. Altitude instruments. Part II. Precision altimeter design.  
 National Advisory Committee for Aeronautics, Report No. 126, Washington, Aug. 4, 1922, Government Printing Office, 1922, pp. 28-37, ill.
- PETIT, HENRI. Le moteur d'aviation Farman.  
*Technique Automobile et Aérienne*, Vol. 13, No. 119 (1922), Paris, pp. 97-106, ill.
- PETREL. Petrel in another competition.  
*Aviation*, Vol. 13, No. 4 (July 24, 1922), New York, p. 100.
- PEYRET. The Peyret tandem monoplane. Details of winning machine.  
*Flight*, Vol. 14, No. 43 (Oct. 26, 1922), London, pp. 621-623, ill., diagr.
- PEYRET, LOUIS. Le planeur Peyret.  
*L'Aérophile*, 30e année, Nos. 21-22 (1er-15 nov. 1922), Paris, pp. 323-325, ill.
- See Peyriller, E.: Louis Peyret.
- PEYRET glider. The French Peyret monoplane glider.  
*Aeronautical Digest*, Vol. 1, No. 9 (Dec. 1922), New York, p. 293.
- PEYRILLER, E. Aviateurs contemporains. Le Colonel Casse.  
*L'Aérophile*, 30e année, Nos. 17-18 (1er-15 sept. 1922), Paris, pp. 257-258, port.
- Aviateurs contemporains. Maneyrol.  
*L'Aérophile*, 30e année, Nos. 21-22 (1er-15 nov. 1922), Paris, p. 321, port.
- Le budget de l'aéronautique à la Chambre des Députés.  
*L'Aérophile*, 30e année, Nos. 1-2 (1er-15 janv. 1922), Paris, pp. 24-25.
- La discussion du budget de l'aéronautique à la Chambre des Députés.  
*L'Aérophile*, 30e année, Nos. 23-24 (1er-15 déc. 1922), Paris, pp. 354-355.
- Louis Peyret.  
*L'Aérophile*, 30e année, Nos. 21-22 (1er-15 nov. 1922), Paris, p. 325.
- De la préparation militaire et de l'organisation des services aériens de l'armée.  
*L'Aérophile*, 30e année, Nos. 17-18 (1er-15 sept. 1922), Paris, pp. 268-272.
- Le rapport de M. Bouilloux-Lafont sur le budget de l'aéronautique en 1923.  
*L'Aérophile*, 30e année, Nos. 21-22 (1er-15 nov. 1922), Paris, p. 335.
- PHILIPPE. L'atterrisseage des avions.  
*L'Aérophile*, 30e année, Nos. 7-8 (1er-15 avril 1922), Paris, pp. 101-103, diagr.
- PHILIPPE, J. Les avions sans moteurs. Clermont-Ferrand, 14 août 1922.  
*L'Aérophile*, 30e année, Nos. 16-16 (1er-15 août 1922), Paris, pp. 239-240, ill.
- PHILIPPINES. Flying over the wilds of Philippines.  
*Aeronautical Digest*, Vol. 1, No. 6 (Sept. 1922), New York, p. 81.
- PHILLIPS, C. M. See Grard, C., translated by C. M. Phillips and H. W. L. Phillips. Aluminum and its alloys. Their properties, thermal treatment, and industrial application.

- PHILLIPS, H. W. L. *See* Grard, C., translated by C. M. Phillips and H. W. L. Phillips: Aluminum and its alloys. Their properties, thermal treatment, and industrial application.
- PHILLIPS, S. H. Improvements in built-up airship girders. With special reference to the strength of girders as a whole.  
Aviation, Vol. 13, No. 26 (Dec. 25, 1922), New York, pp. 823-830, ill.
- Why the mooring mast?  
Aviation, Vol. 13, No. 23 (Dec. 4, 1922), New York, p. 750.
- PHOTOGRAPHY. Aerial camera aids reconstruction work.  
Aviation, Vol. 13, No. 25 (Dec. 18, 1922), New York, p. 810.
- Aerial mapping and photography to save enormous sums.  
Automotive Manufacturer, Vol. 63, No. 12 (Mar. 1922), New York, pp. 7-10, 28, ill.
- Aerial photography progressive.  
Aerial Age, Vol. 15, No. 20 (Nov. 1922), New York, p. 554.
- Efficient high-speed aerial camera.  
Pop. Mech., Vol. 33 (July 1922), Chicago, p. 36, ill.
- Map making and aerial photography. Canada's use of the new method.  
Flight, Vol. 14, No. 39 (Sept. 23, 1922), London, p. 556, ill.
- Practical uses of aerial photography. Fairchild camera produces remarkable aerial map of New York City. Photographs taken in 69 minutes.  
Aviation, Vol. 12, No. 15 (Apr. 10, 1922), New York, pp. 424-426, ill.
- Two new airplane cameras developed by experts.  
Pop. Mech., Vol. 33, No. 1 (July 1922), Chicago, p. 23, ill.
- *See* Bagley, James Warren: Concerning aerial photographic mapping.
- *See* Bagley, James Warren: Experimental mapping with aerial photographs in the Army.
- *See* Blake, W. T.: Latest application of aerial photography.
- *See* Blake, W. T.: Progress of aerial photography.
- *See* Carlier, André H.: La photographie aérienne.
- *See* Carlier, André H.: La photographie aérienne pendant la guerre.
- *See* Eliel, Leon T.: Engineering with the eagles. The inside story of aerial photography.
- *See* Fairchild, S. M.: Winged surveyors.
- *See* Fiske, H. C.: Air photos as plane-table sheets aid mapping.
- *See* Hamilton, W. L.: Aerial photography.
- *See* Hogg, J. E.: Aerial photos taken from the ground.
- *See* Hogg, J. E.: Taking aeronautical photographs from the ground.
- *See* Johnson, D.: Aerial observation of physiographic features; reply to B. Willis.
- *See* Map making: Mosaic maps by air photography.
- *See* Map making: Mosaic maps of cities; aerial maps taken vertically or obliquely serve many purposes in municipal administration and publicity work.
- *See* Maxwell, Hamilton: Aerial photography.
- *See* Smith, G. S.: Uses of aerial photographs in map making.

**PHOTOGRAPHY.** *See* Topography: Plotting topography from oblique aerial photographs, by the topographical surveys branch, department of the interior, Canada.  
 —— *See* Winters, S. R.: School for photographers of the air.

**PICK,** W. H. A short course in elementary meteorology.  
 London, H. M. Stationery Office, 1922, pp. 118.

**PIERROT,** ÉMILE. L'I. A. T. A. et les transports aériens.  
 Aéronautique, 1re année, No. 3 (Supplément à L'Aéronautique, No. 34, mars 1922), Paris, pp. 28-30, ill.

**PILON,** H. La radiométallographie dans les constructions aéronautiques.  
 Techn. Aér., 13e année, n. s., No. 13 (15 nov. 1922), Paris, pp. 402-410, ill.

**Pilot certificates.** *See* Germany: Soaring pilot certificates in Germany.

**PINSARD.** La coupe Lamblin.  
 L'Aérophile, 30e année, Nos. 11-12 (1er-15 juin 1922), Paris, p. 177.

**PISCHOF,** A. DE. L'influence de la nature des courants aériens sur la construction des alles voilières.  
 Aéronautique, 4me année, No. 35 (avril 1922), Paris, pp. 125-129, ill.

— Vol plané—vol à voile. Par les expériences d'avions sans moteur.  
 L'Aéronautique, 4e année, No. 32 (juv. 1922)- Paris, pp. 7-10, ill.

— *See* I. T.: Ceux qui disparaissent (De Pischof.)

**PISTOLESI,** E. L'attività tecnica e scientifica di Augusto Rota.  
 Ala d'Italia, Anno 1, Num. 3 (sett. 1922), Milano, pp. 72-76.  
 Atti, Assoc. Ital. Aerotechn., 1922, Vol. 2, Nos. 1-2, Roma, pp. 8-14.

— Nuovi indirizzi e sviluppi della teoria delle eliche.  
 Atti, Assoc. Ital. Aerotechn., 1922, Vol. 2, Nos. 1-2, Roma, pp. 28-44.

— I propulsori elicoidali e i recenti progressi dell'aerodinamica (Saggio di una teoria delle eliche).  
 Rend. Istituto Sper. Aer., Anno 10-Ser. 2a, N. 3 (15 ottobre 1922), Roma, pp. 107.

— Sulla possibilità del volo a vela dinamico.  
 Atti, Assoc. Ital. Aerotechn., 1922, Vol. 2, Nos. 3-4, Roma, pp. 116-140, ill.

— Teoria dei vortici applicata ai sistemi portanti.  
 Rend. Istituto Sper. Aer., Anno 10-Ser. 2a, N. 1 (15 feb. 1922), Roma, pp. 1-93.

**PISTON rings.** *See* Magee, John: Piston rings.

— *See* National Advisory Committee for Aeronautics, Technical Notes No. 88.  
 Test of oil scraper piston ring and piston fitted with oil drain holes.  
 — *See* National Advisory Committee for Aeronautics, Technical Notes No. 114.  
 Supplementary report of oil scraper piston rings.

**PISTONS.** *See* Diamond, James E.: The aluminum-alloy piston.

**PLESMAN,** A. Het veelzijdig nut van het vliegtuig.  
 Vliegveld, 6de Jaarg., No. 3 (Maart 1922), Amsterdam, pp. 65-66.

**POHL,** W. Luftgütertransporte.  
 Zeitschr. Flugt. Motorl., 13. Jahrg., 2. Hft. (31. Jan. 1922), Berlin, pp. 27-28.

**POIDLONIÉ,** A. Les avions lancés par catapultes.  
 La Nature 50e année 1er sem., No. 2505 (8 avril 1922), Paris, pp. 223-224, ill.

— La résistance des grands dirigeables et les services de transports aériens.  
 Génie Civil, Vol. 80, No. 7 (Feb. 18, 1922), Paris, pp. 153-154.

**PONCET.** Turbines à vapeur.  
 Paris, J. Baillière et Fils, 1922, pp. 350.

- POIRÉE.** M. Poirée.  
*Aeroplane*, Vol. 23, No. 21 (Nov. 22, 1922), London, p. 396.
- See R. L.: Poirée
- POLICE.** See New York City: New York City was the first metropolis in the world to establish an aviation division in connection with its police department.
- POLIS,** P. Bemerkungen zum Möwenflug.  
*Zeitschr. Flugt. Motorl.*, 13. Jahrg., 19-20. Hft. (30. Okt. 1922), München, p. 286.
- POMEROY,** L. H. Advantages of light-weight reciprocating parts.  
*Journ. Soc. Aut. Eng.*, Vol. 11, No. 6 (Dec. 1922), New York, pp. 508-519.
- The fundamentals of internal-combustion-engine design.  
*Journ. Soc. Aut. Eng.*, Vol. 11, No. 4 (Oct. 1922), New York, pp. 328-332, 354.
- POPOFF,** G. Air travel in Russia.  
*Living Age*, Vol. 315 (Dec. 16, 1922), Boston, pp. 638-641.
- PORTAL,** C. F. A. Methods of aeroplane flying instruction.  
*Aeronautical Journal*, Vol. 26, No. 137 (May 1922), London, pp. 177-190.
- PORTER, HAROLD E.** Aerial observations.  
*New York*, 1922, Harper Brothers.
- PORTUGAL.** Portugal to Brazil flight.  
*Aviation*, Vol. 12, Nos. 16, 18 (Apr. 17, May 1, 1922), New York, pp. 456, 517, ill.
- Portuguese aviators cross the Atlantic.  
*Aeronautical Digest*, Vol. 1, No. 5 (Aug. 1922), New York, pp. 8, 44, ill.
- POSITION finding.** Une solution du problème de l'orientation en avion.  
*Industrie Electrique*, Vol. 31, No. 710 (Ján. 25, 1922), Paris, pp. 25-27, ill.
- POTEZ.** Un avion commercial le Potez X-A tri-moteur aux essais.  
*L'Aérophile*, 30e année, Nos. 13-14 (1er-15 juil. 1922), Paris, pp. 209-211, ill.
- POTEZ biplane.** The Henry Potez three-engined biplane.  
*Aer. Eng. Suppl. The Aeroplane*, Vol. 23, No. 13 (Sept. 27, 1922), London, pp. 247-248, ill. diagr.
- POUTI,** R. L'adaptation des hélices aux, multimoteurs couplés variations du rendement quand on utilise la demi-puissance sur chaque hélice.  
*L'Aéronautique*, 4me année, No. 39 (août 1922), Paris, pp. 264-266.
- PRAEGER,** OTTO. Success of the air mail service. An unparalleled service record maintained at comparatively low cost.  
*Aviation*, Vol. 12, No. 9 (Feb. 27, 1922), New York, p. 256.
- PRANDTL,** L. Lehren des Rhönflugs 1922.  
*Zeitschr. Flugt. Motorl.*, 13. Jahrg., 19. u. 20. Hft. (30. Okt. 1922), Berlin, pp. 274-275.
- Zur Vorgeschichte der Wissenschaftliche Gesellschaft für Luftfahrt.  
*Zeitschr. Flugt. Motorl.*, 13. Jahrg., 11. Hft. (15. Juni 1922), München, pp. 156-157.
- PRESSURE distribution.** See National Advisory Committee for Aeronautics: Pressure distribution over thick aerofoils—model tests.
- See National Advisory Committee for Aeronautics: Report No. 149. Pressure distribution over the rudder and fin of an airplane in flight.
- PRIESTLEY,** B. G. New type wind tunnel for airplane testing.  
*Pop. Mech.*, Vol. 38, No. 1 (July 1922), Chicago, pp. 77-78, ill.
- PRIZES.** Il gran premio d'Italia.  
*Gazz. Aviaz.*, 1922, Anno 4, No. 36, p. 1.
- PROBLEMS.** See Klemperer, W.: Ein einfaches Verfahren . . .
- See Kromer, Hugo H.: Die Bausicherheits-Vorschriften für Flugzeuge.

**PROBLEMS.** See Reynolds, R.: Zur Spaltflügelfrage.

— See Rohrbach, Adolf: Bausicherheit und Kurvenflug.

— See Rohrbach, Adolf: Zeichnerische Berechnung . . .

**PRÖLL, A.** Gedanken zur Frage des Hochschulunterrichtes im Luftfahrtwesen.

Zeitschr. Flugt. Motorl., 13. Jahrg., 11. Hft. (15. Juni 1922), Berlin, pp. 163-166.

— Kurze Betrachtungen zu den diesjährigen Rhönflügen.

Zeitschr. Flugt. Motorl., 13. Jahrg., 19-20, Hft. (30. Okt. 1922), Berlin, pp. 278-280.

**PRONDZYNISKI, STEPHAN V.** Der spitze Flügel.

Luftweg, Nr. 6 (23. März 1922), Berlin, pp. 62-64.

**PROPELLERS.** The design of model propellers.

Aerial Age, Vol. 15, No. 11 (May 22, 1922), New York, p. 257.

— Helicopter and the variable-pitch propeller.

Mechanical Engineering, Vol. 44, No. — (Sept. 1922), New York, pp. 575-578, ill., diagrs.

— Der Hubschrauber Berliners.

Luftweg, Nr. 13 (12. Okt. 1922), Berlin, p. 125, ill.

— Make reversible propeller for dirigible balloon.

Pop. Mech., Vol. 33 (Aug. 1922), Chicago, p. 251, ill.

— Metal air screws.

Aer. Eng. Suppl. The Aeroplane, Vol. 23, No. 21 (Nov. 22, 1922), London, p. 404.

— Paragon reversible propeller.

Aviation, Vol. 13, No. 19 (Nov. 6, 1922), New York, p. 634.

— Variable-pitch propeller demonstration.

Aviation, Vol. 12, No. 4 (Jan. 23, 1922), New York, p. 109.

— See Aeronautical Research Committee.

— See Aeronautical Research Committee. Report No. 786.

— See Bacon, David L.: The "Universal" propeller.

— See Balabau, Karl: Ein Beitrag zur Entwicklungsgeschichte des Hubschraubers.

— See Betz, A.: The theory of the screw propeller.

— See Constantin, Joessel and Daloz: L'emploi d'un moteur éolien pour actionner un navire contre le vent.

— See Everling, E.: Die neuere Theorie der Tragflügel und Luftschauben.

— See Fage, A., and R. G. Howard: A consideration of air-screw theory in the light of data from an experimental investigation of the distribution over pressure over the entire surface of an air-screw blade.

— See Falcon: The Falcon metal tipping scheme for air screws.

— See Hornespeed propeller: The Hornespeed propeller.

— See Katzmayr, R.: Bestimmung der Deformationsgrösse von Schraubenblättern im Marsche.

— See Korvin-Kroukowsky, B. V.: Properties of two aeromarine aerofoils.

— See Miller, William H.: The prediction of propeller characteristics from the blade element analysis.

— See Munk, Max M.: Notes on propeller design. The energy losses of the propeller.

— See National Advisory Committee for Aeronautics: Report No. 141. Experimental research on air propellers. V.

- PROPELLERS. *See* National Advisory Committee for Aeronautics: Technical Notes No. 83. The theory of the screw propeller.
- *See* National Advisory Committee for Aeronautics: Technical Notes Nos. 91, 94, 95, 96. Notes on propeller design.
- *See* Paragon: The Paragon adjustable and reversible air screw.
- *See* Riach, M. A. S.: The fan propeller and blade interference.
- *See* Rohrbach, Adolf: Zeichnerische Berechnungen der Leistungen von Luftschauben nach Modellversuchen.
- *See* Trefftz, E.: Prandtl'sche Tragflächen- und Propeller-Theorie.
- *See* Wagner, Rud: Propellerwirkung.

PUJOL, J. Détermination graphique des fatigues dans la cellule d'un aéroplane.  
Paris, E. Chiron, 1922, pp. 118, ill.  
Reviewed in: Zeitschr. Flugt. Motorl., 13. Jahrg., 13. Hft. (15. Juli 1922), München, p. 196.

PULITZER race. The Army pursuit ships for the Pulitzer race.  
Aviation, Vol. 12, No. 25 (June 19, 1922), New York, p. 719.

PULITZER trophy race. Characteristics of the aircraft entered in the Pulitzer trophy race, Saturday, October 14, 1922.  
Aviation, Vol. 13, No. 14 (Oct. 2, 1922), New York, pp. 416-420, ill.

- The 1922 Pulitzer race.  
Flight, Vol. 14, No. 42 (Oct. 19, 1922), London, pp. 603-605, ill.
- Pulitzer race course over water.  
Aviation, Vol. 13, No. 10 (Sept. 4, 1922), New York, p. 290, map.
- The Pulitzer trophy race.  
Aer. Eng. Suppl. The Aeroplane, Vol. 23, Nos. 19-21 (Nov. 8, 22, 1922), London, pp. 363-364, 400-402, ill.

— Pulitzer trophy race. Event No. 5, Saturday, October 14.  
Aviation, Vol. 13, No. 15 (Oct. 9, 1922), New York, pp. 450-452.

— World records established in Pulitzer race.  
Aerial Age, Vol. 15, No. 20 (Nov. 1922), New York, pp. 533-536, ill.

— *See* Black, A.: Pulitzer trophy.

— *See* Mingos, H.: Airplane racing and what it means; the immediate lessons to be drawn from the Pulitzer race at Omaha.

— *See* Orcy, Ladislas d': The third Pulitzer race.

PULLIN, V. E. Radiological inspection work.  
Aeron. Journ., Vol. 26, No. 141 (Sept. 1922), London, pp. 336-348, ill.

— Radiological research.  
Flight, Vol. 14, No. 12 (Mar. 23, 1922), London, pp. 179-180.

PULSIFER, L. VALENTINE. Fifty years of progress in the varnish industry.  
Automotive Manufacturer, Vol. 6, No. 8 (Nov. 1922), New York, pp. 27-29.

PUMA. An improved "Puma" cylinder block.  
Aer. Eng. Suppl. The Aeroplane, Vol. 22, No. 22 (May 31, 1922), London, p. 390, diagr.

PUSHERS. How an efficient pusher might be built.  
Aer. Eng. Suppl. The Aeroplane, Vol. 22, No. 19 (May 10, 1922), London, p. 335, diagr.

## Q.

QUEENSLAND. Queensland aviation going ahead. Charleville-Cloncurry air service subsidized.  
Flight, Vol. 14, No. 20 (May 18, 1922), London, p. 286.

## R.

- R. L. Des avions écrivent dans le ciel . . .  
 L'Aérophile, 30e année, Nos. 11-12 (1er-15 juin 1922), Paris, p. 162.
- La coupe Gordon-Bennett.  
 L'Aérophile, 30e année, Nos. 13-14 (1er-15 juil. 1922), Paris, pp. 212-213, ill.
- La coupe Leblanc des sphériques.  
 L'Aérophile, 30e année, Nos. 21-22 (1er-15 nov. 1922), Paris, p. 343, map.
- La XI<sup>e</sup> Coupe Gordon-Bennett.  
 L'Aérophile, 30e année, Nos. 19-20 (1er-15 oct. 1922), Paris, pp. 313-314, map.
- Poirée.  
 L'Aérophile, 30e année, Nos. 21-22 (1er-15 nov. 1922), Paris, p. 344, port.
- La semaine d'aérostation de Genève.  
 L'Aérophile, 30e année, Nos. 15-16 (1er-15 août 1922), Paris, pp. 233-235, ill.
- R. 29. *See* Aeronautical Research Committee. Report No. 675.
- R. 32. *See* Aeronautical Research Committee. Report No. 779.
- R. 33. *See* Aeronautical Research Committee: Reports and memoranda No. 815 (Ae. 66). Measurements of normal force and pitching moment on rigid airship R. 33.
- *See* Stability: The stability of airships. Trials with the R. 33.
- R. 34. The Atlantic cruise of H. M. airship R. 34.  
 Flight, Vol. 14, No. 45 (Nov. 9, 1922), London, p. 661.
- R. 38. The accident to H. M. airship R. 38. Report of accident investigation subcommittee issued.  
 Flight, Vol. 14, No. 9 (Mar. 2, 1922), London, pp. 139-140.
- British report on the loss of airship R. 38. Findings of Aeronautical Research Committee attribute accident to inaccurate calculations, faulty design, and structural weakness.  
 Aviation, Vol. 12, No. 11 (Mar. 13, 1922), New York, pp. 311-312.
- The loss of R. 38.  
 Aer. Eng. Suppl. The Aeroplane, Vol. 22, No. 9 (Mar. 1, 1922), London, pp. 158-160.  
 Engineering, Vol. 113 (Mar. 3, 1922), London, pp. 265-266.
- The loss of R. 38. The report of the admiralty.  
 Flight, Vol. 14, No. 3 (Jan. 19, 1922), London, p. 39.
- R. 38 memorial prize.  
 Aeronautical Journal, Vol. 26, No. 144 (Dec. 1922), London, p. 461.
- Rudder pressures and airship R. 38.  
 Engineering, Vol. 112 (Nov. 11, 1921), London, pp. 651-652, diagrs.
- *See* Aeronautical Research Committee. Report No. 775.
- *See* Aeronautical Research Committee. Report No. 782.
- *See* Collas, Robert: Le rapport officiel sur les causes de la perte du R. 38.
- *See* Reyneker, F. H.: Het vergaan van de R. 38.
- R. 80. *See* Aeronautical Research Committee. Report No. 541.
- RADIATORS. Cleaning radiators.  
 Aviation, Vol. 13, No. 9 (Aug. 28, 1922), New York, p. 259.
- Getting airplane details on a manufacturing basis.  
 American Machinist, Vol. 55, No. 22 (Dec. 1, 1921), New York, pp. 886-887, ill.

## RADIATORS. A matter of radiators.

Aeroplane, Vol. 23, No. 9 (Aug. 30, 1922), London, p. 166.

## — The resistance of radiators.

Aer. Eng. Suppl. The Aeroplane, Vol. 22, No. 14 (Apr. 5, 1922), London, p. 248.

## — See Parsons, S. R., and D. R. Harper: Radiators for aircraft engines.

## RADIO. Field locator makes travel by air safe.

Aerial Age, Vol. 15, No. 16 (June 26, 1922), New York, p. 379.

## — Localized radio landing signals for aeroplanes.

Flight, Vol. 14, No. 21 (May 25, 1922), London, p. 299.

## — Loop aerial cuts down interference.

Aerial Age, Vol. 15, No. 6 (Apr. 17, 1922), New York, p. 139.

## — Naval aircraft radio development.

Aviation, Vol. 13, No. 9 (Aug. 28, 1922), New York, p. 263.

## — New York police combine radio and aviation.

Aerial Age, Vol. 15, No. 6 (Apr. 17, 1922), New York, p. 138.

## — Radio and aircraft.

Aviation, Vol. 12, No. 17 (Apr. 24, 1922), New York, p. 485.

## — Radio in aeronautics.

Aviation, Vol. 13, No. 2 (July 10, 1922), New York, p. 35.

## — Radio in aviation.

Aviation, Vol. 12, No. 16 (Apr. 17, 1922), New York, p. 447.

## — Radio direction finding in flying machines.

Nature, Vol. 110, No. 2749 (July 8, 1922), London, p. 59.

## — See Lemoine, Siffer: Radiopejling.

## — See Radio direction finding in flying machines.

## RADIOPHONES. Radiophones on mail planes.

Aviation, Vol. 12, No. 18 (May 1, 1922), New York, p. 516, ill.

## — Radiophoning from airplanes.

Aerial Age, Vol. 15, No. 6 (Apr. 17, 1922), New York, pp. 138-139.

## RAHUSEN, E. N. Bij "D. Napier &amp; Son, Ltd."

Vliegveld, 6de Jaarg., No. 5 Mei 1922, Amsterdam, pp. 93-101, ill.

## — Het Rieseler sportvliegtuig.

Vliegveld, 6de Jaarg., No. 8 (Aug. 1922), Amsterdam, pp. 201-202.

## RAILROADS. Aircraft for railroad emergency.

Aviation, Vol. 13, No. 4 (July 24, 1922), New York, p. 101.

## RAIN. Making rain by aeroplane.

Engineer, Vol. 135, No. 3503 (Feb. 16, 1923), London, p. 171.

## RALEIGH, WALTER. The official history of the war in the air.

London, Clarendon Press, 1922, pp. 510.

## — Sir Walter Raleigh.

Aer. Jour., Vol. 26, No. 138 (June 1922), London, pp. 256, 258.

Aeroplane, Vol. 22, No. 20 (May 17, 1922), London, p. 347.

## — The war in the air (official history of the air); the story of the part played in the great war by the Royal Air Force.

Oxford, Clarendon Press, 1922, Vol. 1, pp. 510.

## RATEAU, A. Les plus grandes vitesses possibles en aviation. Emploi du turbo-compresseur.

Techn. Aér. 13e année, n. s., Nos. 8-10 (15 juin-aôut 1922), Paris, 226-231, 258-266, 290-296, ill.

Revue Universelle des Mines, Vol. 15, No. 4 (Nov. 15, 1922), Liège, pp. 253-283, ill.

- RATEAU, A Turbo-compressors for high-speed aviation.  
*Engineering*, Vol. 114 (July 21-28, Nov. 3, 1922), London, pp. 91-94, 123-125, 545-547.  
*Engineer*, Vol. 114 (Nov. 3, 1922), London, pp. 476-477, 472-473.
- RAT WIRES. *See* Aeronautical Research Committee. Report No. 758.
- REBOUL. Die deutsche Luftfahrt in französischer Beurteilung.  
*Nachr. Luftf.*, Jahrg. 3, Nr. 47 (26. Nov. 1922), Berlin, pp. 585-587.
- RECORDERS. *See* National Advisory Committee for Aeronautics: Technical Notes No. 97. N. A. C. A. control position recorder.
- RECORDS. Army flier speeds 220 miles an hour. Lieut. R. L. Maughan makes world record at Garden City October 2.  
*Aviation*, Vol. 13, No. 16 (Oct. 16, 1922), New York, p. 504, ill.
- Army makes record cross-country flight.  
*U. S. Air Service*, Vol. 7, No. 11 (Dec. 1922), Washington, D. C., p. 10, ill.
- Bossoutrot et Drouhin battent le record de durée par 34 h. 14 m. 7 s. 1/5.  
*L'Aérophile 30e année*, Nos. 21-22 (1er-15 nov. 1922), Paris, p. 333, ill.
- Establishing world's records.  
*Aviation*, Vol. 13, No. 19 (Nov. 6, 1922), New York, p. 627.
- The European duration record.  
*Aer. Eng. Suppl. The Aeroplane*, Vol. 23, No. 19 (Nov. 8, 1922), London, p. 368, ill.
- Fourth airplane record for America.  
*Literary Digest*, Vol. 72, No. 2 (Jan. 14, 1922), New York p. 49.
- French airman climbs 34,768 feet.  
*Wireless and Aviation News*, Vol. 5, No. 1 (Mar. 1922), Toronto, p. 25.
- General Mitchell sets new world's speed record. Averages 224 miles per hour over 1-kilometer course.  
*Aviation*, Vol. 13, No. 17 (Oct. 23, 1922), New York, p. 558.
- New F. A. I. duration record.  
*Aviation*, Vol. 13, No. 19, Nov. 6, 1922, New York, p. 634.
- The new world's duration record.  
*Aviation*, Vol. 12, No. 2 (Jan. 9, 1922), New York, p. 37.
- The new world's speed record.  
*Aer. Eng. Suppl. The Aeroplane*, Vol. 23, No. 20 (Nov. 15, 1922), London, p. 384.
- T 2 makes new duration record. Lieutenants MacReady and Kelly stay up 35 hours 18½ minutes in Army transport plane.  
*Aviation*, Vol. 13, No. 16 (Oct. 16, 1922), New York, p. 505, ill.
- Two hundred and forty-eight miles an hour.  
*Aerial Age*, Vol. 15, No. 20 (Nov. 1922), New York, p. 552.
- Vom Fliegerlager.  
*Flugsport*, 14. Jahrg., Nrs. 16-17 (23. Aug. 1922), Frankfurt a. M., pp. 262-267.
- The world's aviation records up to December 31, 1921.  
*Aeronautical Digest*, Vol. 1, No. 4, 1922, New York, pp. 7-8.
- The world's official airplane records. What every pilot should know about the F. A. I. regulations governing recognition of records.  
*Aviation*, Vol. 13, No. 15 (Oct. 9, 1922), New York, p. 468.
- The world's speed record.  
*Aeroplane*, Vol. 23, No. 13 (Sept. 27, 1922), London, p. 244.
- See Castiglioni: Brack Papa coll'R 700 conquista all'Italia il record mondiale di velocità.

- RECORDS. *See* National Advisory Committee for Aeronautics: Technical Notes No. 117. The synchronization of N. A. C. A. flight records.
- *See* Van der Muelen, J. H. W.: De Nederlandsche proefvliegtuigclubs en de Nederlandsche records.
- RECOULY, R. Across the Syrian deserts by airplane.  
Scribner's Magazine, Vol. 72, No. 4 (Oct. 1922), New York, pp. 387-400, ill.
- REDDEN, CHARLES F. America leads Europe in flying over the water.  
Aeronautical Digest, Vol. 1, No. 8 (Nov. 1922), New York, pp. 187-188, ill.
- Commercial aviation.  
Aviation, Vol. 12, No. 1 (Jan. 2, 1922), New York, pp. 11-12.
- REDINGTON, P. G. Use of the airplane in forest protection.  
California Citrograph, Vol. 7 (Jan. 1922), Los Angeles, p. 67, ill.
- REDZICH, CONSTANTIN. Die Gewinnung von Stickstoff aus der Luft.  
Wirtschaftsmotor, 1922, Nr. 7, Berlin, pp. 5-6, ill.
- REED. *See* National balloon race: Experiences in the national balloon race. Interesting accounts by Major Westover, Ralph Upson, Lieutenant Reed, and Commander Norfleet.
- REED, WILLIAM F., Jr. Aviation weather for military operations. Importance of correct weather forecasting for aircraft has caused wider investigation of the upper atmosphere.  
Aviation, Vol. 12, No. 20 (May 15, 1922), New York, p. 569.
- REGER, J. Der tägliche Gang der Feuchtigkeit über Lindenberge.  
Arbeiten d. Preuss. Aeron. Observ. bei Lindenberge, 14. Bd., 1922, pp. 44-61, diagrs.
- REID. The Reid aeroplane control indicator.  
Engineering, Vol. 111, No. 2955 (Aug. 18, 1922), London, pp. 216-218, ill.
- REID, H. J. E. The N. A. C. A. three-component accelerometer.  
National Advisory Committee for Aeronautics, Technical Notes No. 112, Oct. 1922 (Mimeo-graph), Washington, pp. 6, ill.
- A study of airplane maneuvers, with special reference to angular velocities.  
National Advisory Committee for Aeronautics, Report No. 155, Oct. 9, 1922, Washington, Government Printing Office, 1922, pp. 9, ill., diagrs.
- REINHARDT, G. Das L. F. G. Schiffsflugzeug.  
Motorwagen, 25. Jahrg., Heft 35 (20. Dez. 1922), Berlin, pp. 689-690.
- REISSNER, H. Ausschuss für konstruktive Fragen.  
Zeitschr. Flugt. Motorl., 13. Jahrg., 11. Hft. (15. Juni 1922), München, pp. 158-159.
- RENARD, J. Les tarifs et le prix de revient des transports aériens.  
Supplément à L'Aéronautique, 4me année, No. 39 (août 1922), Paris, pp. 87-89.
- RENARD, PAUL. Un demi-siècle de navigation aérienne.  
Techn. Aér., 13e année, n. s., Nos. 7, 8, 9, 10, 13 (15 mai, juin, juil., août, nov. 1922), Paris, pp. 194-198, 243-248, 277-281, 307-312, 393-401.
- Le prix Bernard-Dubos pour la météorologie appliquée à l'aéronautique.  
L'Aérophile, 30e année, Nos. 15-16 (1er-15 août 1922), Paris, pp. 247-248.
- RENTSCHLER, F. B. The evolution of flight.  
U. S. Air Service, Vol. 7, No. 11 (Dec. 1922), Washington, D. C., pp. 11-15, ill.
- RESEARCH. Aeronautical research.  
Engineering, Vol. 113, No. 2947 (June 23, 1922) London, p. 790.
- Aeronautical research and experimentation.  
Aviation, Vol. 12, No. 9 (Feb. 27, 1922), New York, p. 247.

**RESEARCH.** The importance of research in aeronautics.

Aeronautical Journal, Vol. 26, No. 134 (Feb. 1922), London, pp. 43-45.  
 Flight, Vol. 14, No. 4 (Jan. 26, 1922), London, p. 55.

- Research at a profit.  
 Aer. Eng. Suppl. The Aeroplane, Vol. 23, No. 19 (Nov. 8, 1922), London, p. 366.
- See Fleming, A. P. M., and J. G. Pearce: Research in industry.
- See Norton, F. H.: Research with full-sized airplanes.
- See Bagnall-Wild, R. K.: The progress of research.
- See Green, Fred M.: Research from the designers', constructors', and users' points of view.
- See Guidoni, A.: Preparing altitude records.
- See Ogilvie, A.: Wilbur Wright lecture. Some aspects of aeronautical research.
- See Smith, S. Heckstall: On research and other matters.

**RESEARCH University.** Course in aeronautics, Research University.

Aviation, Vol. 12, No. 22 (May 29, 1922), New York, p. 631.

**RESISTANCE.** See Jaray, P.: Die Leistungsberechnung des Motorwagens unter besonderer Berücksichtigung des Luftwiderstandes.

- See Poidlouë, A.: La résistance des grands dirigeables et les services de transports aériens.

**REYNEKER, F. H.** De automatische stabilisator van Aveline.  
 Vliegveld, 6de Jaarg., No. 11 (Nov. 1922), Amsterdam, pp. 269-271, ill.

- Het landen van vliegtuigen.  
 Vliegveld, 6de Jaarg., No. 3 (Maart 1922), Amsterdam, pp. 56-58.
  - Het starten van vliegtuigen.  
 Vliegveld, 6de Jaarg., No. 1 (Jan. 1922), Amsterdam, pp. 7-8.
  - Het vergaan van de *R 38*.  
 Vliegveld, 6de Jaarg., No. 4 (Apr. 1922), Amsterdam, pp. 78-79.
  - Lekvrije benzinereservoirs.  
 Vliegveld, 6de Jaarg., No. 7 (Juli 1922), Amsterdam, pp. 161-163.
  - De luchtverbinding mit Indië.  
 Vliegveld, 6de Jaarg., No. 9 (Sept. 1922), Amsterdam, pp. 221-223.
  - Nieuwe Handley-Page vliegtuigen.  
 Vliegveld, 6de Jaarg., No. 7 (Juli 1922), Amsterdam, pp. 156-158, ill.
  - De richtkabel von Loth.  
 Vliegveld, 6de Jaarg., No. 6 (Juni 1922), Amsterdam, pp. 129-130.
  - Snelheidsmeting van vliegtuigen.  
 Vliegveld, 6de Jaarg., No. 12 (Dec. 1922), Amsterdam, pp. 292-296, ill.
  - Uit het leven van Otto Lilienthal.  
 Vliegveld, 6de Jaarg., No. 11 (Nov. 1922), Amsterdam, pp. 276-278, port.
  - Vliegen op groote hoogten.  
 Vliegveld, 6de Jaarg., No. 3 (Maart 1922), Amsterdam, pp. 53-55.
  - Waarde-bepaling van vliegtuigen.  
 Vliegveld, 6de Jaarg., No. 6 (Juni 1922), Amsterdam, pp. 126-129.
- REYNOLDS, R.** The case for the slotted wing.  
 Flight, Vol. 14, No. 28 (July 13, 1922), London, pp. 398-399, diagr.
- Zur Spaltflügelfrage.  
 Zeitschr. Flugt. Motorl., 13. Jahrg., 9. Hft. (15. Mai 1922), Berlin, pp. 123-126.

## RHONE contests. Ausschreibung.

Zeitschr. Flugt. Motorl., 13. Jahrg., 4. Hft. (28. Feb. 1922), München, pp. 43-45.

## — Die Ausschreibung des Rhön-Segelflugwettbewerbs 1922.

Flugsport, 14. Jahrg., Nr. 3 (1. Feb. 1922), Frankfurt, pp. 39-40.

## — Dritter Rhön-Wettbewerb.

Flugsport, 14. Jahrg., Nr. 15 (26. Juli 1922), Frankfurt, pp. 242-243.

## — Die Ergebnisse des Rhönsegelflugwettbewerbes.

Nachr. Luftf., Jahrg. 3, Nr. 37 (17. Sept. 1922), Berlin, pp. 466-468.

## — Letzte Nachrichten vom Rhön-Segelflug.

Flugsport, 14. Jahrg., Nr. 16-17 (23. Aug. 1922), Frankfurt a. M., pp. 275-279.

## — Rhön-Segelflug 1922.

Flugsport, 14. Jahrg., Nr. 16-17 (22. Aug. 1923), Frankfurt a. M., pp. 267-274, ill.

## — Rhön-Segelflugwettbewerb 1922.

Luftweg, Nr. 12 (15. Sept. 1922), Berlin, pp. 115-117.

Zeitschr. Flugt. Motorl., 13. Jahrg., 8. Hft. (29. Apr. 1922), Berlin, p. 112.

## — Vorschau Rhön-Segelflugwettbewerb 1922.

Luftweg, Nr. 11 (15. Aug. 1922), Berlin, pp. 108-109.

## — See Schlink, W.: Der Rhön-Segelflugwettbewerb 1922.

## RIACH, M. A. S. The fan propeller and blade interference.

Aeron. Journ., Vol. 26, No. 134 (Feb. 1922), London, pp. 63-80, diagr.

## RIBS. Design of large trussed ribs.

Air Service Information Circular, Vol. 4, No. 312 (Mar. 15, 1922), Washington, D. C., pp. 17, ill.

## — See Brown, D. T., and R. J. Diefenbach: The strength of airplane rib forms.

## RICARDO, HARRY R. Recent research work on the internal-combustion engine.

Journ. Soc. Aut. Eng., Vol. 10, No. 5 (May 1922), New York, pp. 305-336, 347, ill., diagrs.

## RICHARDS, C. H. Los Angeles mapped from air to aid traffic studies.

Engineering News-Record, Vol. 88, (June 8, 1922), New York, pp. 961-963.

## RICHARDS, CHARLES W. Radio activities of the airplane patrols of the national forests.

U. S. Air Service, Vol. 7, No. 2 (Mar. 1922), Washington, D. C., pp. 11-16, ill.

## RICHTHOFEN, LOTHAR FREIHERR V. Lothar Frhr. v. Richthofen.

Zeitschr. Flugt. Motorl., 13. Jahrg., 14. Hft. (31. Juli 1922), Berlin, p. 207, port.

## RICKENBACKER, EDDIE. Come on, America, let's fly!

Illustrated World, Vol. 38, (Sept. 1922), Chicago, pp. 17-22, ill.

## — Duce among the air aces.

Collier's, Vol. 70, (Oct. 28, 1922), New York, p. 20, ill.

## — The new transportation.

The Ace, Vol. 3, No. 7 (July 1922), Los Angeles, p. 9.

## — "Why do they do it?" America's famous ace says a few words about stunt flying.

The Ace, Vol. 4, No. 1 (Aug. 1922), Los Angeles, p. 8, ill.

## — See Hannagan, S.: Thrills and laughs with Captain Rickenbacker.

## RICKER, CHESTER S., and JOHN C. MOORE. Valve actions in relation to internal-combustion-engine design.

Journ. Soc. Aut. Eng., Vol. 11, No. 3 (Sept. 1922), New York, pp. 284-291, ill.

## RIPERT, GEORGES. Proposed air traffic law.

Aerial Age, Vol. 15, No. 14 (June 12, 1922), New York, pp. 320-323.

## RITH. The Rith semirigid dirigible.

Flight, Vol. 14, No. 17 (Apr. 27, 1922), London, pp. 247-248, diagr.

- ROBERT. Les laboratoires du Service Technique de l'Aéronautique.  
Aéronautique, Vol. 4, No. 43 (déc. 1922), Paris, pp. 373-378, ill.
- ROBERTS, S. G. Industrial production of helium.  
Scienc. Amer. Vol. 126 (May 1922), New York, pp. 308-309, ill.
- ROBINSON, J. Reid control indicator for aeroplanes.  
Journal of Scientific Instruments. Preliminary number, May 1922, London, Institute of Physics, 1922, pp. 22-24, ill.
- ROBITSCH, M. Periodizitäten im Gange des Luftdruckes und der Lufttemperatur.  
Arbeiten Preuss. Aeron. Observ. bei Lindenbergs, 14. Bd., 1922, pp. 137-149.
- Die Strahlung in Lindenbergs während des Jahres 1920.  
Arbeiten Preuss. Aeron. Observ. bei Lindenbergs, 14. Bd., 1922, pp. 128-136.
- ROCHELEAU, W. F.: Navigating the air.  
Chicago, A. Flanagan Company, 1922, pp. 29, ill.
- ROCKENFELLER, THEO. Die Luftfahrt in Schund und Ulk.  
Luftweg, Nr. 4 (23. Feb. 1922), Berlin, pp. 40-43; Nr. 5 (9. März), pp. 54-55, illus.
- Mit dem ersten Flugzeug auf die Zugspitze.  
Autom. Flugv., Nr. 4, 1922, Berlin, pp. 119-192, ill.
- ROESCH, D. Some power requirements of aircraft.  
Armour Engr., Vol. 13, No. 4 (May 1922), Chicago, pp. 223-244, ill.
- ROGERS-DAY. The Rogers-Day three-seater biplane.  
Aviation, Vol. 13, No. 17 (Oct. 23, 1922), New York, p. 561, ill.
- ROHLFS, ROLAND. Roland Rohlfs joins aeromarine.  
Aviation, Vol. 12, No. 4 (Jan. 23, 1922), New York, p. 111.
- ROHRBACH, ADOLF. Bausicherheit und Kurvenflug.  
Zeitschr. Flugt. Motorl., 13. Jahrg., 1. Hft. (14. Jan. 1922), München, pp. 1-6.
- The 1,000-horsepower passenger-carrying aeroplane of the Zeppelin works in Staaken.  
Engineering Progress, Vol. 2, No. 11 (Nov. 1921), Berlin, pp. 259-262, ill.
- Structural safety during curved flight.  
National Advisory Committee for Aeronautics, Technical Notes No. 107, Aug. 1922 (Mimeograph), Washington, pp. 18, diagrs.
- Zeichnerische Berechnung der Geschwindigkeiten von Flugzeugen im Geradeaus und Kurvenflug.  
Zeitschr. Flugt. Motorl., 13. Jahrg., 5. Hft. (15. März 1922), Berlin, pp. 59-61.
- Zeichnerische Berechnungen der Leistungen von Luftschauben nach Modellversuchen.  
Zeitschr. Flugt. Motorl., 13. Jahrg., 5. Hft. (15. März 1922), Berlin, pp. 61-52.
- ROMA. The airship disaster.  
Engineer, Vol. 133, No. 3452 (Feb. 24, 1922), London, p. 209.
- America's latest airship—Roma.  
Scienc. Amer., Vol. 126, No. 4 (Apr. 1922), New York, p. 259, ill.
- Army's new dirigible passes tests.  
Pop. Sci. Month., Vol. 100, No. 4 (Apr. 1922), New York, p. 40, ill.
- Blame for the Roma wreck.  
Literary Digest, Vol. 72, No. 10 (Mar. 11, 1922), New York, p. 16, ill.
- Christening of the Army airship Roma. Largest semirigid in the world is christened with liquid air after stormy trip from Langley Field.  
Aviation, Vol. 12, No. 1 (Jan. 2, 1922), New York, pp. 15-16, ill.
- Destruction of the Roma.  
Outlook, Vol. 130, No. 10 (Mar. 8, 1922), New York, pp. 369-370, ill.

- ROMA. Explanation of the Roma picture which shows that the picture was not taken the day of the last flight and that the elevator rudder was not out of alignment.  
 Aviation, Vol. 12, No. 12 (Mar. 20, 1922), New York, p. 339, ill.
- Giant dirigible Roma meets with disaster.  
 Pop. Mech., Vol. 37, No. 4 (Apr. 1922), Chicago, p. 518, ill.
- The lighter-than-air situation. Official inquiry into the Roma accident—New helium appropriation sought—Fate of the United States Navy Zeppelin.  
 Aviation, Vol. 12, No. 10 (Mar. 6, 1922), New York, pp. 280-282, ill.
- On the loss of the Roma.  
 Aeroplane, Vol. 22, No. 9 (Mar. 1, 1922), London, pp. 149-151.
- Report on accident to the airship Roma. Official War Department report fails to determine with absolute accuracy the causes of the accident.  
 Aviation, Vol. 13, No. 6 (Aug. 7, 1922), New York, pp. 148-152, ill.
- The Roma accident.  
 U. S. Air Service, Vol. 7, No. 2 (Mar. 1922), Washington, D. C., pp. 7-8.
- Roma being fitted with Liberties.  
 Aviation, Vol. 12, No. 4 (Jan. 23, 1922), New York, p. 109.
- Roma destroyed with great loss of life.  
 Aviation, Vol. 12, No. 9 (Feb. 27, 1922), New York, p. 251, ill.
- What the wreck of the Roma shows.  
 Literary Digest, Vol. 72 (Mar. 4, 1922), New York, p. 11, ill.
- See Collas, Robert: La catastrophe du Roma.
- See Van Nostrand, P. E.: Lessons learned from Roma accident.
- ROPER, ALBERT. La question du déarmement aérien à la Conference de Washington.  
 Aéronautique, 4<sup>e</sup> année, No. 33 (fév. 1922), Paris, pp. 33-34.
- Ross, ORRIN E. Designing landing-gear shock absorbers. Practical method for determining the size of cord, number of loops, tension, etc., for a given service.  
 Aviation, Vol. 13, No. 8 (Aug. 21, 1922), New York, pp. 215-218, diagr.
- ROTA, AUGUSTO. Calcoli di equilibrio e di stabilità.  
 Rend. Instituto Sper. Aer., Anno 10, Ser. 2<sup>a</sup>, N. 4 (15 dic. 1922), Roma, pp. 273-286, ill.
- Sulla posizione più conveniente dei carichi variabili dal punto di vista dell' equilibrio e della stabilità longitudinale.  
 Rend. Instituto Sper. Aer., Anno 10, Ser. 2<sup>a</sup>, N. 4 (15 dic. 1922), Roma, pp. 287-290, diagrs.
- See Pistolesi, E.: L'attività tecnica e scientifica di Augusto Rota.
- ROTCH, A. LAWRENCE. Charts of the atmosphere, for aeronauts and aviators.  
 New York, John Wiley & Sons (Inc.), 1922.
- ROTH, H. Die Messverfahren beim Rhön-Segelflug 1922.  
 Zeitschr. Flugt. Motorl., 13. Jahrg., 19-20. Hft. (30. Okt. 1922), München, pp. 236-237.
- ROUCH, J. Etude sur la haute atmosphère en France. Le vent en altitude à Bayonne.  
 L'Aérophile, 30<sup>e</sup> année, Nos. 7-8 (1er-15 avril 1922), Paris, pp. 105-110, diagr., table.
- La route aérienne Paris-Londres. Influence des vents en fonction de l'altitude.  
 Aéronautique, 4<sup>e</sup> année, No. 41 (oct. 1922), Paris, pp. 318-320, ill.
- Le vent en altitude sur la route aérienne Paris-Londres.  
 Techn. Aér. 13<sup>e</sup> année, n. s., No. 11 (15 sept. 1922), Paris, pp. 322-331, ill.
- ROUND, GEORGE A. Oil pumping.  
 Journ. Soc. Aut. Eng. Vol. 11, No. 3 (Sept. 1922), New York, pp. 232-236.
- ROUNDS, E. W. See Sylvander, R. C., and E. W. Rounds: Direction instruments. Part IV. Turn indicators.

ROUTE book. *Das neue Luftkursbuch.*

Reviewed in: *Luftweg*, Nr. 11 (15. Aug. 1922), Berlin, p. 114.

ROUTES. *Líneas aéreas de carácter particular.*  
Ibérica, No. 454 (2 dic. 1922), Tortosa, p. 324.

- Organisation der auf die französischen Luftlinien verteilten Staatsflughäfen.  
*Nachr. Luftf.*, Jahrg. 3, Nr. 43 (29. Okt. 1922), Berlin, pp. 540-541.
- Vereinigte Staaten von Amerika: Betriebsergebnisse der Handelsluftfahrt der Vereinigten Staaten von Amerika im Jahre 1921  
*Nachr. Luftf.*, Jahrg. 3, 1922, Berlin, pp. 542-545, 566-569, 578-579, 590-591, 602-603, 616-617, 622-627.
- See Kracker v. Schwartzfeldt, Ottokar: *Flugzonenkarte mit Orientierungsmaßstab für Luftreisende.*

ROWLEDGE, A. L. The importance of low weight per B. H. P. and low fuel consumption per B. H. P. of the power plant for aeroplanes.

*Aeronautical Journal*, Vol. 26, No. 140 (Aug. 1922), London, pp. 331-333.

ROY, MAURICE. *Aérodynamique. Remarques sur la théorie de Joukowski.*  
*L'Aérophile*, 30e année, Nos. 15-16 (1er-15 aout 1922), Paris, pp. 236-238, ill.

- Les profils d'aile Joukowska. *Détermination des vitesses limites.*  
*Aéronautique*, 4me année, No. 41 (oct. 1922), Paris, pp. 325-330, ill.

ROYAL Aeronautic Society. Associate fellowship examination, September 25-26, 1922.

*Aeron. Journ.*, Vol. 126, No. 143 (Nov. 1922), London, pp. 448-455.

ROYAL Air Force. The air estimates.

*Aeroplane*, Vol. 22, No. 12 (Mar. 22, 1922), London, pp. 215-216.  
*Flight*, Vol. 14, No. 12 (Mar. 23, 1922), London, pp. 174-175.

- The air estimates debate.  
*Flight*, Vol. 14, No. 13 (Mar. 30, 1922), London, pp. 191-193.
- British Government justifies Royal Air Force.  
*Aviation*, Vol. 12, No. 16 (Apr. 17, 1922), New York, p. 448.
- Expansion of the Royal Air Force.  
*Engineer*, Vol. 134, No. 3476 (Aug. 11, 1922), London, p. 139.
- The health of the Royal Air Force.  
*Aeroplane*, Vol. 22, No. 16 (Apr. 19, 1922), London, p. 288.
- The navy and the Royal Air Force.  
*Flight*, Vol. 14, No. 12 (Mar. 23, 1922), London, pp. 172-174.
- On a future Royal Air Force scandal.  
*Aeroplane*, Vol. 23, No. 22 (Nov. 29, 1922), London, pp. 409-410.
- On the independent force, Royal Air Force.  
*Aeroplane*, Vol. 22, No. 25 (June 21, 1922), London, pp. 437-439.
- On the Lords and the Royal Air Force.  
*Aeroplane*, Vol. 23, No. 5 (Aug. 2, 1922), London, pp. 81-84.
- On the Magna Charta of the air force.  
*Aeroplane*, Vol. 22, No. 12 (Mar. 22, 1922), London, pp. 201-204, 215.
- On the Royal Air Force and the aircraft industry.  
*Aeroplane*, Vol. 23, No. 4 (July 26, 1922), London, pp. 57-59.
- On the Royal Air Force in India.  
*Aeroplane*, Vol. 23, No. 10 (Sept. 6, 1922), London, pp. 181-182.
- On the Royal Air Force in Irak.  
*Aeroplane*, Vol. 23, No. 12 (Sept. 20, 1922), London, pp. 221-224.

**ROYAL AIR FORCE.** On the Royal Air Force pageant.

Aeroplane, Vol. 22, Nos. 25, 26 (June 21, 28, 1922), London, pp. 439-440, 453-460, ill.

— On the Royal Air Force reserve and the auxiliary air force.

Aeroplane, Vol. 23, No. 15 (Oct. 11, 1922), London, pp. 285-288.

\* — On the Royal Air Force Staff College.

Aeroplane, Vol. 23, No. 24 (Dec. 13, 1922), London, pp. 445-448, 458, ill.

— On the reequipment of the Royal Air Force.

Aeroplane, Vol. 23, Nos. 1-2 (July 5-12, 1922), London, pp. 1-2, 17-19.

— The Royal Air Force aerial pageant.

Flight, Vol. 14, Nos. 25, 26 (June 22, 29, 1922), London, pp. 351-352, 368-373, ill.

— The Royal Air Force and the middle east.

Flight, Vol. 14, No. 11 (Mar. 16, 1922), London, pp. 165-166.

— The Royal Air Force creed.

Aeroplane, Vol. 22, No. 15 (Apr. 12, 1922), London, pp. 257-258.

— The Royal Air Force Staff College.

Flight, Vol. 14, Nos. 15, 49 (Apr. 13, Dec. 7, 1922), London, pp. 217, 720-721, ill.

— The unified air force vindicated.

Aviation, Vol. 12, No. 16 (Apr. 17, 1922), New York, p. 447.

**ROYAL DUTCH AERO CLUB.** Dutch instrument competition for fog flying.

Aviation, Vol. 13, No. 6 (Aug. 7, 1922), New York, p. 157.

**RUBBER.** See Cleary, C. J.: Rubber materials in airplane construction.

— See Dyer, J. W.: Rubber as applied to aircraft.

— See Gurney, H. P., and C. H. Tavener: Energy-absorbing capacity of vulcanized rubber.

**RUBEN, F. W.** Soaring flight and its mechanical solution. Observation of bird flight discloses ability of birds to vary their wing area with changing wind pressures.

Aviation, Vol. 12, No. 26 (June 26, 1922), New York, pp. 750-752, ill., diagr.

**RUDDER control.** See National Advisory Committee for Aeronautics: Technical Notes No. 110. The effect on rudder control of slip stream body and ground interference.

**RUMPLER, EDMUND.** Dr.-Ing. Edmund Rumpler.

Zeitschr. Flugt. Motorl., 13. Jahrg., 1. Hft. (14. Jan. 1922), München, p. 8, port.

— Der 1,000 P. S. Rumpler-Flugmotor.

Flugsport, 14. Jahrg., 1922, Frankfurt, pp. 26-27.

Reviewed in: Vliegveld, 6de Jaarg., No. 1 (Jan. 1922), Amsterdam, p. 19.

— Der Segelflug.

Zeitschr. Flugt. Motorl., 13. Jahrg., 11. Hft. (15. Juni 1922), Berlin, p. 163.

**RUMPLER prize.** See Koppe, Heinrich: Ueber der Rumpler-Preis-Wettbewerb.

**RUSSELL, FRANK H.** General Mitchell flies officially at 224 miles an hour.

U. S. Air Service, Vol. 7, No. 10 (Nov. 1922), Washington, D. C., p. 18.

— A review of the third Pulitzer race. Biplane properly refined with medium-sized engine, writer says, offers greater possibilities than monoplane for high speed and maneuverability.

U. S. Air Service, Vol. 7, No. 10 (Nov. 1922), Washington, D. C., pp. 9-10.

**RUSSIA.** Aviation in soviet Russia. Recent information on the organization of the Red air fleet.

Aviation, Vol. 13, No. 23 (Dec. 4, 1922), New York, p. 745.

— See Lefèvre, D.: L'aviation dans la Russie soviétique.

— See Popoff, G.: Air travel in Russia.

- RUST spores. Aeroplanes used in experimental work in the study of rust spores.  
*Aerial Age*, Vol. 15, No. 10 (May 15, 1922), New York, pp. 227, 230.
- RYDER, E. A. Aeromarine model U873 engine. A development of the U8D in which numerous refinements have been incorporated.  
*Aviation*, Vol. 13, No. 16 (Oct. 16, 1922), New York, pp. 499-501, ill.
- S.
- S. C. A. Een klein italiaansch luchtschip.  
*Vliegveld*, 6de Jaarg., No. 12 (Dec. 1922), Amsterdam, p. 304.
- S. E. 5a. *See* Aeronautical Research Committee. Report No. 773.
- SABATIER, J. Le matériel volant aux colonies. Étude sommaire des conditions technique qu'il doit réaliser.  
*Aéronautique*, 4me année, No. 35 (avril 1922), Paris, pp. 99-104, ill.
- SABER, G. Castles from the air.  
*Arts and Decoration*, Vol. 16 (Apr. 1922), New York, pp. 430-431, ill.
- SAFETY. Aeronautical safety code.  
*Aerial Age*, Vol. 15, No. 21 (Dec. 1922), New York, pp. 601-602.
- Greater safety for air travelers. Voluntary adoption by airways of radio or carrier pigeons would be a desirable step.  
*Aviation*, Vol. 13, No. 1 (July 3, 1922), New York, pp. 11-12, ill.
- New safety devices for aeroplanes.  
*Aerial Age*, Vol. 15, No. 17 (Aug. 1922), New York, pp. 420-421.
- Safety first in the air.  
*Aviation*, Vol. 12, No. 22 (Nov. 27, 1922), New York, p. 714.
- Safety in the air.  
*Aer. Eng. Suppl. The Aeroplane*, Vol. 22, Nos. 25, 26 (June 21, 28, 1922), London, pp. 446-464.
- The safety of air travel.  
*Aviation*, Vol. 12, No. 25 (June 19, 1922), New York, p. 726.
- The safety of foreign aeroplanes.  
*Aer. Eng. Suppl. The Aeroplane*, Vol. 22, No. 24 (June 14, 1922), London, p. 424.
- *See* National Advisory Committee for Aeronautics: Technical Notes No. 107. Structural safety during curved flight.
- SAILPLANES. The significance of sailplane experiments.  
*Aviation*, Vol. 13, No. 12 (Sept. 18, 1922), New York, p. 345.
- SALMOND, JOHN. *See* India: The Royal Air Force in India. Sir John Salmond's mission.
- SAMPAIO CORREIA. Odyssey of the Sampaio Correia.  
*Aviation*, Vol. 13, No. 10 (Sept. 4, 1922), New York, p. 286, ill.
- SANFORD, R. L. Direction instruments. Part II. The testing and use of magnetic compasses for airplanes.  
*National Advisory Committee for Aeronautics, Report No. 128*, Sept. 1, 1922, Washington, Government Printing Office, 1922, pp. 16-19, ill.
- SANTA ANA. Glenn Martin day at Santa Ana.  
*The Ace*, Vol. 3, No. 4 (Apr. 1922), Los Angeles, p. 7, ill.
- SANTONI, D. LAWRENCE. *See* Blanchet, Georges: Aviateurs contemporains. D. Lawrence Santoni.
- SANTOS-DUMONT. Santos-Dumont chez Astra. Le dirigeable français le plus récent.  
*L'Aérophile*, 30e année, Nos. 11-12 (1er-15 juin 1922), Paris, p. 165, ill.

- SASKATCHEWAN. Aviation activities in Saskatchewan.  
Aviation and Wireless News, Vol. 4, No. 12 (Feb. 1922), Toronto, pp. 25-26.
- SATO, NAOZO. *See* Naozo Sato.
- SATTCO. "Sattco" six-passenger commercial airplane. New Liberty-engined cabin biplane an interesting development.  
Aviation, Vol. 13, No. 25 (Dec. 18, 1922), New York, p. 808, ill.
- SAURER. The Saurer bevel-gear testing machine.  
Journ. Soc. Aut. Eng., Vol. 11, No. 2 (Aug. 1922), New York, pp. 193-194, ill.
- SAVANI. La costruzione degli aeroplani in metallo.  
Ala d'Italia, Anno 1, Num. 4 (ott. 1922), Milano, pp. 99-101; Num. 6 (dic.), pp. 166-167.
- SAVOIA. A new Savoia seaplane.  
Aviation, Vol. 12, No. 6 (Feb. 6, 1922), New York, p. 173, ill.
- SAYERS. The Sayers, Courtney, and Wright monoplane. Constructed by the Central Aircraft Co.  
Flight, Vol. 14, No. 42 (Oct. 12, 1922), London, pp. 612-615, ill., diagr.
- SAYERS, W. H. The commercial aeroplane.  
Aer. Eng. Suppl. The Aeroplane, Vol. 22, Nos. 5, 6, 8, 10, 11, 12, 15 (Feb. 1, 8, 22; Mar. 8, 15, 22, Apr. 12, 1922), London, pp. 83-84, 99-100, 138, 171-172, 191-194, 207-208, 263-264.
- The first report of the Civil Aviation Advisory Board.  
Aer. Eng. Suppl. The Aeroplane, Vol. 23, Nos. 9-10 (Aug. 30, Sept. 6, 1922), London, pp. 171-172, 187-188.
- 1921.  
Aer. Eng. Suppl. The Aeroplane, Vol. 22, No. 1 (Jan. 4, 1922), London, p. 7.
- A visit to Wasserkuppe.  
Aer. Eng. Suppl. The Aeroplane, Vol. 23, Nos. 12, 14, 15 (Sept. 20, Oct. 4, 11, 1922), London, pp. 227-232, 267-270, 291-294, ill.
- SCHALK, ERNST. Konstruktions-Einzelheiten.  
Flugsport, 14. Jahrg., Nr. 14 (12. Juli 1922), Frankfurt, pp. 230-233, ill.
- SCHILLER, H. Germany's naval airships and their war record.  
Engineer, Vol. 133, No. 3463 (May 12, 1922), London, pp. 513-514.
- SCHILLER, L. Untersuchungen über laminare und turbulente Strömung.  
Berlin, Julius Springer, 1922, pp. 36, III.  
Reviewed in: Zeitschr. Flugt. Motorl., 13. Jahrg., 24. Hft. (30. Dez. 1922), München, p. 347.
- SCHLINK, W. Der Rhön-Segelflug-Wettbewerb 1922.  
Zeitschr. Flugt. Motorl., 13. Jahrg., 19.-20. Hft. (30. Okt. 1922), Berlin, pp. 261-274, ill.
- SCHMIEDEL, KARL. Das altern des Flugzeugbespannungsstoffes.  
Zeitschr. Flugt. Motorl., 13. Jahrg., 3. Hft. (15. Feb. 1922), München, pp. 39-40.
- SCHMUASS, A. Meteorological advice for the air traffic.  
Aerial Age, Vol. 15, No. 18 (Sept. 1922), New York, pp. 467-468.
- SCHNEIDER, EDWARD C. The human machine in aviation.  
Aerial Age, Vol. 15, No. 4 (Apr. 3, 1922), New York, pp. 81-83, 86, 95.  
Yale Review, Vol. 11 (Apr. 1922), New Haven, pp. 594-612.
- SCHNEIDER, KARL. Die Darstellung der Steigleistungen von Flugzeugen.  
Zeitschr. Flugt. Motorl., 13. Jahrg., 17. Hft. (13. Sept. 1922), Berlin, pp. 237-239.
- Die Hochaufstiege am Observatorium Lindenbergs.  
Arbeiten Preuss. Aeron. Observ. bei Lindenbergs, 14. Bd., 1922, pp. 150-157.
- SCHNEIDER cup. The British victory at Naples. Supermarine wins the Schneider cup race.  
Flight, Vol. 14, No. 33 (Aug. 17, 1922), London, pp. 465-466, ill.
- British win Schneider Cup.  
Aviation, Vol. 13, No. 10 (Sept. 4, 1922), New York, p. 287.

- SCHNEIDER cup. Las copas Schneider y Deutsch de la Meurthe.  
Ibérica, No. 450 (4 nov. 1922), Tortosa, pp. 261-262, ill.
- Il gran premio del Tirreno vinto dalla Germania e la coppa Schneider dall' Inghilterra.  
Gazz. Aviaz., 1922, Anno 4, No. 35, Milano, p. 1.
- The runner-up in the Schneider cup race.  
Aer. Eng. Suppl. The Aeroplane, Vol. 23, No. 9 (Aug. 30, 1922), London, p. 172, ill.
- The Schneider cup race.  
Aviation, Vol. 13, No. 1 (July 3, 1922), New York, pp. 7, 16.
- The Schneider cup victory.  
Aeroplane, Vol. 23, No. 7 (Aug. 16, 1922), London, pp. 124, 134.
- The Schneider trophy challenger.  
Aeroplane, Vol. 23, No. 3 (July 19, 1922), London, pp. 52-53, ill.
- Schneider victors' welcome home.  
Flight, Vol. 14, No. 35 (Aug. 31, 1922), London, p. 495, ill.
- Le vicende della coppa Schneider.  
Gazz. Aviaz., 1922, Anno 4, No. 36, Milano, p. 2.
- SCHOLTZ, C. Wolkenmessungen mit dem Entfernungsmesser.  
Arbeiten Preuss. Aer. Observ. bei Lindenbergs, 14. Bd., 1922, pp. 158-161.
- SCHRENK, M. Beitrag zur Segelflugzeugberechnung.  
Zeitschr. Flugt. Motorl., 13. Jahrg., 6. Hft. (31. März 1922), München, pp. 79-80
- SCHUETTE, JOHANN. Airship lines will create demand for planes. World airship authority discusses air navigation in the United States.  
U. S. Air Service, Vol. 7, No. 2 (Mar. 1922), Washington, D. C., pp. 9-10, ill.
- SCHUMACHER, N. Darmstadt-Doppeldecker 1921.  
Flugsport, 14. Jahrg., Nr. 6 (15. März 1922), Frankfurt, pp. 89-92.
- SCHUSTER, H. Mechanische Vorgänge beim egenden Flugzeug.  
Glaser's Annalen, Vol. 90, Nos. 5-6 (Mar. 1-15, 1922), Berlin, pp. 67-74, 83-90, ill.
- SCHWARTZ, H. A., and W. W. Flagle. Malleable-iron drilling data.  
Journ. Soc. Aut. Eng., Vol. 11, No. 1 (July 1922), New York, pp. 81-87, ill.
- SCOTT, G. H. Airships.  
Aerial Age, Vol. 14 (Feb. 27, 1922), New York, pp. 590-593.  
Engineering, Vol. 113 (Feb. 17, 1921), London, pp. 187-189.  
Flight, Vol. 14, No. 9 (Mar. 2, 1922), London, pp. 132-134.
- The present state of airship development.  
Aero. Journ. Vol. 26, No. 133 (Jan. 1922), London, pp. 23-39.
- SCOTT, WISNER GILLETTE. Airways and air sidings and their relation to railways.  
The Ace, Vol. 3, No. 5 (May 1922), Los Angeles, pp. 6, 12.
- Highway aircraft emergency landings.  
U. S. Air Service, Vol. 7, No. 5 (June 1922), Washington, D. C., p. 13.
- Highway aircraft landings.  
The Ace, Vol. 4, No. 2 (Sept. 1922), Los Angeles, p. 11.
- More about highway landing fields.  
The Ace, Vol. 4, No. 1 (Aug. 1922), Los Angeles, p. 12.
- SEAGULL. Port Washington to Palm Beach in a Seagull.  
Aviation, Vol. 12, No. 4 (Jan. 23, 1922), New York, p. 110.
- SEAPLANES. Combination land and sea plane of original design.  
Pop. Mech., Vol. 36, No. 6 (Dec. 1921), Chicago, p. 804, ill.
- Flugboot oder Schwimmerflugzeug.  
Motorwagen, 25. Jahrg., Heft 15, 22 (31. Mai, 10. Aug. 1922), Berlin, pp. 291, 421-423, ill.

- SEAPLANES.** The seaplane's place in aviation.  
*Flight*, Vol. 14, No. 22 (June 1, 1922), London, pp. 316-317.
- See Aeronautical Research Committee. Reports Nos. 784, 785.
- See Magaldi, Giulio: *Idrovolanti*.
- SEARLE, FRANK.** The requirements and difficulties of air transport.  
*Aer. Journ.*, Vol. 36, No. 133 (Jan. 1922), London, pp. 3-22.  
*Automotive Manufacturer*, Vol. 63, No. 12 (Mar. 1922), New York, pp. 24-27.  
*Aviation*, Vol. 12, No. 8 (Feb. 20, 1922), New York, pp. 220-223, ill.
- SEEKATZ, FRIEDRICH WILHELM.** De eerste passagiersvlucht in een motorloos zeilyvliegtuig.  
*Vliegveld*, 6de Jaarg., No. 10 (Oct. 1922), Amsterdam, pp. (253-254).
- Zeitungstransport durch Fluzzeuge.  
*Zeitschr. Flugt. Motorl.*, Jahrg. 13, 2. Hft. (31. Jan. 1922), Berlin, pp. 23-24.
- SEIFERTH, R.** Segelflüge im Erzgebirge. Von H. Muttray und R. Seiferth.  
*Zeitschr. Flugt. Motorl.*, 13. Jahrg., 14. Hft. (14. Aug. 1922), Berlin, p. 214.
- SEILER, F. E., Jr.** See Miller, Roy G., and F. E. Seiler, jr.: Improved method for designing aircraft parts.
- See Miller, Roy G., and F. E. Seiler, jr.: Propulsion efficiency *v.* performance. Influence of propulsion efficiency on the performance of airplanes demonstrated by some well-known examples.
- SEILKOFF, HEINRICH.** Der Ausbau des Wetterdienstes im Rahmen der Bodenorganisation des Luftverkehrs.  
*Zeitschr. Flugt. Motorl.*, 13. Jahrg., 5. Hft. (15. März 1922), Berlin, pp. 65-57.
- SELFRIFFE prize.** The Selfridge prize.  
*Aer. Eng. Suppl. The Aeroplane*, Vol. 23, No. 24 (Dec. 13, 1922), London, p. 452.
- SELLERS, M. B.** Some notes on the helicopter. Elements of the problem—Some experimental results—Difficulties yet awaiting solution.  
*Aviation*, Vol. 12, No. 8 (Feb. 20, 1922), New York, pp. 228-230, ill.
- SEUTTER, LOUIS.** See Hein, A. L., A. C. Knauss, and Louis Seutter: Internal stresses in laminated construction.
- SEYMOUR, LESTER DRAPER.** The airplane and the amateur builder. A compendium of elementary notions and formulæ for building a small single-seater sport plane.  
*Aviation*, Vol. 13, No. 26 (Dec. 25, 1922), New York, pp. 831-836.
- Research University at Washington, D. C., giving training in aviation.  
*Aerial Age*, Vol. 15, No. 3 (Mar. 27, 1922), New York, p. 62.
- SHAUGHNESSY, E. H.** Air mail has made wonderful record. Past performances and future policy outlined.  
*U. S. Air Service*, Vol. 7, No. 1 (Feb. 1922), Washington, D. C., pp. 17-18.
- Death of Colonel Shaughnessy.  
*Aviation*, Vol. 12, No. 7 (Feb. 13, 1922), New York, p. 199, ill.
- The present status of the air-mail service.  
*Journ. Soc. Aut. Eng.*, Vol. 11, No. 5 (Nov. 1922), New York, pp. 435-437.
- The United States air mail service. Brief history shows air mail pilots carried since beginning of service 100,000,000 letters over an aggregate distance of 3,400,000 miles.  
*Aviation*, Vol. 12, No. 4 (Jan. 23, 1922), New York, pp. 96-99, ill.
- SHEDS.** See Hoff, W.: Windsaugwirkungen am Dach der Luftschiffhalle "Nord" in Staaken.
- See Sonntag, R.: Der Einsturz der Luftschiffhalle A in Niedergörsdorf.

**SIAM.** *See* Amoradhat, Prince: Aviation in Siam.

**SIDDELEY.** The Siddeley air-cooled radial engines.

Aer. Eng. Suppl. The Aeroplane, Vol. 23, No. 3 (July 19, 1922), London, pp. 43-46, ill.

**SIEMENS-HALSKE.** A new low-power German radial air-cooled aero engine. The 60-horsepower five-cylinder Siemens-Halske.

Flight, Vol. 14, No. 23 (June 8, 1922), London, pp. 326-327, ill.

— The new Siemens-Halske aero engine.

Aerial Age, Vol. 15, No. 20 (Nov. 1922), New York, pp. 563, 571, ill.

— The 60-horsepower Siemens-Halske radial engine.

Aer. Eng. Suppl. The Aeroplane, Vol. 23, No. 13 (Sept. 27, 1922), London, p. 250, ill.

**SIGNAL Corps.** *See* Army War College: The Signal Corps and Air Service.

**SIGNALS.** Die Hönigschen Kreise.

Autom. Flugv., Nr. 5, 1922, Berlin, pp. 153-159, ill.

**SILVERTON.** The Silverton self-sealing tank.

Aer. Eng. Suppl. The Aeroplane, Vol. 22, No. 20 (May 17, 1922), London, p. 354, ill.

— *See* Fuel tanks. Air ministry tank competition. The winner of first prize.

Some particulars of the Silverton tank.

**SIMS, WILLIAM S.** Military conservatism. Address to the graduating class of 1921 by Rear Admiral William S. Sims, United States Navy, president United States Naval War College.

Aviation, Vol. 12, No. 17 (Apr. 24, 1922), New York, pp. 478-480.

**SIOUX CITY.** The aeronautical convention at Sioux City. Commercial aeronautical association of Seventh Corps Area organized. Its plans for the development of aviation.

Aviation, Vol. 12, No. 15 (Apr. 10, 1922), New York, pp. 420-421.

**SKIN friction.** *See* National Advisory Committee for Aeronautics: Technical Notes No. 102. Skin frictional resistance of plane surfaces in air; abstract of recent German tests, with notes.

**SKY writing.** Sky writing over New York.

Aviation, Vol. 13, No. 24 (Dec. 11, 1922), New York, p. 784.

**SLIMMON, JAMES B.** Ninety thousand attend Hartford meet.

U. S. Air Service, Vol. 7, No. 11 (Dec. 1922), Washington, D. C., p. 29.

**SLOBINSKY.** Een opzienbarende diefstal.

Vliegveld, 6de Jaarg., 1922, Amsterdam, pp. 13-15, 42-43, 66-67, 91-92, ill.

**SLOTTED wing.** *See* National Advisory Committee for Aeronautics: Technical Notes No. 100. Theory of the slotted wing.

— *See* Wings.

**SLUITERS, A.** Draadloze oriëntering van vliegtuigen.

Vliegveld, 6de Jaarg., No. 7 (Juli 1922), Amsterdam, pp. 158-159.

— Veiligheidsmaatregelen voor verkeersvliegtuigen.

Vliegveld, 6de Jaarg., No. 6 (Juni 1922), Amsterdam, pp. 133-134, diagr.

**SMILES, M. G.** Mr. M. G. Smiles.

Aeroplane, Vol. 22, No. 4 (Jan. 25, 1922), London, p. 72.

**SMITH.** The Smith petrol level indicator.

Flight, Vol. 14, No. 8 (Feb. 23, 1922), London, p. 124, ill.

— *See* Instruments: The Smith petrol level indicator.

**SMITH, G. S.** Uses of aerial photographs in map making.

Engineering News-Record, Vol. 83 (Feb. 2, 1922, May 4, 1922), New York, pp. 194-196, 746-747, ill.

- SMITH, Ross. 14,000 miles through the air.  
London, Macmillan, 1922, pp. 136.
- The round-the-world attempt.  
Flight, Vol. 14, No. 15 (Apr. 13, 1922), London, pp. 216-217, map.
- Sir Ross Smith.  
Aeroplane, Vol. 22, No. 16 (Apr. 19, 1922), London, p. 275.
- See Accidents. The death of Sir Ross Smith and Lieutenant Bennett. Sad fatality on the eve of great flight.
- SMITH, R. C. Aircraft versus battleships.  
North American Review, Vol. 216 (Oct. 1922), New York, pp. 470-475.
- SMITH, R. H. See Zahm, Albert Francis, R. H. Smith, and G. C. Hill: The drag of C class airship hull with varying length of cylindric midships.
- See Zahm, Albert Francis, R. H. Smith, and G. C. Hill: Point drag and total drag of Navy struts No. 1 modified.
- SMITH, R. J. Flying in California.  
Aerial Age, Vol. 15, No. 20 (Nov. 1922), New York, pp. 548-549.
- SMITH, ROSS MACPHERSON. 14,000 miles through the air.  
New York, The Macmillan Co., 1922, pp. x, 136, ill., maps.
- SMITH, S. "The Smiths of Cricklewood." A brief visit to the works of S. Smith & Sons (M. A.) (Ltd.).  
Flight, Vol. 14, No. 39 (Sept. 28, 1922), London, p. 565, ill.
- SMITH, S. HECKSTALL. On research and other matters.  
Aeron. Journ., Vol. 26, No. 140 (Aug. 1922), London, pp. 325-330.
- SOARING. American Darius Green in Europe.  
Literary Digest, Vol. 74 (Aug. 26, 1922), New York, pp. 46-48, ill.
- American machines set two new marks in flying.  
Current Opinion, Vol. 73 (Nov. 1922), New York, pp. 650-651, ill.
- Are the new glider records really important?  
Literary Digest, Vol. 75 (Oct. 7, 1922), New York, pp. 51-56, ill.
- Ausschreibung für beste Flugleistungen mit einem Segelflugzeug für zwei Insassem.  
Zeitschr. Flugt. Motorl., 13. Jahrg., 8. Hft. (29. Apr. 1922), Berlin, p. 110.
- Les avions sans moteurs. Congrès de l'aviation sans moteur de Combegrasse.  
L'Aérophile, 30e année, Nos. 17-18 (1er-15 sept. 1922); Paris, pp. 260-261, ill.
- Ein Beitrag zur Segelflugsforschung.  
Flugsport, 14. Jahrg., Nr. 16-17 (23. Aug. 1922), Frankfurt a. M., pp. 274-275.
- Die Erforschung des Segelfluges.  
Flugsport, 14. Jahrg., Nr. 6 (15. März 1922), Frankfurt, pp. 92-93.
- A German view of soaring flight.  
Aer. Eng. Suppl. The Aeroplane, Vol. 22, No. 1 (Jan. 4, 1922), London, pp. 8-10, ill.
- Glider controls.  
Aer. Eng. Suppl. The Aeroplane, Vol. 23, No. 18 (Nov. 1, 1922), London, pp. 348-352, diagr.
- Gliders and gliding.  
Scient. Amer., Vol. 127, No. — (Nov. 1922), New York, pp. 296-299, ill.
- Gliding in Germany and France.  
Aer. Eng. Suppl. The Aeroplane, Vol. 23, No. 9 (Apr. 30, 1922), London, p. 174.

- SOARING.** Gliding time.  
*Aeroplane*, Vol. 23, No. 22 (Nov. 29, 1922), London, pp. 422-424, ill.
- Latest development of flight without engines.  
*Current Opinion*, Vol. 73 (Sept. 1922), New York, pp. 384-385, ill.
- On the gliding competition.  
*Aeroplane*, Vol. 23, Nos. 16-17 (Oct. 18-25, 1922), London, pp. 301-304, 314-316, 322-338, ill.
- On the gliding epidemic.  
*Aeroplane*, Vol. 23, Nos. 20-21 (Nov. 15-22, 1922), London, pp. 373-374, 393-394.
- On the uses of gliding and soaring.  
*Aeroplane*, Vol. 23, No. 9 (Aug. 30, 1922), London, p. 165.
- Preis des Verbandes Deutscher Luftfahrzeug-Industrieller G. m. b. H. für motorlosen Segelflug.  
*Autom. Flugv.*, Nr. 3, 1922, Berlin, pp. 95-96, ill.  
*Zeitschr. Flugt. Motorl.*, 13. Jahrg., 4. Hft. (28. Feb. 1922), Berlin, p. 46.
- Der Segelflug über See.  
*Luftweg*, Jahrg. 1922, Hft. 15 (12. Dez. 1922), Berlin, pp. 148-149.
- The soaring and gliding experiments. France learning, but Germany well ahead.  
*Flight*, Vol. 14, No. 34 (Aug. 24, 1922), London, pp. 479-480, ill.
- Soaring flight and soaring aircraft. A review of the progress achieved in soaring flight with considerations of its practical possibilities.  
*Aviation*, Vol. 12, Nos. 7-8 (Feh. 13-20, 1922), New York, pp. 195-193, 224-225.
- Some competing gliders.  
*Aer. Eng. Suppl. The Aeroplane*, Vol. 23, No. 16 (Oct. 18, 1922), London, p. 308, diagr.
- Wie beim Segeln der bewegten Luft energie Entnommen wird.  
*Flugsport*, 14. Jahrg., Nr. 3 (1. Fcb. 1922), Frankfurt, pp. 42-43.
- Zur Segelflugmodellfrage.  
*Flugsport*, 14. Jahrg., Nr. 6 (15. März 1922), Frankfurt, pp. 34-38.
- See Allen, Edmund T.: Three European gliding meets. What we can learn from the principal competitions held during the summer.
- See Brodetsky, Selig: Motorless or wind flight.
- See Clermont meeting: French gliders at the Clermont meeting.
- See Curtiss: The Curtiss sail plane.
- See Curtiss, Glenn H.: Motorless flight.
- See Drzewiecki: Le vol d'un avion sans moteur.
- See Eisenlohr, Roland: Die Technik der Rhön-Flugzeuge 1922.
- See France: The French gliding competition.
- See France: The French gliding tests.
- See Gentry, Frank M.: The M. I. T. soaring machine.
- See Germany: The German gliders.
- See Germany: The German soaring records.
- See Germany: On German soaring extraordinary.
- See Germany: Soaring pilot certificates in Germany.
- See Gohlke, Gerhard: Der Verlauf des Rhön-Segelflug-Wettbewerbs 1922.
- See Great Britain: The British gliding competition.

- SOARING. *See* Great Britain: Motorless flight in England.
- *See* Grey, C. G.: Gliding and soaring machines.
- *See* Guidon, A.: Gliders, sail planes, and the peace treaty.
- *See* Handasyde: The Handasyde monoplane glider. The machine on which Raynham remained up for nearly two hours.
- *See* Hankin: Doctor Hankin on soaring flight.
- *See* Hankin: Soaring flight.
- *See* Hannover: The Hannover glider.
- *See* Herff, A. P.: The problem of soaring flight. A new theory based on observations of the flight of the turkey buzzard. Requirements for reproducing soaring flight with airplanes.
- *See* Hoff, Wilhelm: Der Segelflug und die Rhön-Segelflug-Wettbewerbe.
- *See* Idrac, P.: Etudes expérimentales sur le vol à voile.
- *See* Idrac, P.: Soaring flight in French Guinea. Careful observation of irregularities of the wind show regions of soaring flight coincide with ascending winds.
- *See* Klemperer, W.: Le vol des avions sans moteur.
- *See* Langsdorff, Werner von: Die neuen Segelflugzeuge beim 3. Rhön-Wettbewerb.
- *See* Lesage, André: Le vol à voile.
- *See* Liurette, Henri: Le vol à voile.
- *See* Miller, J. W.: An explanation of soaring flight. Condensed outline of a series of lectures delivered before the Northwest Aeronautical Society, Seattle, Washington.
- *See* Motorless flight.
- *See* Orcy, Ladislas d': Soaring birdmen; a study of soaring birds and a review of recent glider experiments in Germany.
- *See* P. J.: Les avions sans moteurs. Le premier Congrès de l'Aviation sans Moteur.
- *See* Philippe, J.: Les avions sans moteurs, Clermont-Ferrand, 14 août 1922.
- *See* Ruben, F. W.: Soaring flight and its mechanical solution. Observation of bird flight discloses ability of birds to vary their wing area with changing wind pressures.
- *See* Schrenk, M.: Beitrag zur Segelflugzeugberechnung.
- *See* Student, Kurt: Aussprache über das Segelflugproblem.
- *See* Switzerland: Gliding in Switzerland.
- *See* Thomas, Erik: Zur Sinkgeschwindigkeit von Segelflugzeugen.
- *See* Vogt, H. C., and A. Brun: Flyvning uder motor.
- *See* Warner, Edward P.: Gliding experiments in Europe, 1922. An eyewitness review of the results achieved at the recent French and German gliding meets.
- *See* Wright, Orville: Possibilities of soaring flight.

SOCIEDAD Colombo-Alemana de Transportes Aéreos. Gründung und Entwicklung der Sociedad Colombo-Alemana de Transportes Aéreos, Kolombien, Südamerika. Luftweg, Nr. 13 (12. Okt. 1922), Berlin, pp. 124-215.

- SOCIETÀ Idrovolanti Alta Italia di Sesto Calende. Le nuove creazioni idrovolante Savoia a sei posti.  
Ala d'Italia, Anno 1, Num. 1 (luglio 1922), Milano, p. 15, diagr.
- SONNTAG, R. Der Einsturz der Luftschiffhalle A in Niedergörsdorf.  
Zeitschr. Flug. Motorl., 13. Jahrg., 15. Hft. (14. Aug. 1922), München, pp. 216-218, ill.
- Wirtschaftlichste und I-förmige Holm-Querschnitte.  
Zeitschr. Flugt. Motorl., 13. Jahrg., 9. Hft. (15. Mai 1922), Berlin, pp. 126-127.
- SOREAU, R. Nonographie ou traité des abaques.  
Paris, Etienne Chiron, 1921, 2 vols.  
Reviewed in: Zeitschr. Flugt. Motorl., 13. Jahrg., 3. Hft. (15. Feb. 1922), München, p. 42.
- SOUTH AFRICA. On South African aviation.  
Aeroplane, Vol. 22, Nos. 19-20 (May 10, 17, 1922), London, pp. 329-330, 345-346.
- SOUTH AMERICA. Argentinisch-uruguayisches Luftfahrtabkommen.  
Nachr. Luftf., Jahrg. 3, Nr. 30 (30. Juli 1922), Berlin, pp. 335-336.
- SOUTH ATLANTIC. The South Atlantic flight.  
Aer. Eng. Suppl. The Aeroplane, Vol. 22, No. 17 (Apr. 26, 1922), London, pp. 299-300.
- SOVIET Government. See Lefèvre, D.: L'aviation dans la Russie soviétique.
- SPAD. Another aeroplane disaster.  
Engineer, Vol. 133, No. 3467 (June 9, 1922), London, p. 635.
- Berline Spad-Herbemont.  
Flugsport, 14. Jahrg., Nr. 3 (1. Feb. 1922), Frankfurt, pp. 44-45.
- SPAIN. Spanische Luftfahrtkoncessionsbedingungen.  
Nachr. Luftf., Jahrg. 3, Nr. 14 (9. Apr. 1922), Berlin, pp. 181-182.
- SPARROW, STANWOOD W. Background of detonation.  
National Advisory Committee for Aeronautics, Technical Notes No. 93 (Apr. 1922), Mimeo-graph, Washington, pp. 17, diagr.  
Aerial Age, Vol. 15, No. 9 (May 8, 1922), New York, pp. 201-203, 206.
- SPARROW, STANWOOD W., and STEPHEN M. LEE. Comparing maximum pressures in internal-combustion engines.  
National Advisory Committee for Aeronautics, Technical Notes No. 101, June 1922 (Mimeo-graph), Washington, pp. 3, ill.
- SPARROW, STANWOOD D. Maximum cylinder pressures; the effects produced by preignition in internal-combustion engines.  
Automobile Engineer, Vol. 12 (Jan. 1922), London, p. 21.
- Performance of B. M. W. 185-horsepower airplane engine.  
National Advisory Committee for Aerouatics, Report No. 135, Apr. 13, 1922, Washington, Government Printing Office, 1922, pp. 10, diagrs.
- Performance of Maybach 300-horsepower airplane engine.  
National Advisory Committee for Aeronautics, Report No. 134, May 18, 1922, Washington, Government Printing Office, 1922, pp. 11, diagrs.
- The use of multiplied pressures for automatic altitude adjustments.  
National Advisory Committee for Aeronautics, Technical Notes No. 108, Aug. 1922 (Mimeo-graph), Washington, pp. 8, ill.
- SPERRY. Sperry drops landing gear, lands on skids. Demonstrates new type releasable landing gear by successful flights.  
Aviation, Vol. 13, No. 10 (Sept. 4, 1922), New York, p. 272, ill.
- The Sperry flight indicator. An instrument built for flying in fog and in clouds which combines the features of turn indicator and inclinometer.  
Aviation, Vol. 12, No. 14 (Apr. 3, 1922), New York, pp. 393-394, ill.
- SPEED. American airplane with change-speed device.  
Aerial Age, Vol. 15, No. 20 (Nov. 1922), New York, pp. 547-548.

**SPEED.** Four miles a minute through the air.

Literary Digest, Vol. 75 (Nov. 18, 1922), New York, pp. 57-60, ill.

— See I. T.: Le record du monde de vitesse.

— See Rateau, A.: Les plus grandes vitesses possibles en aviation—Emploi du turbo-compressenr.

— See Reyneker, F. H.: Snelheidsmeting van vliegtuigen.

— See Spit, G.: Over lucht en snelheid.

**SPEED instruments.** See National Advisory Committee for Aeronautics: Report No. 127. Aeronautic instruments. Section III: Aircraft speed instruments.

**SPIT.** G. Over lucht en snelheid.

Vliegveld, 6de Jaarg., No. 12 (Dec. 1922), Amsterdam, pp. 301-302.

**SPLITDORF magneto.** New Splitdorf magneto for aircraft engines. Ignition system specially developed for aircraft.

Aviation, Vol. 13, No. 24 (Dec. 11, 1922), New York, p. 783, ill.

**SPOKANE.** Municipal airdrome at Spokane.

Aviation, Vol. 12, No. 10 (Mar. 6, 1922), New York, p. 291.

**SPRATT,** G. A. A theory and its proof.

Aviation, Vol. 12, No. 18 (May 1, 1922), New York, pp. 510-511.

**SPRUCE.** Investigation of crushing strength of spruce at varying angles of grain.

Air Service Information Circular, Vol. 3, No. 259 (July 15, 1921), Washington, D. C., pp. 15, ill.

— See Carrington, H.: The elastic constants of spruce as influenced by moisture.

**STAAKEN.** See Rohrbach, K.: The 100-horsepower passenger-carrying aeroplane of the Zeppelin works in Staaken.

**STABILITY.** Airplane stability demonstrator.

Pop. Mech., Vol. 37, No. 3 (Mar. 1922), Chicago, p. 328, ill.

— Airplane-stability tests to make flying safe.

Pop. Mech., Vol. 37, No. 1 (Jan. 1922), Chicago, pp. 52-53, ill.

— Stability.

Aerial Age, Vol. 15, No. 2 (Mar. 20, 1922), New York, p. 41.

— The stability of airships: Trials with the *R. 33*.

Indian Eng., Vol. 71, No. 23 (June 10, 1922), Calcutta, pp. 326-328, ill.

— See Aeronautical research committee. Report No. 751.

— See Balabau, Karl: Zur Stabilitätsfrage des Hubschraubers.

— See National Advisory Committee for Aeronautics: Technical Notes No. 115.

The effect of longitudinal moment of inertia upon dynamic stability.

— See North, John D.: Stability calculations in the process of design.

— See Warner, Edward P.: Stability of aeroplanes.

**STABILITY, longitudinal.** See Burzio, F.: Sulla stabilità longitudinale degli aeroplani.

— See Geckeler, Josef: Ueber Auftrieb und statische Längsstabilität . . .

**STABILIZERS, automatic.** See Reyneker, F. H.: De automatische stabilisator van Aveline.

**STADTHAGEN, PAUL.** Unsere Flugverkehrsmöglichkeiten.

Luftweg, Nr. 11 (15. Aug. 1922), Berlin, pp. 108-109.

**STANDARDIZATION.** Aeronautical standardization. Standardization of materials, parts, and tools desirable for mass production in emergencies.

Aviation, Vol. 12, Nos. 20-21 (May 15-22, 1922), New York, pp. 564-566, 597-598.

**STANDARDIZATION.** Government and industry cooperate in standardization.  
*Aviation*, Vol. 12, No. 14 (Apr. 3, 1922), New York, p. 391.

- Reports of divisions to standards committee.  
*Journ. Soc. Aut. Eng.*, Vol. 11, No. 6 (Dec. 1922), New York, pp. 529-547, diagr.
- *See* Katzmayr, Richard: Standardization and aerodynamics.
- *See* Knight, William: Standardization and aerodynamics.
- *See* Verduzio, R.: Standardization and aerodynamics.
- *See* Zahm, Albert Francis: Standardization and aerodynamics.

**STARTERS.** Fifty-hour endurance flight test of auxiliary starting device (buzzer starter) for the Liberty engine.

*Air Service Information Circular*, Vol. 4, No. 302 (Feb. 15, 1922), Washington, D. C., p. 1, ill.

**STARTING devices.** Auxiliary starting engine for airplanes.  
*Pop. Mech.*, Vol. 37 (Mar. 1922), Chicago, p. 364, ill.

**STATAX.** A really light low-powered engine at last? The German statax three-cylinder rotary.

*Flight*, Vol. 14, No. 47 (Nov. 23, 1922), London, p. 683, ill.

**STATIC tests.** Report of static test of ski for an SE-5 airplane.

*Air Service Information Circular*, Vol. 4, No. 322 (Mar. 15, 1922), Washington, D. C., p. 1, ill.

- Report of static test on engineering division Messenger airplane.

*Air Service Information Circular*, Vol. 3, No. 270 (Oct. 1, 1921), Washington, D. C., pp. 15, ill.

**STEARNS, H. O.** Aircraft speed instruments. Part II. Testing of air-speed meters.  
*National Advisory Committee for Aeronautics, Report No. 127*, July 14, 1922, Washington, Government Printing Office, 1922, pp. 25-33, ill., diagrs.

**STEDMAN, E. W.** Some technical aspects of aviation in Canada.  
*Aeron. Journ.*, Vol. 26, No. 141 (Sept. 1922), London, pp. 349-376, ill.

**STEELS.** Les aciers spéciaux et la construction des aéroplanes.  
*Usine*, Vol. 31, No. 49 (Dec. 9, 1922), Paris, pp. 21-29, ill.

- Chrome-molybdenum steels.  
*Aviation*, Vol. 12, No. 8 (Feb. 20, 1922), New York, p. 233.

- Effect of heating in hardening steels.  
*Journ. Soc. Aut. Eng.*, Vol. 11, No. 3 (Sept. 1922), New York, p. 257.

- The heat treatment of steels.  
*Aer. Eng. Suppl. The Aeroplane*, Vol. 23, No. 20 (Nov. 15, 1922), London, pp. 382-384.

- *See* Kothny, E.: Manufacture of alloy steel for airplane shafts.

**STEFANSSON, VILHJALMUR.** Arctic as an air route of the future.

*National Geographic Magazine*, Vol. 42, No. 2 (Aug. 1922), Washington, D. C., pp. 205-218, map, ill.

- Human flight a triumph of pure reason.  
*U. S. Air Service*, Vol. 7, No. 11 (Dec. 1922), Washington, D. C., p. 18.

**STEVENS, A. LEO.** Airships.  
*Aeronautical Digest*, Vol. 1, No. 8 (Nov. 1922), New York, pp. 213-214.

**STEVENS, A. W.** Parachuting from 24,000 feet.  
*U. S. Air Service*, Vol. 7, No. 6 (July 1922), Washington, D. C., pp. 9-11, ill.

**STILLMAN, M. H.** *See* Franklin, W. S., and M. H. Stillman: Direction instruments. Part I. Inclinometers and banking indicators.

**STORAGE.** Instructions for the storage of airplanes, engines, their parts and accessories.  
*Air Service Information Circular*, Vol. 3, No. 256 (July 15, 1921), Washington, D. C., pp. 9.

- *See* Hoare, P. V.: Notes on the storage of aircraft.

- STORAGE** battery. *See* Hazelett, Clarence W.: The storage battery as a mechanical problem.
- STOUT, WILLIAM B.** The modern airplane and all-metal construction.  
*Journ. Soc. Aut. Eng.*, Vol. 11, No. 6 (Dec. 1922), New York, pp. 495-504, ill.
- Requirements for commercial aircraft. An airplane which can be operated on a ton-mile cost basis—Efficient design and inexpensive maintenance.  
*Aviation*, Vol. 12, No. 3 (Jan. 16, 1922), New York, pp. 72-74, ill.
- A thrill for mankind at the Detroit meet. Novelties to be seen in the "motor city" air events described and explained.  
*U. S. Air Service*, Vol. 7, No. 9 (Oct. 1922), Washington, D. C., pp. 9-11, diagr.
- STRETT, ST. C.** First Alaskan air expedition.  
*National Geographic Magazine*, Vol. 41 (May 1922), Washington, D. C., pp. 498-552, ill., map.
- STRENGTH** calculators. A strength calculator for aeroplane details. A handy slide rule for the D. O.  
*Flight*, Vol. 14, No. 23 (June 8, 1922), London, p. 330, diagr.
- STRESS.** Study of stress analysis of the JL-6.  
*Air Service Information Circular*, Vol. 4, No. 332 (Mar. 15, 1922), Washington, D. C., pp. 2.
- *See* Case, John: Stresses in air screws due to varying engine torque.
- *See* National Advisory Committee for Aeronautics: Technical Notes No. 111. Stresses produced on an airship flying through gusty air.
- STRUCTURAL** strength. Structural strength of aircraft. Requirements for certificates of airworthiness.  
*Flight*, Vol. 14, No. 27 (July 6, 1922), London, pp. 385-386.
- STRUTS.** Tests on combined loading of wooden struts.  
*Air Service Information Circular*, Vol. 3, No. 276 (Oct. 1, 1921), Washington, D. C., pp. 11, ill.
- *See* Miller, R. A.: Reserve bending strength of struts.
- *See* National Advisory Committee for Aeronautics: Report No. 137. Point drag and total drag of Navy struts No. 1 modified.
- STUDENT, KURT.** Aussprache über das Segelflugproblem.  
*Zeitschr. Flugt. Motorl.*, 13. Jahrg., 4. Hft. (28. Feb. 1922), Berlin, pp. 47-50.
- "Zur Ausschreibung des Rhön-Segelflugwettbewerbes 1922."  
*Zeitschr. Flugt. Motorl.*, 13. Jahrg., 4. Hft. (28. Feb. 1922), Berlin, pp. 45-46.
- STÜVE, G.** Aerologische Untersuchungen zum Zwecke der Wetterdiagnose.  
*Arbeiten Preuss. Aeron. Observ. bei Lindenberg*, 14. Bd., 1922, pp. 104-116.
- Eine Verbesserung der Haarhygrometer.  
*Arbeiten Preuss. Aeron. Observ. bei Lindenberg*, 14. Bd., 1922, pp. 117-118.
- STUNT flying.** Stunt flying in civil aviation.  
*Aviation*, Vol. 13, No. 13 (Sept. 25, 1922), New York, p. 375.
- SUBSIDIES**—France. Lage der subventionierten französischen Luftverkehrsgesellschaften, 1. Semester 1921.  
*Nachr. Luftf.*, Jahrg. 3, Nr. 49 (10. Dez. 1922), Berlin, pp. 614-615.
- SUDRE, G.** Air traffic.  
*Aerial Age*, Vol. 15, No. 14 (June 12, 1922), New York, pp. 325-326.
- SUFFRIN.** Que sont devenus les appareils du dernier salon?  
*L'Aérophile*, 30e année, Nos. 23-24 (1er-15 déc. 1922), Paris, pp. 371-375, ill.
- SUFFRIN-HÉBERT M.** *See* Huguet, L., and M. Suffrin-Hébert: Calculus aérodynamiques des avions.
- SUHARA, TOYOTARO.** *See* Toyotaro Suhara.

**SUPERCHARGERS.** Functioning of supercharger in altitude flight. Experience of Lieut. John A. MacReady on record-breaking altitude flight shows difficulties met in exceeding 40,000 feet.

Aviation, Vol. 12, No. 2 (Jan. 9, 1922), New York, p. 51.

**SUPERMARINES.** Supermarines abroad.

Flight, Vol. 14, No. 45 (Nov. 9, 1922), London, pp. 655-656, ill.

— Supermarine activities.

Aer. Eng. Suppl. The Aeroplane, Vol. 22, No. 6 (Feb. 8, 1922), London, p. 102, ill.

— The supermarine single-seater fighter amphibian.

Aer. Eng. Suppl. The Aeroplane, Vol. 22, No. 15 (Apr. 12, 1922), London, pp. 264-268, ill. diagr.

— The supermarine single-seater fighting scout *Sea King*, Mark II. An interesting amphibian flying boat, with Hispano engine.

Flight, Vol. 14, No. 16 (Apr. 20, 1922), London, pp. 226-229, 236, ill., diagr.

**SURVEYING.** Aerial photographic mapping developed for municipal and other engineering services.

Engineering News-Record, Vols. 87-88 (Oct. 13, 1921; Nov. 17, 1921; May 4, 1922), New York pp. 596-599, 828, 746, ill., maps.

— Aeroplane surveying.

Engineering, Vol. 114 (Sept. 29, 1922), London, p. 407.

— Air surveying.

Aviation, Vol. 12, No. 8 (Feb. 20, 1922), New York, p. 219.

— New air-surveying device.

Aviation, Vol. 12, No. 8 (Feb. 20, 1922), New York, p. 232.

— See Fairchild, S. M.: Winged surveyors.

— See Fiske, H. C.: Air photos as plane-table sheets aid mapping.

— See Jones, E. L.: Progress in air surveying.

— See Mandeville, J. B.: Aerial photography as applied to surveying.

— See Smith, G. S.: Uses of aerial photographs in map making.

**SWANSON.** Swanson model 3 sport plane. Small single seater fitted with Lawrance engine has good performance.

Aviation, Vol. 13, No. 26 (Dec. 25, 1922), New York, p. 837, ill.

**SWITZERLAND.** Aviation in Switzerland.

Aviation, Vol. 12, No. 3 (Jan. 16, 1922), New York, p. 76.

— Gliding in Switzerland.

Aer. Eng. Suppl. The Aeroplane, Vol. 22, No. 18 (May 3, 1922), London, p. 322.

— A Swiss pageant.

Aer. Eng. Suppl. The Aeroplane, Vol. 22, No. 24 (June 14, 1922), London, p. 428.

— The Swiss soaring flight course and competition.

Aer. Eng. Suppl. The Aeroplane, Vol. 22, No. 4 (Jan. 25, 1922), London, p. 68.

**SYKES, FREDERICK.** On Sir Frederick Sykes: His book.

Aeroplane, Vol. 22, No. 24 (June 14, 1922), London, pp. 417-419.

— The resignation of Sir Frederick Sykes.

Aeroplane, Vol. 22, No. 14 (Apr. 5, 1922), London, p. 238.

**SYKES, FREDERICK HUGH.** Aviation in peace and war.

Edward Arnold, London and New York, Longmans, 1922, p. 139.

**SYLPHON.** The Sylphon fuel pump for Liberty 12 and Wright model H engines.

Air Service Information Circular, Vol. 3, No. 281 (Oct. 15, 1921), Washington, D. C., pp. 8, ill.

**SYLPHON.** The Sylphon petrol pump.

Flight, Vol. 14, No. 24 (June 15, 1922), London, p. 344, diagr.

**SYLPHON diaphragms.** See National Advisory Committee for Aeronautics: Technical Notes No. 90. Sylphon diaphragms, a method for predicting their performance for purposes of instrument design.

**SYLVANDER, R. C.** Power-plant instruments. Part II. Testing of airplane tachometers.

National Advisory Committee for Aeronautics, Report No. 129, Sept. 30, 1922, Washington, Government Printing Office, 1922, pp. 25-48, ill., diagrs., tables.

**SYLVANDER, R. C., and E. W. ROUNDS.** Direction instruments. Part IV. Turn indicators.

National Advisory Committee for Aeronautics, Report No. 128, Sept. 1, 1922, Washington, Government Printing Office, 1922, pp. 50-67, ill.

## T.

"T-2." The United States Army giant monoplane T-2.

Aeronautical Digest, Vol. 1, No. 9 (Dec. 1922), New York, p. 281.

— See Records: T-2 makes new duration record. Lieutenants MacReady and Kelly stay up 35 hours 18½ minutes in Army transport plane.

**TABOCHINI, V.** La madonna di Loreto.

Ala d'Italia, Anno 1, Num. 3 (sett. 1922), Milano, pp. 64-65, ill.

**TAIL planes.** See Aeronautical research committee. Report No. 761.

— See Glauert, H., and I. L. Peatfield: Experimental determination of tail-plane characteristics.

— See National Advisory Committee for Aeronautics: Report No. 133. The tail plane. By Max M. Munk.

**TAIL surfaces.** See National Advisory Committee for Aeronautics: Report No. 136. Damping coefficients due to tail surfaces in aircraft.

**TAKENS, H. J.** De gelaschte buizen-romp constructie.

Vliegveld, 6de Jaarg., No. 3 (Maart 1922), Amsterdam, pp. 52-53.

— Waarde-beoordeling van een vliegtuig.

Vliegveld, 6de Jaarg., No. 2 (Feb. 1922), Amsterdam, p. 26.

**TAKING off.** See National Advisory Committee for Aeronautics: Report No. 154. A study of taking off and landing an airplane.

**TANKS.** Crash-proof tanks.

Aer. Eng. Suppl. The Aeroplane, Vol. 22, No. 10 (Mar. 8, 1922), London, p. 176.

— New crash-proof tank.

Aviation, Vol. 13, No. 5 (July 31, 1922), New York, p. 129.

— The safety fuel tank awards.

Aer. Eng. Suppl. The Aeroplane, Vol. 22, No. 18 (May 3, 1922), London, p. 318.

— The safety fuel tank competition.

Aer. Eng. Suppl. The Aeroplane, Vol. 22, No. 19 (May 10, 1922), London, pp. 336-338.

— See Silverton: The Silverton self-sealing tank.

**TARKIO, Mo.** Flying meet at Tarkio, Mo.

Aviation, Vol. 13, No. 9 (Aug. 28, 1922), New York, p. 258.

**TATUO KOBAYASI.** See Torahiko Terada and Tatuo Kobayashi: On the diurnal variation of winds in different coastal stations of Japan.

**TAVENER, C. H.** See Gurney, H. P., and C. H. Tavener: Energy-absorbing capacity of vulcanized rubber.

- TAYLOR, C. FAYETTE. Curves for estimating the fuel consumption of an aviation engine on the basis of piston displacement and revolutions per minute.  
Air Service Information Circular, Vol. 4, No. 375 (Oct. 15, 1922), Washington, D. C., pp. 8, ill.
- Recent aircraft engine development.  
Journ. Soc. Aut. Eng., Vol. 10, No. 3 (Mar. 1922), New York, pp. 204-206, ill.
- TAYLOR, R. Seventh Corps Area commercial aeronautical association organized.  
Aerial Age, Vol. 15, No. 6 (Apr. 17, 1922), New York, pp. 128-129.
- TEACHING. *See* Training.
- TENSIOMETER. *See* Larson: The Larson tensiometer.
- TERADA, TORAHICO. *See* Torahiko Terada.
- TERAZAWA, KWAN-ICHI. *See* Kwan-ichi Terazawa.
- TERMINOLOGY. Glossary of aeronautical terms prepared by the technical terms committee. (Great Britain Air Ministry, air publication 822.)  
Royal Aeronautical Soc., London, 1921, pp. 161.
- TESTS. Hydrostatic test of an airship model.  
Aerial Age, Vol. 15, No. 7 (Apr. 24, 1922), New York, pp. 154-155, 158, 166.
- Method of testing models of dirigible balloons.  
Pop. Mech., Vol. 33 (Aug. 1922), Chicago, pp. 225, ill.
- *See* Barlow, T. M.: Performance testing of aircraft.
- *See* Douglas, Wm. D.: Testing aircraft to destruction.
- TÈTE, A. De l'aide accordée par l'Etat aux compagnies de navigation aérienne et aux propriétaires d'avions de tourisme et de son contrôle sur la navigation aérienne.  
L'Aérophile, 30e année, Nos. 17-18 (1er-15 sept. 1922), Paris, pp. 275-280.
- TETENS, OTTO. Der tägliche Gang des Windes in der freien Atmosphäre über Lindenbergs.  
Arbeiten Preuss. Aeron. Observ. bei Lindenbergs, 14. Bd., 1922, pp. 62-84.
- TEVIS, M. Guiding aircraft into port at night and in foggy weather.  
St. Nicholas, Vol. 49, No. 8 (June 1922), New York, pp. 880-881, ill.
- THADEN, HERBERT V. Methods of air navigation. Formula and instruments for checking dead reckoning described.  
Aviation, Vol. 12, No. 9 (Feb. 27, 1922), New York, pp. 252-255, ill.
- THOMAS, ERIK. Rechentafel für Profiluntersuchungen.  
Zeitschr. Flugt. Motorl., 13. Jahrg., 14. Hft. (31. Juli 1922), Berlin, pp. 206-207.
- Zur Sinkgeschwindigkeit von Segelflugzeugen.  
Zeitschr. Flugt. Motorl., 13. Jahrg., 6. Hft. (31. März 1922), Berlin, pp. 75-78.
- THOMSON, G. F. Young America's future highway the air.  
St. Nicholas, Vol. 29, No. 2 (Dec. 1921), New York, pp. 138-145, ill.
- THORBURN, D. W. An aviation week at Nice.  
Flight, Vol. 14, No. 14 (Apr. 6, 1922), London, pp. 202-203.
- THORET. *See* Aimé, Emmanuel: La fête du 1.000e pilote du centre d'Orly. Le vol. vertical du Lieutenant Thoret.
- THRUST-METER. - *See* Aeronautical Research Committee. Report No. 771.
- THURSTAN, FRANCIS FARNALL. Francis Farnall Thurstan.  
Aeroplane, Vol. 22, No. 3 (Jan. 18, 1922), London, pp. 42-43, ill.
- TICE, P. S. Vaporization of motor fuels.  
Journ. Soc. Aut. Eng., Vol. 11, No. 4 (Oct. 1922), New York, pp. 307-319, 322, ill.

- TILLINCHAST, T. E. Variation in volumetric efficiency of an engine with valve lift.  
Air Service Information Circular, Vol. 4, No. 356 (June 15, 1922), Washington, D. C., pp. 11, ill.
- TIMBER. Australian timbers for aircraft.  
Aer. Eng. Suppl. The Aeroplane, Vol. 23, No. 4 (July 26, 1922), London, pp. 67-68.
- See Warren, W. H.: Timbers for aeroplane construction.
- TINKER, CLIFFORD A. Airship lines in America now assured. General air service organizes for transcontinental aerial navigation on grand scale.  
U. S. Air Service, Vol. 7, No. 1 (Feb. 1922), Washington, D. C., pp. 9-12.
- Ancients pay tribute.  
Outlook, Vol. 131 (July 26, 1922), New York, pp. 522-524, ill.
- Barber sees brilliant aeronautical future. British authority interviewed by United States Air Service.  
U. S. Air Service, Vol. 7, No. 5 (June 1922), Washington, D. C., p. 12.
- Statesmanship run wild.  
Outlook, Vol. 131 (Aug. 16, 1922), New York, pp. 634-637, ill.
- TIPTON, WM. D. Some impressions of the Pulitzer race.  
U. S. Air Service, Vol. 7, No. 10 (Nov. 1922), Washington, D. C., pp. 10-12.
- Technical requirements of pursuit aviation.  
U. S. Air Service, Vol. 7, No. 8 (Sept. 1922), Washington, D. C., pp. 16-19.
- TIRES. Addendum to Information Circular, Vol. IV, No. 303, discussion of airplane tires and wheels.  
Air Service Information Circular, Vol. 4, No. 303 (addendum) (Sept. 15, 1922), Washington, D. C., pp. 2.
- Discussion of airplane tires and wheels.  
Air Service Information Circular, Vol. 4, No. 303 (Feb. 15, 1922), Washington, D. C., pp. 11, ill.
- TIRRENO cup. The Tirreno cup.  
Aer. Eng. Suppl. The Aeroplane, Vol. 23, No. 12 (Sept. 20, 1922), London, p. 232.
- TISSANDIER, PAUL, and CHARLES DOLLFUS. L'Aéronautique des origines à 1922.
- TOLMAN, R. C. Thermodynamic treatment of the possible formation of helium from hydrogen.  
Journ. Amer. Chemical Soc., Vol. 44 (Sept. 1922), Washington, D. C., pp. 1902-1908.
- TÔKYÔ TD. Kôkû Hôkoku. See Tôkyô Teikoku-Daigaku Kôkû-Kenkyûzyo Hôkoku.
- TÔKYÔ Teikoku-Daigaku Kôkû-Kenkyûzyo Hôkoku. Report of the Aeronautical Research Institute, Tôkyô Imperial University, Vol. 1, Nos. 2-5, June-December 1922.  
Tôkyô, Imperial University, 1922, pp. 25-170, ill., diagrs.
- TOPOGRAPHY. "Plotting topography from oblique aerial photographs" by the topographical surveys branch, department of the interior, Canada.  
Dominion of Canada, Report of the Air Board for the year 1922, Ottawa, F. A. Acland, Printer to the King's Most Excellent Majesty, 1922, pp. 56-69, ill.
- TORAHICO TERADA and TATUO KOBAYASI. On the diurnal variation of winds in different coastal stations of Japan.  
Tôkyô TD. Kôkû Hôkoku, Vol. 1, No. 3 (July 1922), Tôkyô, pp. 35-85, diagrs., tables.
- TORPEDO planes. Navy tests of torpedo planes.  
Aviation, Vol. 13, No. 4 (July 24, 1922), New York, p. 102.
- TOURING. Touring à la wild duck.  
Literary Digest, Vol. 74 (July 1, 1922), New York, pp. 54-59, ill.
- TOUSSAINT. Application de la théorie des tourbillons à l'aérodynamique des ailes sustentatrices.  
L'Aérophile, 30e année, Nos. 19-24 (1er oct.-15 déc. 1922), Paris, pp. 298-305, 326-331, 356-360, ill., cont.

- TOUSSAINT, A. Evolution of modern aviation and experimental and technical researches in aerodynamic laboratories.  
Aerial Age, Vol. 15, No. 12 (May 29, 1922), New York, pp. 270-272.
- TOYOTARO SUHARA. A new air velocity calculator.  
Tōkyō TD. Kōkū Hōkoku, Vol. 1, No. 2 (June 1922), Tōkyō, pp. 25-30 [1], ill.
- TOYOTARO SUHARA and NAOZO SATO. On the distribution and variation of temperature in the cylinder and piston of an aircraft engine.  
Tōkyō TD. Kōkū Hōkoku, Vol. 1, No. 5 (Dec. 1922), Tōkyō, pp. 137-170, ill., diagrs.
- TRAINING. On teaching flying.  
Aer. Eng. Suppl. The Aeroplane, Vol. 22, No. 10 (Mar. 8, 1922), London, pp. 175-176.
- Vorlesungen über Luftfahrwesen (Wintersemester 1922-23).  
Nachr. Luftf., Jahrg. 3, Nr. 47 (26. Nov. 1922), Berlin, pp. 587-589.
- See United States Bureau of Aeronautics, Navy Department: Syllabus for the training of naval aviators and naval aviation pilots. Airplane.
- TRAINING planes. New Navy training plane.  
Aviation, Vol. 13, No. 10 (Sept. 4, 1922), New York, p. 291.
- TRAINING—Spain. Escuelas de aviación.  
Iberica, No. 453 (25 Nov. 1922), Tortosa, p. 306.
- TRANS-ATLANTIC flight. Europe to South America.  
Aviation, Vol. 12, No. 18 (May 1, 1922), New York, p. 503.
- The Lisbon to Rio trans-Atlantic attempt. Fairey seaplane used.  
Flight, Vol. 14, No. 14 (Apr. 6, 1922), London, p. 202, ill.
- The Lisbon to Rio trans-Atlantic attempt. Flight delayed by mishap.  
Flight, Vol. 14, No. 17 (Apr. 27, 1922), London, p. 243.
- Portugal: Der Versuch eines Fluges Lissabon-Rio de Janeiro.  
Nachr. Luftf., Jahrg. 3, Nr. 22 (4. Juni 1922), Berlin, pp. 293-294.
- The Portuguese Atlantic flight.  
Aeroplane, Vol. 22, No. 23 (June 7, 1922), London, p. 403.
- TRANSCONTINENTAL flight. Across America in eight hours by utilizing the antitrade winds.  
Scient. Amer., Vol. 127 (Sept. 1922), New York, p. 149, ill.
- TRANSPORTATION. Air transport freight rates.  
Engineer, Vol. 133, No. 3452 (Feb. 24, 1922), London, p. 209.
- The Institute of Transport—Aircraft.  
Engineer, Vol. 133, No. 3464 (May 19, 1922), London, pp. 556-557.
- TRAUTWETTER. Ueber die Begriffsbestimmungen für den deutschen Luftfahrzeugbau.  
Luftweg, Nr. 8 (15. Mai 1922), Berlin, pp. 77-79.
- TRAUTWETTER. Le concours de vol à voile du Rhoen.  
L'Aérophile, 30e année, Nos. 17-18 (1er-15 sept. 1922), Paris, p. 262, ill.
- TREFFITZ, E. Prandtl'sche Tragflächen- und Propeller-Theorie.  
Zeit. für angewandte Mathematik. u. Mechanik, Vol. 1, No. 3 (June 1921), Berlin, pp. 206-218, ill.
- TRIPLANES. Tandem triplane has noteworthy features.  
Pop. Mech., Vol. 38, No. 2 (Aug. 1922), Chicago, p. 175, ill.
- TROPICS. Air transport in the Tropics.  
Aviation, Vol. 12, No. 23 (June 5, 1922), New York, p. 655.
- Seaplanes in the Tropics.  
Aer. Eng. Suppl. The Aeroplane, Vol. 22, No. 24 (June 14, 1922), London, pp. 423-424.

**T**SCHUDI. Die rechtliche Behandlung der Luftfahrzeuge mit Räderantrieb im Entwurf eines Luftverkehrsgesetzes vom 8. 7. 1921.  
Luftweg, Nr. 13 (12. Okt. 1922), Berlin, pp. 126-127.

**T**UBE, braced. *See* Aeronautical Research Committee. Report No. 791.

**T**UCKER, ALBERT. Airplanes, airships, aircraft engines.  
Annapolis, Md., United States Naval Institute, 1922, pp. 436, ill.

**T**UNIS. Aeropuerto a orillas del lago de Túnez.  
Iberica, No. 457 (23 dic. 1922), Tortosa, p. 376.

**T**URNER, C. C. Our urgent need: Air power.  
Nineteenth Century, Vol. 90, No. 546 (Aug. 1922), New York, pp. 212-219.

**T**YPEWRITING. Typewriting in an airplane flying among the clouds with radio machinery duplicating the letters.  
Aeronautical Digest, Vol. 1, No. 6 (Sept. 1922), New York, p. 68, ill.

## U.

**UDET.** The Udet sporting single seater. The production of a newcomer to the German aircraft industry.  
Flight, Vol. 14, No. 28 (July 13, 1922), London, pp. 393-394, ill., diagr.

**UNDERWRITERS' laboratories.** Underwriters' laboratories aviation record.  
Aviation, Vol. 12, No. 6 (Feb. 6, 1922), New York, pp. 160-161, ill.

**U. S. S. "WRIGHT."** U. S. S. Wright, our first balloon and airplane carrier.  
Scient. Amer. Vol. 126 (Apr. 1922), New York, p. 267, ill.

**UNITED STATES.** America ready for air travel.  
Aerial Age, Vol. 15, No. 16 (June 26, 1922), New York, pp. 369-370.

— American airplane achievements in 1921.  
Automotive Manufacturer, Vol. 63, No. 10 (Jan. 1922), New York, p. 18.

— An American airship scheme.  
Aeroplane, Vol. 23, No. 9 (Aug. 30, 1922), London, pp. 167-168.

— American aviation forging ahead.  
Aviation, Vol. 13, No. 5 (July 31, 1922), New York, p. 130.

— American aviation in 1921. Statistics issued by Aeronautical Chamber of Commerce show civil aircraft carried 275,000 passengers, covering 6,500,000 miles.  
Aviation, Vol. 12, No. 1 (Jan. 2, 1922), New York, pp. 8-9.

— America's advance in aeronautics.  
Aviation, Vol. 13, No. 22 (Nov. 27, 1922), New York, p. 711.

— America's civil flying.  
Aer. Eng. Suppl. The Aeroplane, Vol. 23, No. 19 (Nov. 8, 1922), London, p. 368.

— Commercial airship lines for the United States.  
Literary Digest, Vol. 72, No. 11 (Mar. 18, 1922), New York, pp. 66-68.

— Commercial aviation in America.  
Aviation, Vol. 12, No. 10 (Mar. 6, 1922), New York, p. 279.

— Government aid for aviation.  
Journ. Soc. Aut. Eng., Vol. 10, No. 5 (May 1922), New York, p. 413.

— On a lesson from the United States.  
Aeroplane, Vol. 23, No. 19 (Nov. 8, 1922), London, p. 358.  
Winning the Pulitzer trophy.

— Summary of aviation in United States.  
Aviation and Wireless News, Vol. 4, No. 11 (Jan. 1922), Toronto, p. 27.

— What's the trouble with United States aviation?  
Literary Digest, Vol. 74, No. 1 (July 1, 1922), New York, p. 63.

UNITED STATES academy of aeronautics. For a United States academy of aeronautics. Resolution by Senator Walsh asks War and Navy secretaries to report on advisability of establishing aerial academy.

Aviation, Vol. 12, No. 16 (Apr. 17, 1922), New York, p. 452.

— Regarding a United States academy of aeronautics. Secretaries of War and Navy report to Senate on practicability of creating academy.

Aviation, Vol. 12, No. 26 (June 26, 1922), New York, pp. 753-754.

UNITED STATES bureau of aeronautics, Navy Department. Syllabus for the training of naval aviators and naval aviation pilots. Airplane . . . . Washington, Government Printing Office, 1922, pp. 39, diagrs., forms.

UNITED STATES Congress, Senate Committee on Commerce. Bureau of aeronautics in Department of Commerce. Report. To accompany S. 3076.

Washington, Government Printing Office, 1922, pp. 31, table, 67th Congress, 2d session, Senate, Report 460, Calendar No. 461.

Submitted by Mr. Jones, of Washington.

UNITED STATES mail DH-M2. Performance test of United States mail DH-M2. Air Service Information Circular, Vol. 4, No. 386 (Nov. 1, 1922), Washington, D. C., pp. 5, ill.

UPPERCU, INGLIS M. A biographical sketch.

U. S. Air Service, Vol. 7, No. 10 (Nov. 1922), Washington, D. C., pp. 21-22, ill.

— Uppercu, president of the A. C. C., one of America's most enthusiastic supporters of aviation.

Aerial Age, Vol. 15, No. 20 (Nov. 1922), New York, pp. 545-546.

UPSON, RALPH. Aeronautical lessons from Europe.

Aviation, Vol. 12, No. 1 (Jan. 2, 1922), New York, pp. 13-14, ill.

— Great balloon flight.

St. Nicholas, Vol. 49, No. — (June 1922), New York, pp. 813-819, ill.

— See National balloon race: Experiences in the national balloon race. Interesting accounts by Major Westover, Ralph Upson, Lieutenant Reed, and Commander Norfleet.

URQUHART, JOHN W. Steel thermal treatment.

London, Crosby, Lockwood & Son, 1922.

URSO, MARIO d'. Il "raid" aereo commerciale Roma-Costantinopoli nella narrazione di Mario d'Urso.

Gazz. Aviaz., 1922, Anno 4, No. 34, Milano, p. 2.

## V.

VACUUM airship. A partial vacuum airship.

Aviation, Vol. 12, No. 7 (Feb. 13, 1922), New York, p. 205.

— The vacuum airship.

Engineer, Vol. 133, No. 3447 (Jan. 20, 1922), London, p. 73.

— See Airships: The vacuum hulled airship.

VALLE, GIUSEPPE. Sulla aeronavigazione di domani.

Atti, Assoc. Ital. Aeroteen., 1922, Vol. 2, Nos. 3-4, Roma, pp. 86-105.

VAN DER HOOP. Moet een luchtvaartcompas cardanisch opgehangen worden?

Vliegveld, 6de Jaarg., No. 12 (Dec. 1922), Amsterdam, pp. 302-304.

VAN DER MUELEN, J. H. W. De Nederlandsche proefvliegtuigclubs en de Nederlandsche records.

Vliegveld, 6de Jaarg., No. 2 (Feb. 1922), Amsterdam, pp. 34-35.

— Proefvliegtuigpraatje.

Vliegveld, 6de Jaarg., No. 7 (Juli 1922), Amsterdam, pp. 162-163.

- VAN NOSTRAND, P. E. Lessons learned from *Roma* accident.  
U. S. Air Service, Vol. 7, No. 2 (Mar. 1922), Washington, D. C., pp. 16, 28.
- VAN VLECK, J. H. Normal helium atom and its relation to the quantum theory.  
*Philosophical Magazine and Journ. Science*, 6th ser., Vol. 44 (Nov. 1922), London, pp. 842-869.
- VANCE, EARL T. A day in the life of a commercial flyer.  
U. S. Air Service, Vol. 7, No. 7 (Aug. 1922), Washington, D. C., p. 10.
- How to start a flying business.  
U. S. Air Service, Vol. 7, No. 4 (May 1922), Washington, D. C., pp. 14-16, ill.
- VAUGEAN-GARGIULO. Le projet de dirigeable Vaugean-Gargiulo.  
*L'Aéronautique*, 4<sup>e</sup> année, No. 32 (janv. 1922), Paris, pp. 6.
- VEERE. *See* Hegener, Henri: De Nederlandschevliegtuigen fabriek te Veere.
- VEIEL, G. E. Die Knebelung der deutschen Luftfahrt seit Kriegsende.  
Luftweg, Nr. 7 (15. Apr. 1922), Berlin, pp. 72-75.
- VERDUZIO, RODOLFO. Alcunenuove macchine della Sezione di Technologia dell' Istituto Sperimentale Aeronautico.  
Rend. Istituto Sper. Aer., Anno 10-Ser. 2<sup>a</sup>, N. 2 (15 aprile 1922), Roma, pp. 45-69, ill.
- Interpretazione delle esperienze idrodinamiche per la determinazione delle caratteristiche della partenza degli idrovoltanti.  
Rend. Istituto Sper. Aer., Anno 10-Ser. 2<sup>a</sup>, N. 4 (15 dic. 1922), Roma, pp. 263-272, diagrs.
- Metal construction.  
Aerial Age, Vol. 15, No. 16 (June 26, 1922), New York, pp. 372-373.
- Le prove di rottura degli apparechi.  
Ala d'Italia, Anno 1, Num. 4 (ott. 1922), Milano, pp. 97-98.
- Standardization and aerodynamics.  
Aerial Age, Vol. 15, No. 4 (Apr. 3, 1922), New York, p. 81.
- Sui solidi caricati assialmente di punta.  
Rend. Istituto Sper. Aer., Anno 10-Ser. 2<sup>a</sup>, N. 1 (15 feb. 1922), Roma, pp. 11-21, diagrs.
- VERMONT. Aviation progress in Vermont.  
Aviation, Vol. 13, No. 11 (Sept. 11, 1922), New York, p. 324.
- VERNEUIL,. Spontaneous ignition of hydrogen and aerostatic accidents.  
U. S. Air Service, Vol. 6, No. 6 (Jan. 1922), Washington, D. C., pp. 27-30.
- VERVILLE, ALFRED. Croydon, important center of British and French aircraft transportation.  
U. S. Air Service, Vol. 7, No. 8 (Sept. 1922), Washington, D. C., pp. 9-11.
- VIBRATION. *See* Morris, J.: The vibration of air-screw blades.
- VICKERS. A design for a new Vickers passenger carrier.  
Aer. Eng. Suppl. The Aeroplane, Vol. 22, No. 11 (Mar. 15, 1922), London, pp. 194-196, diagr.
- The Vickers "Vulcan" eight-passenger commercial biplane, 360-horsepower Rolls-Royce "Eagle VIII" engine.  
Flight, Vol. 14, No. 18 (May 4, 1922), London, pp. 253-528, ill., diagr.
- *See* Aeronautical Research Committee. Report No. 541.
- *See* Günther, O.: Der Vickers-Vulcan.
- VICTORY, J. F. National Advisory Committee for Aeronautics meets.  
U. S. Air Service, Vol. 7, No. 10 (Nov. 1922), Washington, D. C., p. 8.
- VIKING IV. Viking IV for naval aviation.  
Aviation, Vol. 12, No. 8 (Feb. 20, 1922), New York, p. 232, diagr.

VINCENT, J. G. The meet in Detroit and the Pulitzer race. Out of them will grow great national aviation body.

U. S. Air Service, Vol. 7, No. 8 (Sept. 1922), Washington, D. C., pp. 13-14.

— The trend of aviation development.

Aviation, Vol. 12, No. 2 (Jan. 9, 1922), New York, pp. 45-49.

Journ. Soc. Auto. Eng., Vol. 10 (Jan. 1922), New York, pp. 25-30.

VISSEERING, HARRY. Zeppelin. The story of a great achievement.  
Chicago, Wells and Company, 1922, pp. 118, ill.

VIVES, PEDRO. El globo "General Vives."

Iberica, No. 458 (30 dic. 1922), Tortosa, pp. 386-387, ill.

VIVIAN, E. C., and W. LOCKWOOD MARSH. A history of aeronautics.  
New York, Harcourt, Brace and Howe, 1922, ill.

VOGT, H. C., and A. BRUN. Flyvning uder motor.

Ingenieren, Vol. 31, No. 68-69 (Oct. 7, 1922), Copenhagen, pp. 415-420.

VOLMERANGE, A. Le material de la photographic aérienne.

L'Aéronautique, 4me année, No. 37 (juin 1922), Paris, pp. 179-186, ill.

— Les phares à grande portée en navigation aérienne.

Aéronautique, 4me année, No. 34 (mars 1922) Paris, pp. 67-74, ill.

— See Franck, P., et A. Volmerange: Le guidage des avions par câbles électriques.

VORTEX theory. See Aeronautical Research Committee. Report No. 752.

— See Glauert, H.: Some applications of the vortex theory of aerofoils.

VREEDE, D. De M. L. D. (Marine luchtvaartdienst).

Vliegveld, 6de Jaarg., No. 8 (Aug. 1922), Amsterdam, pp. 198-200, ill.

## W.

WACO. The Waco model 4.

Aerial Age, Vol. 15, No. 2 (Mar. 20, 1922), New York, pp. 32-34, ill.

WADDON. The air conference visit to Waddon.

Flight, Vol. 14, No. 6 (Feb. 9, 1922), London, pp. 81-82, ill.

WADE, V. M. Interior corrosion of steel struts and its prevention.

Air Service Information Circular, Vol. 4, No. 374 (Sept. 1, 1922), Washington, D. C., pp. 5, ill.

WAGNER, RUD. Propellerwirkung.

Luftweg, Nr. 6 (23. März 1922), Berlin, pp. 61-62.

— Die Zukunft der Luftfahrt.

Autom. Flugv., Nr. 4, 1922, Berlin, pp. 121-123.

Luftweg, Nr. 5 (9. März 1922), Berlin, pp. 51-53.

WALCOTT, CHARLES DOOLITTLE. Civil aviation and the Government.

Farnsworth's Fundamentals, April 1922, New York, pp. 3, 12, 19.

WALDO, J. B. Ramage gasoline process successful.

Automotive Manufacturer, Vol. 44, No. 3 (June 1922), New York, pp. 15, 28.

WALKER, JOHN. See Devillers, R.: The dynamics of the aeroplane. Translated by Capt. William John Walker.

WAMPUS-KAT. See Barnhart: The Barnhart twin 15 "Wampus-Kat."

WAR contracts. War contracts investigation.

Aviation, Vol. 12, No. 6 (Feb. 6, 1922), New York, p. 163.

WAR Department. War Department defines flying service. General Order No. 30 defines flying service in Army, Navy, Marine Corps, and Coast Guard.

Aviation, Vol. 13, No. 7 (Aug. 14, 1922), New York, pp. 186-187.

**WARNER, EDWARD P.** The aerodynamical laboratory of the M. I. T. Recent additions to two new wind tunnels greatly increase operating capacity of America's oldest research establishment.

Aviation, Vol. 12, No. 11 (Mar. 13, 1922), New York, pp. 308-310, ill.

— Airplane performance formulas.

Journ. Soc. Aut. Eng., Vol. 10, No. 6 (June 1922), New York, pp. 469-474, diagrs.; Vol. 11, No. 3 (Sept. 1922), p. 248.

— The choice of air routes.

Aerial Age, Vol. 15, No. 15 (June 19, 1922), New York, pp. 347, 350.

— Commercial use of airplanes.

Boston Soc. Civ. Engrs. Journ., Vol. 9, No. 10 (Dec. 1922), Boston, pp. 285-301, ill.

— The design of wing spar sections.

Aviation, Vol. 12, No. 22 (May 29, 1922), New York, pp. 626-627.

— Determination of surface area for airships.

Aviation, Vol. 12, No. 16 (Apr. 17, 1922), New York, pp. 450-451, diagr.

— European air travel in 1922.

Aerial Age, Vol. 15, No. 18 (Sept. 1922), New York, pp. 444-445, map.

Aeronautical Digest, Vol. 1, No. 6 (Sept. 1922), New York, pp. 74.

— The general design of commercial aircraft.

Aviation, Vol. 13, No. 20 (Nov. 13, 1922), New York, pp. 656-660, ill.

— Giant airplanes.

Aeronautical Digest, Vol. 1, No. 8 (Nov. 1922), New York, p. 210.

— Gliding experiments in Europe, 1922. An eyewitness review of the results achieved at the recent French and German gliding meets.

Aviation, Vol. 13, No. 13 (Sept. 25, 1922), New York, pp. 376-380, ill.

— The new Massachusetts aircraft law.

Aviation, Vol. 13, No. 22 (Nov. 27, 1922), New York, pp. 715-716.

— Report on the general design of commercial aircraft.

National Advisory Committee for Aeronautics, Technical Notes No. 113, Sept. 1922 (Mimeograph), Washington, pp. 19, ill.

— Stability of aeroplanes.

Aerial Age, Vol. 15, No. 16 (June 26, 1922), New York, p. 369.

— See National Advisory Committee for Aeronautics: Report No. 136. Damping coefficients due to tail surfaces in aircraft. By Linn Chu. Condensed and modified by Edward P. Warner.

**WARNER, JOHN A. C.** Altitude instruments. Part IV. Aerographs and strut thermometers.

National Advisory Committee for Aeronautics, Report No. 126, Aug. 4, 1922, Washington, Government Printing Office, 1922, pp. 54-64, ill.

— Direction instruments. Part III. Aircraft compasses--description and classification.

National Advisory Committee for Aeronautics, Report No. 129, Sept. 1, 1922, Washington, Government Printing Office, 1922, pp. 20-49, ill., table.

— Power-plant instruments. Part V. Gasoline depth gages and flow meters for aircraft.

National Advisory Committee for Aeronautics, Report No. 129, Sept. 30, 1922, Washington, Government Printing Office, 1922, pp. 63-72, ill.

**WARREN, W. H.** Timbers for aeroplane construction.

Australian Forestry Journal, Vol. 4 (Nov. 1921); Vol. 5 (Feb. 1922), Sydney, Australia, pp. 320-323, 52-55.

**WASHBURN, G. E.** Power-plant instruments. Part I. Airplane tachometers.

National Advisory Committee for Aeronautics, Report No. 129, Sept. 30, 1922, Washington, Government Printing Office, 1922, pp. 1-23, ill.

WASHINGTON conference. The Washington conference and aircraft. Report of the subcommittee on the limitation of aircraft as to numbers, characters, and use.  
*Aviation*, Vol. 12, Nos. 3, 5 (Jan. 16, 30, 1922), New York, pp. 69, 128-132.

WASSERKUPPE. *See* Sayers, W. H.: A visit to Wasserkuppe.

WATER starting. *See* Gaule, Kurt: Wasserstart zum Segelflug.

WEATHER Bureau. Weather Bureau and air service.

*Aviation*, Vol. 13, No. 3 (July 17, 1922), New York, p. 74.

WEAVER, E. R. Report of the static test of the Junker L-6 monoplane.

*Air Service Information Circular*, Vol. 4, No. 360 (Aug. 1, 1922, Washington, D. C., pp. 36), ill.

WEGENER, KURT. Ausblick.

*Zeitschr. Flugt. Motorl.*, 13. Jahrg., 19-20. Hft. (30. Okt. 1922), München, pp. 288-289.

— Die Flugstelle des Observatoriums Lindenbergs.

*Arbeiten Preuss. Aeron. Obsrv. bei Lindenbergs*, 14. Bd., 1922, pp. 162-167.

— Ueber Flugleistungsbestimmung.

*Zeitschr. Flugt. Motorl.*, 13. Jahrg., 10. Hft. (31. Mai 1922), München, pp. 135-137.

— Vom Fliegen.

München, R. Oldenbourg, 1922, pp. 104, ill.

Reviewed in: *Zeitschr. Flugt. Motorl.*, 13. Jahrg., 22. Hft. (15. Nov. 1922), München, p. 316.

WEINGARTEN, ADOLF. Ueber Festigkeitsuntersuchungen an Holz.

*Zeitschr. Flugt. Motorl.*, 13. Jahrg., 24. Hft. (30. Dez. 1922), München, pp. 338-343; ill.

WEISELBERGER, C. Zur Theorie des Tragflügels bei gekrümmter Flugbahn.

*Zeit. für angewandte Mathematik u. Mechanik*, Vol. 2, No. 5 (Oct. 1922), Berlin, pp. 325-340, ill.

WENDLAND. Der französische Segelflugwettbewerb.

*Zeitschr. Flugt. Motorl.*, 13. Jahrg., 15. Hft. (14. Aug. 1922), Berlin, p. 215.

WENK, F. Neuere Flugzeuge der Segelflugzeugwerke G. m. b. H., Baden-Baden.

*Zeitschr. Flugt. Motorl.*, 13. Jahrg., 15. Hft. (14. Aug. 1922), München, pp. 213-214.

WENTWORTH, R. PRESTON. Suggestion for aerial meteorological research.

*U. S. Air Service*, Vol. 7, No. 7 (Aug. 1922), Washington, D. C., p. 27.

WERNER, ERICH. Triebwerkanordnung und Flugsicherheit.

*Motorwagen*, 25. Jahrg., Heft 23 (20. Aug. 1922), Berlin, pp. 439-442.

WERNER, H. Deutsche Segelflüge und das Fernflug-Problem.

*Motorwagen*, 25. Jahrg., Heft 35 (20. Dez. 1922), Berlin, pp. 671-673.

WERNER V. LANGSDORFF. Das deutsche Luftschiff.

*Schiffbau*, Vol. 23, Nos. 31, 33, 39, 43, 44 (May 3, 17, June 28, July 26, Aug. 2, 1922), Berlin, pp. 940-942, 935-990, 1127-1132, 1185-1189, 1211-1217, ill.

— Der zweite Rhön-Wettbewerb.

*Luftfahrt*, Vol. 25, No. 9 (Sept. 1921), Berlin, pp. 151-156, ill.

WESTOVER. *See* National balloon race: Experiences in the national balloon race.

Interesting accounts by Major Westover, Ralph Upson, Lieutenant Reed, and Commander Norfleet.

WEST POINT. Aviation and West Point.

*Aviation*, Vol. 13, No. 7 (Aug. 14, 1922), New York, p. 190.

WEYL, ALFRED RICHARD. Ein amerikanischer Beitrag zur Lösung der Fahrgestellfrage.  
*Zeitschr. Flugt. Motorl.*, 13. Jahrg., 21. Hft. (15. Nov. 1922), München, pp. 297-298.

— Der englische Segelflug-Wettbewerb von Itford Hill.

*Zeitschr. Flugt. Motorl.*, 13. Jahrg., 23. Hft. (15. Dec. 1922), München, pp. 322-331, ill.

— Der französische Segelflug-Wettbewerb von Clermont Ferrand.

*Zeitschr. Flugt. Motorl.*, 13. Jahrg., 19-20. Hft. (30. Okt. 1922), München, pp. 289-296, ill.

- WEYL, ALFRED RICHARD. Die neuen englischen Festigkeitsvorschriften für Flugzeuge.  
Zeitschr. Flugt. Motorl., 13. Jahrg., 5. 18. Hft. (15. März, 30. Sept. 1922), Berlin, München,  
pp. 67-70, 251-253.
- WHEELS. See Tires: Discussion of airplane tires and wheels.
- WHITE, H. S. Speed and comfort on the hydroglider.  
Pop. Mech., Vol. 37, No. 2 (Feb. 1922), Chicago, pp. 243-245, ill.
- WHITE-SMITH, HENRY. The development of commercial airways.  
Flight, Vol. 14, No. 7 (Feb. 16, 1922), London, pp. 111-112.  
Inst. Transport Journ., Vol. 3, No. 3 (Mar. 1922), London, pp. 145-170.
- WHO'S who? See Gardner, Lester D.: Who's who in American aeronautics?
- WIBAULT. Französischer Metall-Doppeldecker Wibault.  
Flugsport, 14. Jahrg., Nr. 4-5 (15. März 1922), Frankfurt, pp. 61-62, ill.
- The Wibault night bomber. An interesting French all-metal aeroplane.  
Flight, Vol. 14, No. 2 (Jan. 12, 1922), London, pp. 21-22, diagr.
- See Ide, John Jay: The Wibault night bombing biplane. French two-seater  
fitted with 600-horsepower Renault engine has useful load to total weight ratio of  
52 per cent.
- WICHITA FALLS. The flying meet at Wichita Falls.  
Aviation, Vol. 12, No. 23 (June 5, 1922), New York, p. 668.
- WIECKING, E. H. Spore hunting is latest airplane sport.  
Illustrated World, Vol. 38 (Nov. 1922), Chicago, pp. 376-377, ill.
- WIESELSBERGER, C. Further information of the laws of fluid resistance.  
National Advisory Committee for Aeronautics, Technical Notes No. 121, Dec. 1922 (Mimeo-  
graph), Washington, pp. 8, diagrs.
- Manometer for recording air speed.  
Aerial Age, Vol. 15, No. 6 (Apr. 17, 1922), New York, pp. 131-132.
- New data on the laws of fluid resistance.  
National Advisory Committee for Aeronautics, Technical Notes No. 84, Mar. 1922 (Mimeo-  
graph), Washington, pp. 12, ill.
- Ueber den Einfluss der Modellaufhängung auf die Messungsergebnisse.  
Zeitschr. Flugt. Motorl., 13. Jahrg., 13. Hft. (15. Juli 1922), München, pp. 188-191.
- WILBUR WRIGHT lecture. See Ogilvie, A.: Wilbur Wright lecture. Some aspects of  
aeronautical research.
- WILHELM, R. M. See Mueller, E. F., and R. M. Wilhelm: Power-plant instruments.  
Part III. Thermometers for aircraft engines.
- WILLIAMS, KENNETH P. Dynamics of the airplane.  
New York, John Wiley & Sons (Inc.), 1922.
- WILLIS, B. See Johnson, D.: Aerial observation of physiographic features; reply to  
B. Willis.
- WILSON, E. Airplanes for forest work.  
American Forestry, Vol. 28 (Apr. 1922), Washington, D. C., p. 199.
- Forest mapping and estimating.  
Journal of Forestry, Vol. 20 (Feb. 1922), Washington, D. C., pp. 113-116, map.
- WILSON, EDWIN BIDWELL. Aeronautics—A class text.  
New York, John Wiley & Sons (Inc.), 1922.
- WILSON, E. G. Aeronautic progress in Canada.  
Aerial Age, Vol. 15, No. 19 (Oct. 1922), New York, p. 505.
- WILSON, ELWOOD. Forest mapping and estimating from the air. Brief account of  
an aerial timber survey carried out in the Canadian woods by a crew of four men.  
Aviation, Vol. 12, No. 19 (May 8, 1922), New York, pp. 538-539, ill., map.

- WILSON, HENRY. Sir Henry Wilson.  
Aeroplane, Vol. 22, No. 26 (June 28, 1922), London, p. 453.
- WILSON, L. J. Mapping New York City from the air.  
Illustrated World, Vol. 36 (Feb. 1922), Chicago, pp. 839-840, ill., diagr., map.
- WILSON, ROBERT E., and DANIEL P. BARNARD. The mechanism of lubrication.  
Journ. Soc. Aut. Eng., Vol. 11, No. 1 (July 1922), New York, pp. 49-60.
- The measurement of the property of oiliness.  
Journ. Soc. Aut. Eng., Vol. 11, No. 2 (Aug. 1922), New York, pp. 143-157, ill.
- WIMPERIS, H. The internal-combustion engine; a textbook for the use of students and engineers.  
London, Bombay, and Sydney, Constable & Co. (Ltd.), 1922, pp. xvi +320. 4th edition revised and enlarged.
- WIND. See Georgii, Walter: Ueber Windbeeinflussung durch Gebirge.
- WIND balance. See National Advisory Committee for Aeronautics: Report No. 146. The six-component wind balance.
- WIND indicators. See "A. G. A.": The "A. G. A." automatic wind indicator and ground sign.  
— See Arlington: Wind indicator at Arlington.
- WIND tunnels. Large French wind tunnel tests airplane models.  
Pop. Mech., Vol. 38, No. 5 (Nov. 1922), Chicago, p. 721, ill.
- New outdoor wind tunnel.  
Scient. Amer., Vol. 127 (Aug. 1922), New York, p. 93, ill.
- See Bacon, D. L.: Langley Field wind tunnel motor regulator. N. A. C. A. develops motor regulator which practically solves problem of constant propeller speed in wind tunnel.
- See Morse, C. L.: Report of wind-tunnel test of DH-4B model.
- See National Advisory Committee for Aeronautics: Technical Notes No. 81. Langley Field windt-unnel apparatus. Part I. Regulators for speed of wind-tunnel drive motor. Part II. A vernier manometer with adjustable sensitivity.
- See Paul, G. F.: Wind tunnel for testing tiny planes.
- See Priestley, B. G.: New type wind tunnel for airplane testing.
- WINDS. See Torahiko Terada, and Tatuo Kobayasi: On the diurnal variation of winds in different coastal stations of Japan.
- WING coverings. Effect of climate on standard airplane-wing coverings.  
Air Service Information Circular, Vol. 4, No. 384 (Nov. 1, 1922), Washington, D. C., pp. 11, ill.
- WING models. New method of making wing models.  
Aviation, Vol. 12, No. 25 (June 19, 1922), New York, p. 726.
- WINGS. Aeroplane will carry suspended wing in test.  
Aerial Age, Vol. 15, No. 7 (Apr. 24, 1922), New York, p. 151.
- Airplane will carry suspended wing in test.  
U. S. Air Service, Vol. 7, No. 3 (Apr. 1922), Washington, D. C., p. 25.
- Airplane wing of bird like lines.  
Scienc. Amer., Vol. 126 (May 1922), New York, p. 341.
- Flight testing suspended wings.  
Aviation, Vol. 12, No. 19 (May 8, 1922), New York, p. 540.
- The flow round a slotted wing.  
Aer. Eng., Suppl. The Aeroplane, Vol. 22, No. 23 (June 7, 1922), London, p. 410, ill.

- WINGS. Flow tests on slotted aerofoils. Some experiments carried out by Herr Lachmann at Göttingen.  
 Flight, Vol. 14, No. 22 (June 1, 1922), London, pp. 315-316, ill., diagr.
- Flying a "slotted-wing" machine.  
 Aer. Eng. Suppl. The Aeroplane, Vol. 23, No. 21 (Nov. 22, 1922), London, p. 399, diagr.
- Small French airplane has demountable wings.  
 Pop. Mech., Vol. 37, No. 1 (Jan. 1922), Chicago, p. 45, ill.
- Thin wing *v.* thick wing.  
 Aviation, Vol. 13, No. 17 (Oct. 23, 1922), New York, p. 541.
- Variable area wings and tandem wings.  
 Aviation, Vol. 12, No. 3 (Jan. 16, 1922), New York, p. 77.
- Which is the "best" wing section for a glider? Some fundamental considerations in choice of an aerofoil.  
 Flight, Vol. 14, No. 40 (Oct. 5, 1922), London, pp. 577-578.
- See Aeronautical Research Committee.
- See Aeronautical Research Committee: Report No. 767.
- See Betz, A.: Theory of the slotted wing.
- See Bille: Avion à surface variable Bille.
- See Glauert, H.: The calculation of the characteristics of tapered wings.
- See Dacy, G. H.: Taking the error out of airplane wings.
- See Eiffel, Gustave: Méthode permettant, pour les assais de ailes d'avions, au laboratoire Eiffel . . .
- See Glauert, H.: Some applications of the vortex theory of aerofoils.
- See National Advisory Committee for Aeronautics: Report No. 140. Lift and drag effects of wing-tip rake.
- See National Advisory Committee for Aeronautics: Report No. 142. General theory of thin wing sections.
- See National Advisory Committee for Aeronautics: Technical Notes No. 109. The twisted wing with elliptic plan form.
- See Norton, Frederick Harwood: A new method for testing aerofoils in free flight.
- See Reynolds, R.: The case for the slotted wing.
- See Toussaint: Application de la théorie des tourbillons à l'aérodynamique des ailes sustentatrices.
- See Warner, E. P.: The design of wing spar sections.
- See Betz, A.: Theory of the slotted wing.
- WINTERS, S. R. Aerial survey of the Mississippi Delta. One of the biggest undertakings of civil aerial photography recently brought to successful conclusion.  
 Aviation, Vol. 12, No. 4 (Jan. 23, 1922), New York, pp. 103-104, ill.
- Air Service tests new instruments. Rate of climb indicator, bubble statoscopes, and new barograph tested in balloon flights.  
 Aviation, Vol. 12, No. 26 (June 26, 1922), New York, pp. 755-756, ill.
- Forest-fire patrol by airplane and radio. Eighty-seven radio-equipped airplanes now in forest-fire-prevention service.  
 Aviation, Vol. 13, No. 10 (Sept. 4, 1922), New York, pp. 282-283, ill.
- New helium research laboratory.  
 Gas Age, Vol. 48 (Dec. 31, 1921), New York, pp. 831-882, ill.

**WINTERS, S. R.** School for photographers of the air.

Illustrated World, Vol. 37 (Aug. 1922), Chicago, pp. 853-855, ill.

**WIRE cables.** See Moore, R. R.: A study of the elastic properties of small-size wire cable.

**WIRELESS.** The wireless equipment of aircraft.

Engineer, Vol. 135, No. 3504 (Feb. 28, 1923), London, pp. 192-196, ill.

— Wireless for transport service.

Aer. Eng. Suppl. The Aeroplane, Vol. 22, No. 21 (May 24, 1922), London, p. 374.

— Wireless position-finding for aircraft.

Flight, Vol. 14, No. 21 (May 25, 1922), London, p. 299.

**WISSENSCHAFTLICHE** Gesellschaft für Luftfahrt, Festsitzung anlässlich des zehnjährigen Bestehens der Wissenschaftlichen Gesellschaft für Luftfahrt.

Zeitschr. Flugt. Motorl., 13. Jahrg., 11. Hft. (15. Juni 1922), München, pp. 151-156.

**WOLFF, E. B.** Kort overzicht over de ontwikkeling van het luchtverkeer, met inleiding tot het bezoek aan den Rijks Studiedienst voor de luchtvaart.

Ingenieur, Vol. 36, No. 52 (Dec. 24, 1921), The Hague, pp. 1022-1031, ill.

— Standardization and aerodynamics.

Aerial Age, Vol. 15, No. 15 (June 19, 1922), New York, pp. 346-347.

**WOOD, MCKINNON.** The corelation of model and full-scale work.

Aeron. Journ., Vol. 26, No. 144 (Dec. 1922), London, pp. 480-501.

**WOODHOUSE, H.** Where's the glider taking us?

Illustrated World, Vol. 38 (Dec. 1922), Chicago, pp. 505-507, ill.

**WOODS.** See National Advisory Committee for Aeronautics: Technical Notes No. 78.

Impact tests for woods.

**WORLD flight.** The flight around the world.

Aeronautical Digest, Vol. 1, No. 6 (Sept. 1922), New York, pp. 72-73, ill., map.

— The flight around the world. Major Blake's and Captain Macmillan's attempt.

Flight, Vol. 14, No. 19 (May 11, 1922), London, p. 274.

— Round-the-world flight.

Aviation, Vol. 12, No. 26 (June 26, 1922), New York, p. 756; Vol. 13, No. 7 (Aug. 14, 1922), p. 192.

— Round-the-world flight. Farewell luncheon to aviators.

Flight, Vol. 14, No. 21 (May 25, 1922), London, p. 298, ill.

— The round-the-world proposition.

Aeroplane, Vol. 22, No. 21 (May 24, 1922), London, p. 366.

— Round the world in a seaplane.

Aer. Eng. Suppl. The Aeroplane, Vol. 23, No. 7 (Aug. 16, 1922), London, p. 130.

— The seaplane flight around the world. Fairey seaplane with Rolls-Royce "Condor" to be used.

Flight, Vol. 14, No. 32 (Aug. 10, 1922), London, p. 458.

— The world flight abandoned.

Flight, Vol. 14, No. 35 (Aug. 31, 1922), London, p. 494.

— See Frazar, E. W.: Around-the-world flight.

**WRAGG.** The Wragg compound aerofoil.

Aviation, Vol. 12, No. 14 (Apr. 3, 1922), New York, p. 401.

**WRIGHT.** New Wright engines for naval aviation.

Aviation, Vol. 13, No. 5 (July 31, 1922), New York, pp. 124-125, ill.

— Scandal of the first man-carrying airplane.

Current Opinion, Vol. 72 (Mar. 1922), New York, pp. 373-376, ill.

**WRIGHT.** Wright ou Langley?

L'Aérophile, 30e année, Nos. 1-2 (1er-15 janv. 1922), Paris, p. 11, ill.

**WRIGHT, ORVILLE.** Possibilities of soaring flight.

U. S. Air Service, Vol. 7, No. 11 (Dec. 1922), Washington, D. C., pp. 7-9, ill.

**WRIGHT, ORVILLE, and WILBUR WRIGHT.** Early history of the airplane.  
Dayton, Ohio, Dayton-Wright Airplane Co., 1922, pp. 24.

**WRIGHT, WILBUR.** The tenth Wilbur Wright lecture.

Aer. Eng. Suppl. The Aeroplane, Vol. 22, No. 25 (June 21, 1922), London, pp. 443-446.

— See Wright, Orville, and Wilbur Wright: Early history of the airplane.

**WRIGHT Aeronautical Corporation.** Wright Aeronautical Corporation shows profits.  
Second report to stockholders of Paterson firm shows substantial increase in earnings.

Aviation, Vol. 12, No. 14 (Apr. 3, 1922), New York, p. 397.

**WRIGHT BROS.** See Langley, Samuel Pierpont: The Wright-Langley controversy.

**WRIGHT engine.** The Wright 6-cylinder airship engine.

Aviation, Vol. 2, No. 18 (May 1, 1922), New York, pp. 504-505, ill.

— See Mead, George J.: The Wright dirigible engine and its development for the Navy.

**WRIGHTS.** See Loening, Grover C.: The significance of the early work of the Wright Bros.

**WRITING.** The writing in the sky.

Flight, Vol. 14, No. 23 (June 8, 1922), London, p. 330.

— Writing in the sky. Something more than an advertising stunt.

Flight, Vol. 14, No. 33 (Aug. 17, 1922), London, p. 475.

— See R. L.: Des avions écrivent dans le ciel . . .

**WRONSKY, M.** Drei Jahre Luftverkehr.

Zeitschr. Flugt. Motorl., 13. Jahrg., 2. Hft. (31. Jan. 1922), Berlin, pp. 17-22, ill.

— Flugpläne.

Zeitschr. Flugt. Motorl., 13. Jahrg., 17. Hft. (15. Sept. 1922), Berlin, pp. 239-242.

**WYMAN, W. W.** Aeronautical conditions on the Pacific coast. Review of impressions gathered on three-month inspection trip just completed.

U. S. Air Service, Vol. 7, No. 4 (May 1922), Washington, D. C., pp. 11-13.

— Organizing a successful meet.

Aerial Age, Vol. 15, No. 18 (Sept. 1922), New York, p. 453.

## X.

**X-RAY.** The X-ray inspection of aircraft material.

Aer. Eng. Suppl. The Aeroplane, Vol. 22, No. 12 (Mar. 22, 1922), London, p. 210.

## Y.

**YOUNT, B. K.** The Air Service and National Guard. Statement of policy regarding Reserve Air Service officers.

Aviation, Vol. 13, No. 19 (Nov. 6, 1922), New York, pp. 628-629.

## Z.

**ZR-1.** The United States Navy airship ZR-1. Detailed description of America's first rigid airship now under construction.

Aviation, Vol. 13, No. 9 (Aug. 28, 1922), New York, pp. 254-256, ill.

— See Brunner, Frank J.: Navy's own airship under construction. Design, structure, material, and gas in ZR-1 all made in America.

ZR-3. Building the *ZR-3*.

Aviation, Vol. 13, No. 5 (July 31, 1922), New York, p. 132, ill.

— *See Helium: Helium and the ZR-3.*

**ZAHM, ALBERT FRANCIS, R. H. SMITH, and G. H. HILL.** The drag of C class airship hull with varying length of cylindric midships.

National Advisory Committee for Aeronautics, Report No. 138, Apr. 3, 1922, Washington, Government Printing Office, 1922, pp. 10, diagrs.

**ZAHM, ALBERT FRANCIS.** Influence of model surface and air flow texture on resistance of aerodynamic bodies.

National Advisory Committee for Aeronautics, Report No. 139, Mar. 19, 1922, Washington, Government Printing Office, 1922, pp. 6.

**ZAHM, ALBERT FRANCIS, R. M. BEAR, and G. C. HILL.** Lift and drag effects of wing-tip rake.

National Advisory Committee for Aeronautics, Report No. 140, May 3, 1922, Washington, Government Printing Office, 1922, pp. 9, diagrs., table.

**ZAHM, ALBERT FRANCIS, R. H. SMITH, and G. C. HILL.** Point drag and total drag of Navy struts No. 1 modified.

National Advisory Committee for Aeronautics, Report No. 137, May 18, 1922, Washington, Government Printing Office, 1922, pp. 15, ill., diagrs., tables.

**ZAHM, ALBERT FRANCIS** The six-component wind balance.

National Advisory Committee for Aeronautics, Report No. 146, Aug. 18, 1922, Washington, Government Printing Office, 1922, pp. 12, ill., diagrs.

## — Standardization and aerodynamics.

Aerial Age, Vol. 15, No. 18 (Sept. 1922), New York, pp. 445, 474.

**ZANOTTI.** Velo-aviette Maggiore Zanotti.

Flugsport, 14. Jahrg., Nr. 4-5 (15. März 1922), Frankfurt, p. 62, ill.

**ZEPPELIN.** *See* Vissering, Harry: Zeppelin—The story of a great achievement.

**ZEPPELIN L-59.** The African cruise of Zeppelin L-59. German naval airship made 4,250-mile voyage to succor beleaguered German force in East Africa.

Aviation, Vol. 13, No. 5 (July 31, 1922), New York, p. 126.

**ZEPPELINS.** New Zeppelin for United States Navy.

Aviation, Vol. 12, No. 2 (Jan. 9, 1922), New York, p. 44.

— *See Africa: The African cruise of Zeppelin L-59.*— *See* Meyer, E.: Grossflugzeuge der Zeppelinwerke Staaken.

**ZINC.** How to paint on zinc.

Automotive Manufacturer, Vol. 64, No. 7 (Oct. 1922), New York, p. 22.

**ZOPPI, C. BERLIRI.** Legislazione nazionale ed internazionale.

Gazz. Aviaz., 1922, Anno 4, No. 35, Milano, pp. 2-3.

**ZURICH.** *See* Eisenlohr, Roland: Erfolge deutscher Flugzeuge beim Flugmeeting in Zurich.

