SEP 9 '54

N-16173 B

SUPPLEMENT TO NBS CIRCULAR 509

AD-A278 213

Bibliography of Books and Published Reports on Gas Turbines, Jet Propulsion, and Rocket Power Plants

January 1950 through December 1953

COPY 1

DTIC
ELECTE
APR 0 4 1994
S E D

LIBRARY COPY

94-10019

UNITED STATES DEPARTMENT OF COMMERCE

NATIONAL BUREAU OF STANDARDS

Approved for public release
Distribution Unlimited

94 4 1 075

UNITED STATES DEPARTMENT OF COMMERCE • Sinclair Weeks, *Secretary*
NATIONAL BUREAU OF STANDARDS • A. V. Astin, *Director*

Bibliography of Books and Published Reports on Gas Turbines, Jet Propulsion, and Rocket Power Plants

January 1950 through December 1953

Ernest F. Fiock and Carl Halpern

Accesion For	
NTIS CRA&I	X
DTIC TAB	☐
Unannounced	☐
Justification	
By	
Distribution /	
Availability Codes	
Dist	Avail and / or Special
A-1	

Supplement to National Bureau of Standards Circular 509

Issued July 2, 1954

For sale by the Superintendent of Documents, U. S. Government Printing Office
Washington 25, D. C. - Price 50 cents

Preface

This Supplement to Circular 509 extends the period covered by the latter through December 1953, with an overlap of one year. Approximately 5,000 references to sources of information on gas turbines and jet propulsion that have been published in the last four years are included, as are some earlier reports that were originally classified for reasons of military security. To facilitate use of the bibliography, the references have been arranged according to their content.

Most of this literature survey has been made in the course of a broad program of combustion chamber research sponsored by the Bureau of Aeronautics, Department of the Navy.

A. V. Astin, Director.

Contents

	Page
Preface	II
Scope and arrangement of the bibliography	1
Bibliography	2
100. Books through December 1953	2
101. Gas turbines and jet power plants	2
102. Atomic power	4
200. Periodical reports through December 1953	5
201. Jet propulsion	5
201.1 Development and future role	5
201.2 Theory and performance calculations	7
202. Turbojet and propjet engines	11
202.1 American engines	11
202.2 British engines	13
202.3 Engines of other nations	14
202.4 Engine accessories and control	15
202.5 Installation and maintenance	18
202.6 Air intake and exhaust gas discharge systems	19
202.7 Fuels and lubricants	20
202.8 Instrumentation and testing	22
209.9 General	27
203. Other types of gas turbines	28
203.1 For locomotives	28
203.2 For ships	30
203.3 For miscellaneous applications	31
203.4 General	35
204. Intermittent or pulsejets	37
205. Ramjets	38
206. Rockets	39
206.1 Liquid-propellant rockets and fuels	39
206.2 Rocket assist	42
206.3 General	42
207. Engine components	46
207.1 Combustion and combustion chambers	46
207.2 Fuel nozzles, jets, and sprays	50
207.3 Compressors and their components	50
207.4 Turbines and their components	56
208. Compound engines	60
209. Thrust augmentation	61
210. Engine noise	62
211. Metallurgy and fabrication	63
212. Ceramics and metal-ceramics	70
213. Aerodynamic factors	73
214. Thermal properties of working media	74

Bibliography—Continued

200. Periodical reports through December 1953—Continued — Page

215. Jet-, turbine-, and rocket-propelled aircraft — 76
- 215.1 American military aircraft — 76
- 215.2 British military aircraft — 80
- 215.3 Russian military aircraft — 83
- 215.4 Military aircraft of other nations — 85
- 215.5 Civilian or transport aircraft — 86
- 215.6 Tactical, operational, and navigational problems — 91
- 215.7 Helicopters powered by turbines and jets — 93
- 215.8 General — 95

216. Guided missiles and drones — 98

217. Anti-icing — 100

218. Interplanetary considerations — 101

219. Test facilities — 104

220. Research programs — 106

221. Atomic power — 107

222. Miscellaneous — 108

Bibliography of Books and Published Reports on Gas Turbines, Jet Propulsion, and Rocket Power Plants

January 1950 Through December 1953

Ernest F. Fiock and Carl Halpern

SCOPE AND ARRANGEMENT OF THE BIBLIOGRAPHY

The topical subdivisions and the periods covered in this bibliography are shown in the table of contents. Each subdivision is arranged chronologically, and within the chronological sections the arrangement is alphabetical by author, followed by anonymous articles. For greater convenience in use, the number of topical subdivisions has been increased somewhat over the number used in the parent Circular.

The journal abbreviations are those employed in Chemical Abstracts, except that letters are used for the names of familiar organizations and societies, *viz.* NACA for National Advisory Committee for Aeronautics; ASME for American Society of Mechanical Engineers; ASTM for American Society for Testing Materials; and SAE for Society of Automotive Engineers. Volume numbers are in bold-faced type, and the date of issue is given where page numbers do not run consecutively throughout a given volume. Since the year of issue appears at the head of each chronological section, this is repeated in the individual references only when publication was in more than one year.

References made to unpublished papers presented before various Societies are designated by the abbreviations M. P. for Meeting Paper or Pre. for preprint. These may, in some instances, be purchased from the New York headquarters of the society concerned.

BIBLIOGRAPHY

100. BOOKS THROUGH DECEMBER 1953

101. GAS TURBINES AND JET POWER PLANTS

1946

B. Hamlin, Flight testing conventional and jet propelled airplanes. Macmillan, New York.

1949

R. Bidard Thermopropulsion des avions, turbines à gaz et compresseurs aviaux. Gauthier-Villars, Paris.

P. Chambadal, Thermodynamique de la turbine à gaz. Hermann et Cie, Paris.

C. H. Chatfield, C. F. Taylor, and S. Ober, The airplane and its engine. McGraw-Hill, New York.

Internal combustion turbines. ASME, New York.

1950

A. Ananoff, L' astronautique. Librairie Artheme Fayard, Paris.

C. M. Bolster, The assisted take-off of aircraft. James Jackson Cabot Fund Publication No. 9, Norwich University, Northfield, Vt.

J. V. Casamassa, Jet aircraft power systems. McGraw-Hill, New York.

C. C. Chapel, Jet aircraft simplified. Aero Pubs. Inc., Los Angeles.

V. C. Finch, Jet propulsion turboprops. National Press, Millbrae, Calif.

M. Fishenden and O. A. Saunders, An introduction to heat transfer. Clarendon Press, Oxford, England.

R. Friedrich, Gas turbinen mit Gleichdruckverbrennung. G. Braun, Karlsruhe, Germany.

F. W. Godsey, Jr., and L. A. Young, Gas turbines for aircraft. McGraw-Hill, New York.

A. W. Judge, Modern gas turbines. 1st ed. 1947; 2d ed. Chapman and Hall, London, 1950.

L. Laming, L' astronautique. Presses Universitaires de France, Paris.

E. H. Lewitt, Thermodynamics applied to heat engines. 4th ed. Pitman, London.

J. J. McMullin, Wahl und Entwurf einer Gasturbine und Untersuchung ihrer Eignung zum Antrieb eines Fractschiffes. Verlag Leemans, Zürich, Switzerland.

L. E. Neville, Aircraft designers' data book. McGraw-Hill, New York.

E. F. Obert, Internal combustion engines. 2d ed. International Textbook Co., Scranton, Pa.

A. Pope, Aerodynamics of supersonic flight. Pitman, New York.

W. Proell and N. J. Bowman, A handbook of space flight. Perastadion Press, Chicago.

R. Schlaifer and S. D. Heron, Development of aircraft engines and aviation fuels. Harvard Business School, Boston.

Y. I. Shnee, Theory of gas turbines. State Science Technical Pub., Moscow.

B. G. A. Skrotzki and W. A. Vopat, Steam and gas turbines. McGraw-Hill, New York.

E. T. Vincent, The theory and design of gas turbines and jet engines. McGraw-Hill, New York.

R. J. Welsh, Gas turbines for industrial power. Technical Press, Kingston Hill, Surrey, England.

R. N. Wimpress, Internal ballistics of solid-fuel rockets. McGraw-Hill, New York.

H. G. Wintersteen, Jet propulsion. International Textbook Co., Scranton, Pa.

G. S. Zhiritskii, Aviation gas turbines. Oborongiz, Moscow.

Symposium on turbine oils (Special technical publication No. 105). ASTM, Philadelphia.

1951

A. C. Clark, Interplanetary flight; an introduction to astronautics. Temple Press, London, 1950; Harper & Bro., New York, 1951.
J. Coggins and F. Pratt, Rockets, jets, guided missiles and space ships. Random House, New York.
H. Cohen and G. F. C. Rogers, Gas turbine theory. Longmans, Green & Co., London.
C. B. Colby, Our fighting jets. Coward-McCann, New York.
D. C. Cooke and M. Caidin, Jets, rockets and guided missiles. McBride, New York.
F. P. Durham, Aircraft jet powerplants. Prentice-Hall, New York.
A. Gazarin, Graphische Behandlung der kompressiblen und inkompressiblen Strömung durch Turbomaschinenstufen. Verlag Leemans, Zürich, Switzerland.
N. A. Hall, Thermodynamics of fluid flow. Prentice-Hall, New York.
W. F. Hilton, High-speed aerodynamics. Longmans, Green & Co., New York, London and Toronto.
C. P. Lent, Rocketry and jet-propulsion. Pen-Ink Pub., New York.
B. Lewis and G. von Elbe, Combustion, flames and explosions of gases. 1st Ed. Cambridge Univ. Press, London, 1938; 2d ed. Academic Press, New York, 1951.
W. Ley, Rockets, missiles, and space travel. Viking Press, New York.
L. C. Lichty, Internal-combustion engines. 6th ed. McGraw-Hill, New York.
J. F. Marberger, Space medicine, the human factor in flights beyond the earth. University of Illinois Press, Urbana.
M. Neurath, Rockets and jets. Max Parrish and Co., London.
E. C. Roberson, The industrial gas turbine. Temple Press, London.
F. X. Ross, Guided missiles. Lothrop, Lee and Shephard, New York and Boston.
F. A. F. Schmitt, Verbrennungs Kraftmaschinen. R. Oldenbourg, Munich.
G. G. Smith, Gas turbines and je propulsion. 5th ed. Rev. Iliffe & Sons, London; Aircraft Books, New York.
H. A. Sorenson, Gas turbines. Ronald Press, New York.
W. R. Thomson, Fundamentals of gas turbine technology. George Ovev Ltd., Rugby, England.
J. G. Vaeth, 200 miles up. Ronald Press, New York.
R. J. Welsh, Gas turbines for industrial power. Anglobooks, New York; Temple Press, London.
R. J. Welsh and G. Waller, The gas turbine manual. Temple Press, London.
ASME gas turbine power division, Bibliography on gas turbines. ASME, New York.
Gas turbine plant heat exchangers. ASME, New York.

1952

E. Burgess, Rocket propulsion, with an introduction to the idea of interplanetary travel. Chapman & Hall, London.
M. Caidin, Rockets beyond the earth. McBride, New York.
L. J. Carter, The artificial satellite; proceedings of the 2d International Conference on Aeronautics, London, 1951; Brit. Interplanet. Soc., London, 1952.
P. Chambadal, Les machines thermiques. Librairie Armand Colin, Paris.
A. C. Clarke, The exploration of space. Harper & Bro., New York.
J. Coggins and F. Pratt, By space ship to the moon. Random House, New York.
C. B. Colby, Jets of the world. Coward-McCann, New York.
W. Dornberger, V2-der Schuss ins Weltall. Bechtle Verlag, Esslingen.
G. M. Dusinberre, Gas turbine power. International Textbook Co., Scranton, Pa.
K. Gatland, Development of the guided missile. Philosophical Library, New York; Iliffe and Sons, London.
P. W. Gill, Gas turbines and jet propulsion, including rocket, hydrogen peroxide, and nuclear power plants: theory and application. U. S. Naval Institute, Annapolis, Md.
P. W. Gill, J. H. Smith, and E. J. Ziurys, Fundamentals of internal combustion engines. U. S. Naval Institute, Annapolis, Md.
J. C. Hunsakser, Aeronautics at the midcentury. Yale University Press, New Haven, Conn.
J. Kruschik, Die Gasturbine, Verlag Springer, Vienna.
G. Lavoisier, Moteurs à reaction. Technique et Vulgarization, Paris.
C. Pfleiderer, Strömungsmaschinen. Springer-Verlag, Berlin.
F. D. Rossini, et al, Selected values of chemical thermodynamic properties. Nat. Bur. Standards Circular 500.
C. Ryan, Across the space frontier. Viking Press, New York.

C. R. H. Simpson and F. B. Roberts, Locomotives and their workings, with a section on gas turbine, diesel, and electric locomotives. Virtue & Co., London.
M. L. Smith and K. W. Stinson, Fuels and combustion. McGraw-Hill, New York.
J. Stemmer, Raketenantriebe. Schweitzer Druck- und Verlaghaus, Zurich, Switzerland.
W. von Braun, Das Marsprojekt, Studie einer interplanetarischen Expedition. Umschau Verlag, Frankfort am Main.
C. S. White, Physics and medicine of the upper atmosphere. University of New Mexico Press, Albuquerque.
R. F. Yates, Model jets and rockets for boys. Harper & Bro., New York.
A symposium on high-temperature steels and alloys for gas turbines, London, Feb. 21–22, 1951. The Iron and Steel Institute, London.
Gas turbine progress report. ASME, New York.
Handbook of supersonic aerodynamics. John Hopkins University, Applied Physics Lab. (Bureau of Ordnance Navord. Rept. No. 1488), Govt. Printing Office, Washington, vols. 1 and 2, 1950; vols 3 and 4, 1952.
Jane's all the world's aircraft. (Issued annually). McGraw-Hill, New York; Sampson Low Marston, London.

1953

E. Burgess Rocket propulsion. Macmillan, New York.
P. Chambadal, Les diagrammes enthalpie-entropie: Application à l'air et aux gaz de combustion. Dunod, Paris.
C. L. Clark, High-temperature alloys. Pitman, London.
H. Constant, Gas turbines and their problems, revised edition. Todd Publishing Group, London; G. G. Harrap & Co., London.
N. Duke and E. Lanchberry, Sound barrier. Cassel and Co., London.
A. G. Gaydon and W G. Wolfhard, Flames, their structure, radiation and temperature. Chapman and Hall, London.
E. M. Goodger, Petroleum and performance in internal combustion engines. Butterworth Scientific Publications, London.
B. H. Jennings and W. L. Rogers, Gas turbine analysis and practice. McGraw-Hill, New York.
D. Küchemann and J. Weber, Aerodynamics of propulsion. McGraw-Hill, New York.
P. Lefort, *Turbines à gaz et reacteurs.* Libraire Larousse, Paris.
J. Liston, Power plants for aircraft. McGraw-Hill, New York.
A. Morely, Aircraft propulsion. Longmans, Green & Co., New York.
R. Schwartzkopf and R. Kieffer, Refractory hard metals. Macmillan, New York.
M. Seiliger, Moteurs et turbines à combustion interne. Dunod, Paris.
A. H. Shapiro, The dynamics and thermodynamics of compressible fluid flow. Ronald Press Co., New York.
W. von Braun, F. L. Whipple, and W. Ley, Conquest of the moon. Viking Press, New York.
P. H. Wilkinson, Aircraft engines of the world. Issued annually since 1946. P. H. Wilkinson, New York.
Jane's all the world's aircraft 1953–54. McGraw-Hill, New York.

102. ATOMIC POWER

1950

A.L. Dixon, Atomic energy for the layman. Chantry Publications, London.
L. A. Du Bridge and P. C. Aebersold, Power from the atom. Murray & Gee, Culver City, Cal.
F. Gaynor, Rocket encyclopedia of atomic energy. Philosophical Lib., New York.
R. W. Hallows, Atoms and atomic energy. Chapman & Hall, London.
F. Kirchwey, Atomic era—can it bring peace and abundance? McBride, New York.
E. Pollard and W. L. Davidson, Applied nuclear physics. Wiley, New York.
S. H. Schurr and J. Marschak, Economic aspects of atomic power. Princeton University Press, Princeton, N. J.
M. H. Shamos and S. G. Roth, Industrial and safety problems of neuclear technology. Harper & Bro., New York.
G. Wendt, Atomic energy and the hydrogen bomb. McBride, New York.
The effects of atomic weapons. McGraw-Hill, New York.

1951

L. Del Rey, It's your atomic age. Abelard Press, New York.
K. Fearnside, E. W. Jones, and E. N. Shaw, Applied atomic energy. Temple Press, London.
A. B. Gorbman, Our atomic heritage. University of Florida Press, Gainesville, Fla.
B. W. Leyson, Atomic energy in war and peace. E. P. Dutton, New York.
J. Sacks, Atom at work. Ronald Press, New York.

1952

S. Glasstone, Sourcebook on atomic energy. D. Van Nostrand, New York.
S. Glasstone and M. C. Edlund, The elements of nuclear reactor theory. D. Van Nostrand, New York.
W. Isard and V. H. Whitney, Atomic power, an economic and social analysis. Blakiston, Philadelphia.
Harwell: the British atomic energy research establishment, 1946–51. Her Majesty's Stationary Office, London.

1953

G. E. Dean, Report on the atom. A. A. Knopf, New York.
R. W. Hallows, Atoms and atomic energy. Anglobooks, New York; Chapman & Hall, London.
H. S. Massey, Atoms and energy. British Book Center, New York; Elek Books, London.
R. R. Nimmo, Atomic energy. Anglobooks, New York; Chapman & Hall, London.

200. PERIODICAL REPORTS, JANUARY 1950 THROUGH DECEMBER 1953

201. JET PROPULSION

201.1 Development and Future Role

1950

H. T. Chapman, Development of a gas turbine. Hawker Siddeley Rev. **3**, 3 (Sept.).
H. Constant, The gas turbine in perspective. Inst. Mech. Engrs. (London), J. and Proc. **163**, 185.
E. V. Lazar and R. E. Johnson, Do we need turboprops? Aeronaut. Eng. Rev. **9**, 30 (July).
W. V. Hurley, Turbojet engine design for high-speed flight. ASME M. P. No. 50–A–130.
R. P. Kroon, The jet engine comes of age. Westinghouse Engr. **10**, 194 (Sept.); Aero Dig. **61**, 40 (Oct.).
O. A. Saunders, Gas turbines for aircraft. Engineering **170**, 293.
J. W. Siry, Early history of rocket research. Sci. Monthly **71**, 326.
J. W. Siry, Rocket research in the twentieth century. Sci. Monthly **71**, 408.
G. G. Smith, British views on jet engine design. Abstract: SAE Journal **58**, 49 (Sept.).
J. H. Stevens, The interceptor's future. Aircraft and Airport **12**, 15 (Nov.).
P. H. Wilkinson, Turbojets—present and future. Aviation Age **14**, 22 (Nov.).
R. G. Worcester, World trends in jet aircraft design. Am. Aviation **14**, 31 (Nov. 13).
Development of the turboprop; British and American units and the aircraft in which they are installed. Flight **58**, 489 and 494.
Turbine transports of today and tomorrow. Interavia **5**, 456.

1951

F. R. Banks, Power plant development over twenty years. Aeroplane **80**, 260.
F. B. Halford, The jet age in aviation. De Havilland Gazette No. 64, 86 (Aug.).
W. E. P. Johnson, The applicability of gas turbine technology. Engineer **192**, 707.
G. Loening, Future air transport possibilities. Aeronaut. Eng. Rev. **10**, 17 (Aug.).
A. H. Redding, Turbojet engines for supersonic flight. Abstract: Mech. Eng. **73**, 153.

R. T. Simpson and W. T. Sawyer, Prospects of gas turbines in Naval applications. Mech. Eng. **72**, 712 (1950); **73**, 338 (1951).
W. von Braun, Survey of the development of liquid rockets in Germany and their future prospects. J. Brit. Interplanet. Soc. **10**, 75.
Aeronautics in 1950. Engineer **191**, 67 and 100.
Critical review of gas turbine progress in 1950. Engineer **191**, 50.
Gas turbines in 1950. Engineer **191**, 56, 91, 100 and 134.
Gloster's ten years of jet progress. Aeroplane **80**, 568.
Jet power predicted for personal planes. Am. Aviation **15**, 50 (Dec. 10).
Ten years of the jet era. Aviation Week **54**, 74 (May 14).
Ten years of jet progress. Aeroplane **80**, 678.
The jet decade. Shell Aviation News No. 156, 3 (June).
The secret years; an account of jet developments prior to the official disclosure in January 1944. Flight **59**, 550.
Turbine problems in the development of the Whittle engine. Engineer **191**, 283; Engineering **171**, 298.

1952

F. R. Banks, The air and the future. Engineering **174**, 835.
P. M. Gallois, Jet propulsion—a strain on men and nations. Interavia **7**, 304.
H. M. Garner, Prophecy and achievement in aeronautics. J. Roy. Aeronaut. Soc. **56**, 493; Engineering **173**, 711 and 793; Engineer **193**, 767 and 785.
S. D. Hage and D. W. Finlay, Turbine power may transform light plane design in next decade. Can. Aviation **25**, 25 (Feb.).
F. T. Hague, The pattern of gas-turbine development. Mech. Eng. **74**, 627.
H. Knowler, The future of the flying boat. J. Roy. Aeronaut. Soc. **56**, 322; Engineering **173**, 329 and 382; **174**, 485; Aeroplane **82**, 295.
N. Macmillan, The turbojet, ramjet and rocket air force of the future. Aeronautics **27**, 24 (Aug.).
A. C. Monahan, America's jet age. Science News Letter **62**, 90.
T. E. Piper, The high-speed airplanes of the future. Machinery (New York) **58**, 146 (July).
F. B. Rentschler, The next ten years. Aero Dig. **64**, 17 (Feb.).
E. Sänger, The future evolution of the bomber. Interavia **7**, 139.
K. von Gersdorff, Etat actuel du developpement des turbine à gaz de l'aviation. Technique et Science Aéronaut. No. 5, 340.
A review of gas turbine progress, 1951. Engineer **193**, 89.
Aeronautics in 1951. Engineer, **193**, 28 and 53.
Foreign gas turbine work in 1951. Gas and Oil Power **43**, 30.
Gas turbines in 1951. Engineer **193**, 56, 93 and 147.
Horizons unlimited for gas turbines? Power **96**, 71 (Jan.).
50,000 HP jet engines forecast. Aviation Week **56**, 37 (Mar. 17).

1953

A. D. Baxter British progress in propulsion since the war. Aircraft Eng. **25**, 250.
H. Constant, The application of research to the gas turbine. Trans. North East Coast Inst. Engrs. Shipbuilders **69**, 111 (1952); Engineering **175**, 30 and 66.
W. J. Coughlin, AA calls ducted fan key to jet airliners. Aviation Week **59**, 88 (Nov. 23).
C. C. Furnas, The next half century. Aeronaut. Eng. Rev. **12**, 24 (June).
W. E. P. Johnson, Gas turbines in retrospect and prospect. Engineer **175**, 699.
L. Poggi, Su alcune possibili linee di sviluppo del motore aeronautico. Aerotecnica **33**, 199.
R. H. Reichel, Rückstossantriebe. Motortech. Z. **14**, 17 and 52.
C. G. A. Rosen, What's ahead in commercial vehicle powerplants. SAE Trans. **61**, 196.
D. G. Samaras, The coming revolution in flight propulsion. Abstract: SAE Journal **61**, 69 (Sept.).
R. T. Sawyer, et al., Gas-turbine progress reports. Trans. ASME **75**, 123–217.
C. Seippel, From Stodola to modern turbine engineering. Trans. North East Coast Inst. Engrs. Shipbuilders **69**, 133 (1952); Trans. ASME **75**, 121.
A critical review of gas turbine progress, 1952. Engineer **195**, 124.
Aeronautics in 1952. Engineer **195**, 24, 55 and 91.
American gas turbines in 1952. Engineer **195**, 219.
Continental gas turbines in 1952. Engineer **195**, 250.
Developing a jet engine. Aeroplane **84**, 551.
Gas turbine progress report. Gas and Oil Power **48**, 195 (Aug.).

Gas turbine work in past year. Gas and Oil Power **48**, 45 (Feb.); 58 (Mar.).
Gas turbines in 1952. Engineer **195**, 86 and 134.
Turboprop or turbojet? Neither says AA. Am. Aviation **17**, 31 (Dec. 7).

201.2 Theory and Performance Calculations

1948

A. W. Goldstein, S. Alpert, W. Beede, and K. Kovach, Analysis of the performance of a jet engine from characteristics of the components. NACA Tech. Note No. 1701 (Sept.).

N. D. Sanders and J. Palasics, Analysis of effects of inlet pressure losses on performance of axial-flow-type turbojet engine. NACA Research Memo. No. E8J25b (Nov.).

1949

M. F. Heidmann, Method of determining conditions of maximum efficiency of an independent turbine-propeller combination. NACA Tech. Note No. 1951 (Sept.).

A. F. Lietzke and H. M. Henneberry, Evaluation of piston-type gas-generator engine for subsonic transport operation. NACA Research Memo. No. E9D01 (July).

J. C. Sanders and E. C. Chapin, Equilibrium operating performance of axial-flow turbojet engines by means of idealized analysis. NACA Tech. Note No. 1956 (Oct.).

1950

O. E. Balje, A contribution to the design of radial-turbomachines. CADO Tech. Data Dig. **15**, 21 (Sept.).

T. W. F. Brown, Some factors in the use of high temperatures in gas turbines. Inst. Mech. Engrs. (London), J. and Proc. **162**, 167.

Chung-Hua Wu, A general theory of three-dimensional flow with subsonic and supersonic velocity in turbomachines having arbitrary hub and casing shapes. ASME M. P. No. 50-A-79.

Chung-Hua Wu, J. T. Sinnette, Jr., and R. E. Forrette, Theoretical effect of inlet hub-tip-radius ratio and design specific mass flow on design performance of axial-flow compressors. NACA Tech. Note No. 2068 (Apr.).

Chung-Hua Wu and L. Wolfenstein, Application of radial-equilibrium condition to axial-flow compressor and turbine design. NACA Rept. No. 955.

R. Doumerg, Theory of operation of a turbojet with simple flow. Compt. rend. **231**, 329.

I. H. Driggs, Why we still need the propeller. Aviation Week **53**, 28 (Oct. 23).

E. Duncombe, A method of calculating optimum turbine operating conditions for a range of nozzle and blade angles. Natl. Research Council Can. Rept. No. MT-13 (June 2).

F. P. Durham, Increased jet thrust from pressure forces. J. Aeronaut. Sci. **17**, 425.

W. A. Fleming, L. E. Wallner, and J. T. Wintler, Effect of compressor-outlet bleedoff on turbojet-engine performance. NACA Research Memo. No. E50E17 (Aug.).

F. R. Gantmacher and L. M. Levin, Equations of motion of a rocket. NACA Tech. Memo. No. 1255 (Apr.).

H. Hausenblas, Design nomograms for turbine stages. Motortech. Z. **11**, 96 (Aug.).

M. F. Heidmann, Analysis of effect of variations in primary variables on time constant and turbine-inlet-temperature overshoot of turbojet engine. NACA Tech. Note No. 2182 (Sept.).

R. V. Hensley, F. E. Rom, and S. L. Koutz, Effect of heat and power extraction on turbojet-engine performance. I-Analytical method of performance evaluation with compressor-outlet air bleed. NACA Tech. Note No. 2053 (Mar.).

B. Lubarsky, Performance and load-range characteristics of turbojet engine in transonic speed range. NACA Tech. Note No. 2088 (May).

B. T. Lundin, Theoretical analysis of various thrust-augmentation cycles for turbojet engines. NACA Rept. No. 981.

C. A. Meyer, Extrapolation of static tests to predict operation of jet engines in flight. Trans. ASME **72**, 465.

T. F. Nagey, Comparison of turbine-propeller engines with various cycle arrangements for subsonic flight speeds. SAE Pre. No. 513, Los Angeles.

T. F. Nagey and C. G. Martin, Calculated engine performance and airplane range for a variety of turbine-propeller engines. NACA Tech. Note No. 2155 (Aug.).
E. W. Otto and B. L. Taylor, III, Dynamics of a turbojet engine considered as a quasi-static system. NACA Tech. Note No. 2091 (May).
A. E. Puckett, Optimum performance of rocket-powered missiles. Inst. Aeronaut. Sci. Pre. No. 279.
M. Roy, Theoretical investigations on the efficiency and the conditions for the realization of jet engines. NACA Tech. Memo. No. 1259 (June).
J. C. Samuels and B. M. Gale, Effect of humidity on performance of turbojet engines. NACA Tech. Note No. 2119 (June).
J. C. Sanders and E. O. Chapin, Equilibrium operating performance of axial-flow turbojet engines by means of idealized analysis NACA Rept. No. 987.
O. A. Saunders, Gas turbines for aircraft. Engineering **170**, 293.
N. F. Silsbee, Range of the jets. Aviation Age **14**, 32 (Sept.).
D. H. Silvern and W. R. Slivka, Analytical investigation of turbines with adjustable stator blades and effect of these turbines on jet-engine-performance. NACA Research Memo. No. E50E05 (July).
W. Spannhake, The problem of flow through turbomachines. Proc. Midwestern Con. Fluid Dynamics, J. W. Edwards, Ann Arbor, Mich. **1**, 305.
R. B. Spooner, Effect of heat-capacity lag on a variety of turbine-nozzle flow processes. NACA Tech. Note No. 2193 (Oct.).
M. Summerfield, Fundamental problems in rocket research. J. Am. Rocket Soc. No. 81, 79.
A. M. Trout and E. W. Hall, Method for determining optimum division of power between jet and propeller for maximum thrust power of a turbine-propeller engine. NACA Tech. Note No. 2178 (Sept.).
J. Valensi, On the elementary calculation of characteristic operation coefficients of a turbo-reactor in sonic regime. Compt. rend. **231**, 1032.
Aero-engine developments. Aeroplane **79**, 131.

1951

D. G. Ainley, Estimation of the change in performance characteristics of a turbine resulting from changes in the gas thermodynamic properties. National Gas Turbine Establishment. (Gt. Brit.), Memo. No. M 118 (June).
S. Alpert and R. M. Litrenta, Construction and use of charts in design studies of gas turbines. NACA Tech. Note No. 2402 (July).
A. D. Baxter, Power plants for high-speed aircraft. J. Roy. Aeronaut. Soc. **55**, 642.
M. Behun and H. C. Chandler, Jr., Analytical method for determining performance of turbojet-engine tail-pipe heat exchangers. NACA Tech. Note No. 2456 (Sept.).
Chung-Hua Wu, A general through-flow theory of fluid flow with subsonic or supersonic velocity in turbomachines of arbitrary hub and casing shapes. NACA Tech. Note No. 2302 (Mar.).
Chung-Hua Wu and C. A. Brown, Method of analysis for compressible flow past arbitrary turbomachine blades on general surface of revolution. NACA Tech. Note No. 2407 (July).
H. Davis, H. Kottas, and A. M. G. Moody, The influence of Reynolds number on the performance of turbomachinery. Trans. ASME **73**, 499.
G. O. Ellis, J. D. Stanitz, and L. J. Sheldrake, Two axial-symmetry solutions for incompressible flow through a centrifugal compressor with and without inducer vanes. NACA Tech. Note No. 2464 (Sept.).
J. V. Foa, Single flow jet engines—a generalized treatment. J. Am. Rocket Soc. **21**, 115.
P. Formentini, The power of a turbojet. Riv. aeronaut. **27**, 425.
A. Gabelliere, Injection of water into gas turbine cycles and its effects on thermal efficiency. Calore **22**, 109.
J. R. Henry and J. B. Bennett, Method for calculation of ramjet performance. NACA Tech. Note No. 2357 (June).
S. C. Himmel and R. P. Krebs, The effect of changes in altitude on the controlled behavior of a gas-turbine engine. J. Aeronaut. Sci. **18**, 433.
S. Katzoff and M. E. Hannah, Further comparisons of theoretical and experimental lift and pressure distributions on airfoils in cascade at low subsonic speed. NACA Tech. Note No. 2391 (Aug.).
J. Kaye and K. R. Wadleigh, A new method of calculation of reheat factors for turbines and compressors. J. Appl. Mechanics **18**, 387.

S. L. Koutz, et al., Effect of heat and power extraction on turbojet-engine performance. NACA Tech. Notes No. 2053, 2166 and 2202 (1950); 2304 (1951).
K. Leist and E. Knörnschild, Exhaust turbine and jet propulsion systems. NACA Tech. Memo. No. 1294 (Apr.).
A. S. Leonard, Method for analyzing gas turbine cycles. Abstract: SAE Journal **59**, 104 (May).
C. A. Meyer and H. F. Faught. A method of presenting the performance of turbojet engines. Aeronaut. Eng. Rev. **10**, 33 (Jan.).
S. J. Moyes and W. A. Pennington, The influence of size on the performance of turbojet engines. 3d Anglo-American Aeronaut. Conf. (Brighton), Roy. Aeronaut. Soc. 545 (Sept.).
T. F. Nagey, Comparison of some turboprop cycles for subsonic speeds. SAE Quart. Trans. **5**, 316.
E. W. Otto and B. L. Taylor, III, Dynamics of a turbojet engine considered as a quasi-static system. NACA Rept. No. 1011.
W. M. Rohsenow and A. B. Walker, The effect of blade cooling on efficiency of a simple gas turbine cycle. MIT Gas Turbine Lab., Contract N5ori–07862 (July).
M. Roy, Output and thrust of supersonic reaction engines. Aerotecnica **31**, 92.
M. Roy, Power versus weight in aviation. J. Roy. Aeronaut. Soc. **55**, 265.
R. Schmidt, Influence of atmospheric pressure and temperature on performance of jet aircraft. Ciencia y tecn. **117**, 139 (Oct.).
J. G. Slotboom, Some fundamental considerations on propulsion of aircraft. Ingenieur (Utrecht) **63**, L–49, (Oct. 12).
A. T. Sutor and M. A. Zipkin, Method of matching components and predicting performance of a turbine-propeller engine. NACA Tech. Note No. 2450 (Sept.).
B. L. Taylor, III, and F. L. Oppenheimer, Investigation of frequency-response characteristics of engine speed for a typical turbine-propeller engine. NACA Rept. No. 1017.
F. Weinig, Flight performance of a jet power plant. III. Operating characteristics of a jet power plant as a function of altitude. NACA Tech. Memo. No. 1258 (May).
L. R. Woodworth and C. C. Kelber, The generalized approach to the selection of propulsion systems for aircraft. Inst. Aeronaut. Sci. Pre. No. 345.
Performance index; assessment of an Italian suggestion for a new unit of power for turbojets. Flight **60**, 507.

1952

N. P. Bailey, Energy flow and conversion. ASME M. P. No. 52–A–54.
O. E. Balje, A contribution to the problem of designing radial-turbomachines. Trans. ASME **74**, 451.
E. Boxer, J. R. Sterrett, and J. Wlodarski, Application of supersonic vortex-flow theory to the design of supersonic impulse compressor- or turbine-blade sections. NACA Research Memo. No. L52B06 (Apr.).
G. B. Brajnikoff, Method and graphs for the evaluation of air-induction systems. NACA Tech. Note No. 2697 (May).
Chung-Hua Wu, A general theory of three-dimensional flow in subsonic and supersonic turbomachines of axial-, radial-, and mixed-flow types. NACA Tech. Note No. 2604 (Jan.); Trans. ASME **74**, 1363.
Chung-Hua Wu, Matrix and relaxation solutions that determine subsonic through flow in an axial-flow gas turbine. NACA Tech. Note No. 2750 (July).
L. Cohen, Theoretical investigation of velocity diagrams of a single-stage turbine for a turbojet engine at maximum thrust per square foot of turbine frontal area. NACA Tech. Note No. 2732 (June).
A. Craigon, Reciprocal recompression may be solution to high fuel consumption of turbines. Can. Aviation **25**, 22 (Jan.).
G. J. Delio, Evaluation of three methods for determining dynamic characteristics of a turbojet engine. NACA Tech. Note No. 2634 (Feb.).
M. de Valroger, Note sur la propulsion aux vitesse supersonique. Technique et Science Aéronaut. No. 6, 344.
E. Duncombe, A method of estimating optimum turbine operating conditions for a range of nozzle and blade angles. Nat. Aeronaut. Establishment (Canada) Rept. No. 17.
R. E. English and R. H. Cavicchi, One-dimensional analysis of choked-flow turbines. NACA Tech. Note No. 2810 (Oct.).
E. Herrera, Les reacteurs supersonique. Aerotecnica **32**, 76.
G. Hiebel, Verbrennungsturbinenprozesse und ihre Optimalbedingungen. Motortech. Z. **13**, 263.

S. C. Huntley, Effect of compressor-outlet air bleed on performance of a centrifugal-flow turbojet engine with a constant-area nozzle. NACA Tech. Note No. 2713 (June).
J. Jarry, Analyse des etudes thermodynamiques. Technique et Science Aéronaut. No. 6, 348.
J. R. Ketchum and R. T. Craig, Simulation of linearized dynamics of gas-turbine engines. NACA Tech. Note No. 2826 (Nov.).
S. Lieblein, Theoretical and experimental analysis of one-dimensional compressible flow in a rotating radial-inlet impeller channel. NACA Tech. Note No. 2691 (Apr.).
E. Macioce, Rappresentazione adimensionale per il calcolo delle prestazione e delle grandezze caratteristiche dei utrbomotori aeri. Aerotecnica **32**, 242.
A. Mager, J. J. Mahoney, and R. E. Budinger, Discussion of boundary-layer characteristics near the wall of an axial-flow compressor. NACA Rept. No. 1085.
D. H. Mallinson and W. G. E. Lewis, Performance calculations for a double-compound turbojet engine of 12 · 1 design compressor pressure ratio. Ministry of Supply, Aeronaut. Research Council (Gt. Brit.) ARC R and M 2645; ARC11, 355.
F. E. Marble and I. Michelson, Analytical investigation on some three-dimensional flow problems in turbomachines. NACA Tech. Note No. 2614 (Mar.).
J. J. McMullen, Part load considerations for gas turbine cycles. J. Am. Soc. Naval Engrs. **64**, 379.
S. Peracchio, La rigenerazione negli impianti a turbo-elica. (Regeneration in turbopropellers). Aerotecnica **32**, 124.
B. Pinkel and I. M. Karp, A thermodynamic study of the turbine-propeller engine. NACA Tech. Note No. 2653 (Mar.).
F. H. Reynst, Possibilities of the resonator for decreasing fuel consumption in turbine-driven aircraft. Z. Ver. deut. Ing. **94**, 79.
E. Sänger, How much does jet propulson cost? Interavia **7**, 338.
B. I. Sather, F. R. Schuricht, and A. E. Bierman, Summary of investigation of two-stroke cycle gas-generator aircraft engine. Abstract: Mech. Eng. **74**, 239.
A. Schraud, Bases of gas turbine principles. Z. Ver. deut. Ing. **94**, 1160.
J. D. Stanitz, Some theoretical aerodynamic investigations of impellers in radial- and mixed-flow centrifugal compressors. Trans. ASME **74**, 473.
Y. Suchy, Theory of the gas turbine. Rev. trimestr. can. **38**, 269.
J. L. Taylor, A simplified theory of jet propulsion. Aircraft Eng. **24**, 131.
R. C. Treseder, M. Brooks, and J. R. Kessler, The effect of propeller control parameters on gas-turbine power ratings and flight efficiency. Aeronaut. Eng. Rev. **11**, 29, (Nov.).
H. S. Tsien, A method for comparing the performance of power plants for vertical flight. J. Am. Rocket Soc. **22**, 200.
G. B. Warren, Jet propelled airplanes. Gen. Elec. Rev. **55**, 34 (May).
R. H. Wasserman, Theory of supersonic potential flow in turbomachines. NACA Tech. Note No. 2705 (May).
Compression ratio and fuel consumption of gas turbines. Mech. World **132**, 62 (Aug.).
Thrust without tears. Aeroplane **82**, 280.

1953

R. H. Cavicchi and R. E. English, A rapid method for use in design of turbines within specified aerodynamic limits. NACA Tech. Note No. 2905 (Apr.).
R. E. English and R. H. Cavicchi, Possible range of design of one-spool turbojet engines within specified turbine-design limits. Abstract: Mech. Eng. **75**, 495.
J. P. Graef, How a turbojet works. Western Aviation **33**, 22 (Mar.).
D. P. Hearth and E. Perchonok, Analysis of heat addition in a convergent-divergent nozzle. NACA Tech. Note No. 2938 (Apr.).
G. Hiebel, Leistungs- und Wirkungsgradoptimale Stufenaufteilung Verdichtung von Gasturbinen. Motortech. Z. **14**, 351.
F. S. Hunter, Next transport: turboprop or jet? Am. Aviation **17**, 18 (Aug. 3).
W. Krase and R. Neitzel, Specialization in turbojet engine design. Aero Dig. **66**, 74 (June).
H. Linnecken, Über den Umfangswirkungsgrad axial durchströmter Turbomaschinen. Forsch. Gebiete Ingenieurw. **19**, 97.
R. J. McCafferty, Analytical investigation of fuel temperature and fuel-evaporation losses encountered in long-range high-altitude supersonic flight. NACA Research Memo. No. E53E25 (Aug.).
L. Pascucci, Variazione delle grandezze caratteristiche di un turboreattore in funzione delle condizioni di funzionamenti. Aerotecnica **33**, 94.

W. D. Perreault, Don't sell the turboprop short. Am. Aviation **17**, 50 (Dec. 21).
D. G. Samaras, The dawn of aviation's new era. SAE Pre. No. 26, Detroit (Jan. 14).
E. Sänger, Physical fundamentals of jet propulsion. Forsch. Gebiete Ingenieurw. **B19**, Forschungsheft 437, p 5.
G. Santangelo, Metodo di calcolo delle caratteristiche dei turbogetti e del turboelica. Aerotecnica **33**, 204.
G. Santangelo, Possibilita del turbogetto e dell'autoreattore nel campo supersonico. Aerotecnica **33**, 114.
J. E. Steiner, Effect on direct operating cost of frontal area, specific fuel consumption, and engine weights. SAE Pre. No. 37, Detroit (Jan. 15).
J. M. Stephenson, Pressure ratios for aero-engines. Aircraft Eng. **25**, 371.
W. Vogel, Die Vorausberechnung des Betriebsverhaltens von Abgasturbinen. Motortech. Z. **14**, 149.

202. TURBOJET AND PROPJET ENGINES

202.1 American Engines

1948

C. E. Campbell, Altitude-wind-tunnel investigation of a 3000-pound-thrust axial-flow turbojet engine. NACA Research Memo. No. E8B19 (Aug.).
W. A. Fleming, R. L. Golladay R. O. Dietz, Jr., et al., Altitude-wind-tunnel investigation of a 4,000-pound-thrust axial-flow turbojet engine. NACA Research Memos. No. E8F09; E8F09a, b, c, d, and e (Aug.).
W. A. Fleming, R. P. Krebs, F. L. Suozzi, et al., Altitude-wind-tunnel investigation of Westinghouse 19B–2, 19B–8 and 19XB–1 jet-propulsion engines. NACA Research Memos. No. E8J28; E8J28a, b, c and d (Nov.).
S. L. Gendler, W. K. Koffel, R. O. Dietz, Jr., et al., Investigation of the I–40 jet-propulsion engine in the Cleveland altitude wind tunnel. NACA Research Memos. No. E8G02; E8G02a, b, c, and d (Aug.).
W. K. Hawkins and C. L. Meyer, Altitude-wind-tunnel investigation of operational characteristics of Westinghouse X24C–4B axial-flow turbojet engine. NACA Research Memo. No. E8J25 (Nov.).
C. L. Meyer and H. E. Bloomer, Altitude-wind-tunnel investigation of performance and windmilling drag characteristics of Westinghouse X24C–4B axial-flow turbojet engine. NACA Research Memo. No. E8J25a (Nov.).

1950

I. F. Angstadt, Pratt & Whitney turboprop. Aero Dig. **61**, 28 (Oct.).
A. H. Bell and J. E. Farmer, Transient operating characteristics of a turbojet engine when subjected to step changes in fuel flow. NACA Research Memo. No. E9K25a (Feb.).
A. McSurely, P&W reveals most powerful turboprop. Aviation Week **53**, 12 (Sept. 11).
A. H. Redding, Turbojet engines for supersonic flight. ASME M. P. No. 50–A–141.
I. Stone, New high-thrust turbojet seen for G. E. Aviation Week **53**, 21 (Dec. 4).
Along P&W's jet production line. Aviation Week **53**, 22 (July).
Navy turboprops. Naval Aviation News **1** (May).
New turboprop so powerful it flies B–17 with other engines off. CADO Tech. Data Dig. **15**, 12 (Nov.).
Northrop's 7,500 EHP turbodyne engine. Am. Aviation **14**, 27 (June).
Power in the air. Aero Dig. **61**, 44 (Nov.).
Pratt and Whitney engine specifications. Aero Dig. **61**, 54 (Aug.).

1951

A. McSurely, Allison gets heavy T–40 order. Aviation Week **54**, 14 (Jan. 1).
A. McSurely, Allison J–35: new No. 1 engine. Aviation Week **54**, 14 (Mar. 19).
W. D. Perreault, New supersonic engine designs revealed. Am. Aviation **15**, 15 (Oct. 29).
W. D. Perreault, P&W T–34 turboprop engine winning military acceptance. Am. Aviation **14**, 25 (Feb. 5).
I. Stone, J–35 points up new thrust achievements. Aviation Week **54**, 25 (Apr. 2).
K. R. Vincent and B. M. Gale, Altitude performance of J35–A–17 turbojet engine in an altitude chamber. NACA Research Memo. No. E50I15 (Jan.).
P. H. Wilkinson, G–E turbojet progress. Aviation Age **15**, 32 (Jan.).
P. H. Wilkinson, G–E's "advanced J47." Aviation Age **16**, 30 (Aug.).

P. H. Wilkinson, Has Allison won the jet engine race? Aviation Age **15**, 34 (May).
Allison engines. Aero Dig. **62**, 78 (Mar.).
Allison J35-A-23 super jet. Shell Aviation News No. 155, 16 (May).
Allison super jet. Aero Dig. **62**, 21 (Apr.).
Allison unveils-23 model of J-35. Am. Aviation **14**, 10 (Apr. 2).
All-weather jet. Mech. Eng. **73**, 655.
Directory of American aircraft engines. Western Flying **31**, 63 (Apr.).
GE reveals more powerful J-47's. Aviation Week **54**, 17 (June 18).
GE's new J-47 doubles jet thrust. Am. Aviation **15**, 14 (June 25).
General Electric Co. engines. Aero Dig. **62**, 82 (Mar.).
General Electric gas turbines. Shell Aviation News No. 152, 12 (Feb.).
J-35-A-23 work continues at Allison. Aviation Week **54**, 17 (May 14).
J-40 engine develops thrust equal to 14,000 HP. CADO Tech. Data Dig. **16**, 12 (Mar.).
Junior jet. Aviation Week **55**, 15 (Nov. 5).
New GE turbojet engine packs far more wallop though on same frame size as present J-47. CADO Tech. Data Dig. **16**, 8 (Aug.).
Refined design puts more power in J-47. Aviation Week **55**, 21 (July 2).
Turbojet engine (J40). Mech. Eng. **73**, 327.
U. S., allies speed development of more powerful engines for supersonic planes. CADO Tech. Data Dig. **16**, 9 (Apr.).
U. S. gas turbine engines. Aviation Week **54**, 45 (Feb. 26).
Westinghouse engines. Aero Dig. **62**, 94 (Mar.).
Westinghouse Y-ducted J-40. Aviation Week **54**, 14 (Apr. 16).

1952

D. A. Anderton, GE cuts bottleneck at new jet center. Aviation Week **56**, 21 (Apr. 14).
W. Collins, Continental's gas turbines. Automotive Inds. **106**, 41 (May 15).
J. J. Haggerty, Jr., Wright Sapphire seen production feat. Am. Aviation **16**, 20 (Nov. 10).
T. MacNew, 10,145 jet engines. Automotive Inds. **106**, 44 (Apr. 15).
P. H. Wilkinson, Jupiter for helicopters? Aviation Age **18**, 40 (Nov.).
A new Fairchild engine. Aeroplane **82**, 20.
An airscrew-turbine light plane, Aeroplane **83**, 680.
Development of "Centriflow" jet engine for light plane. Western Aviation **32**, 15 (Mar.).
Directory of American aircraft engines. Western Aviation **32**, 79 (Apr.).
Directory of U. S. engines. Aero Dig. **64**, 70 (Mar.).
Family photo of GE jet engines. Aviation Week **57**, 24 (Dec. 22).
First U. S. turboprop assembly line. Aviation Week **57**, 44 (Nov. 10).
GE shows -27 version of J47 jet. Aviation Week **56**, 18 (Mar. 31).
New J-40 in Production. Automotive Inds. **107**, 39 (Oct. 1).
New jet engine. Mech. Eng. **74**, 402.
New jet engine. Mech. Eng. **74**, 911.
School jet. Aviation Week **56**, 53 (June 16).
Specifications of aircraft and engines—U. S. gas turbine engines. Aviation Week **56**, 144 (Feb. 25).
Specifications of U. S. and British aircraft gas turbines. Automotive Inds. **106**, 248 (Mar. 15).

1953

A. L. Ervin, Design for turbojet simplicity. Aviation Age **20**, 28 (Dec.).
R. Hawthorne, Fairchild monocoque turbojet. Aviation Age **20**, 30 (Dec.).
R. T. Holland, Gas turbine design. Abstract: SAE Journal **61**, 54 (Aug.).
R. E. Small, Design features of G-E J47 turbojet. Aviation Age **20**, 56 (Dec.).
I. Stone, Fairchild stresses simplicity in J44 jet. Aviation Week **59**, 30 (Nov. 30).
AF permits first look at P&W J57. Aviation Week **59**, 17 (Nov. 16).
Analysis bares J47 jet design details. Aviation Week **59**, 27 (Oct. 26).
An American twin-spool engine. Aeroplane **85**, 678.
Commercial version of P&W turboprop offered. Am. Aviation **17**, 15 (July 6).
Firebee engines. Aviation Week **58**, 17 (Feb. 23).
First look at the P&W J57. Am. Aviation **17**, 18 (Dec. 7).
Jet engine flying hours. Aeroplane **85**, 649.
Logistics demands jet transports: Convair. Am. Aviation **17**, 19 (July 6).
Novel jet engine is designed for production. Automotive Inds. **109**, 58 (Dec. 1).

U. S. and British aircraft gas turbines. Automotive Inds. **108,** 244 (Mar. 15).
U. S. gas turbine engines. Aviation Week **58,** 230 (Mar. 2).
14th annual directory of engines. Aero Dig. **66,** 80 (Mar.).

202.2 British Engines

1950

Z. Barson, H. D. Wilsted, J. C. Armstrong, et al., Altitude-chamber performance of a British Rolls-Royce Nene II engine. NACA Research Memos. No. E9I23 (Sept.); E9I27 (Oct.); E50A31 (July); and E50B10 (July).
R. N. Dorey, Dart turboprop design accents long-life features. Abstract: SAE Journal **58,** 60 (Nov.).
A.McSurely, Sapphire strengthens Wright's jet bid. Aviation Week **53,** 12 (Oct. 16).
P. H. Wilkinson, Armstrong Siddeley's "Adder" turbojet. Aero Dig. **61,** 43 (Oct.).
P. H. Wilkinson, Napier's "Coupled Naiad". Aero Dig. **61,** 42 (June).
P. H. Wilkinson, Sapphire turbojet development. Aviation Age **14,** 30 (Dec.).
D. H. Wood, Power in the air. Aero Dig. **61,** 40 (Dec.).
British gas turbines. Aeroplane **79,** 245.
Details of Sapphire jet revealed. Aviation Week **53,** 34 (Oct. 23).
Power plants at the SBAC display. Aeroplane **79,** 333.

1951

W. F. Bradley, Latest jet engines displayed at Paris aviation show. Automotive Inds. **105,** 45 (July 15).
P. B. Dilworth, AVRO-Orenda jet-propulsion engine. ASME M. P., Toronto.
R. Hawthorne, Rolls-Royce Dart turboprop. Aviation Age **16,** 34 (Oct.).
D. W. Knowles, Development of the Avro Orenda jet engine. Eng. J. (Can.) **34,** 1183.
I. Stone, Wright speeds Sapphire to production. Aviation Week **54,** 22 (Apr. 16).
P. H. Wilkinson, British holding jet lead. Aviation Age **16,** 36 (Dec.).
American manufacture of the "Sapphire" turbojet. Engineer **191,** 664.
Armstrong-Siddeley Adder A. S. A. 1. turbojet. Flight **59,** 187.
"Bug-hunting" on the Avro Orenda jet. Aviation Week **55,** 21 (Aug. 6).
Canadian turbojet engine. Engineer **192,** 61.
Developed Mamba; modifications to a sound basic design increase power by 25 percent. Flight **59,** 369.
Five hundred hours for the Dart. Aeroplane **81,** 9.
French-built Tays. Aeroplane **80,** 4.
Gas turbine engines. Aeroplane **81,** 315.
Leading foreign jet engines. Aviation Week **54,** 165 (Feb. 26).
Nomad and Olympus. Aeroplane **80,** 495.
Olympus: Wright's ace in the hole? Aviation Week **54,** 33 (May 7).
Orenda axial-flow turbojet engine. Engineering **172,** 735.
Power plants on show. Aeroplane **81,** 398.
Rolls-Royce "Dart" propeller-turbine engine. Engineering **172,** 123.
Tough test. Aviation Week **55,** 32 (July 9).

1952

D. A. Anderton, Redesigned Proteus has better economy. Aviation Week **57,** 22 (July 14).
J. Blanc, Production of the "Nene" by Hispano-Suiza. Interavia **7,** 320.
J. Brodie, Development of the Ghost jet engine for airliner propulsion. de Havilland Gazette No. 69, 81 (June).
J. Brodie, Civilizing the Ghost. Aeroplane **82,** 529.
W. Green, Olympus, Avon, Sapphire lead in British array of power. Can. Aviation **25,** 58 (Nov.).
R. Hawthorne, Armstrong Siddeley Mamba. Aviation Age **17,** 36 (June).
S. G. Hooker, Proteus 3 derivation. Aeroplane **83,** 192.
D. W. Knowles, This is the Orenda. Can. Aviation **25,** 56 (May).
T. S. McCrae, The Orenda project. Jet Age **1,** 1 (Autumn).
N. McKitterick, Sapphire tested at 8,300 lb thrust. Aviation Week **56,** 16 (May 5).
B. H. Slatter, The Mamba engines in the Apollo aircraft. Trans. ASME **74,** 247.
I. Stone, C–W naturalizes Sapphire jet engine. Aviation Week **57,** 21 (Dec. 22).
P. H. Wilkinson, Bristol Phoebus research engine. Aviation Age **17,** 38 (June).
P. H. Wilkinson, The new Proteus turboprop. Aviation Age **18,** 40 (Aug.).

292892—54——2

A close look at Bristol Olympus. Aviation Week **57**, 44 (July 24).
A more powerful Nene. Aeroplane **82**, 149.
A supercharged turbojet. Aeronautics **27**, 36 (Aug.).
Bristol Olympus. Shell Aviation News No. 170, 8 (Aug.).
Bristol's new Proteus. Aeroplane **82**, 687.
Bristol's Olympus—a new jet turbine. Aeroplane **83**, 8.
British aero-engines. Aeroplane **83**, 310.
British aviation. Mech. Eng. **74**, 750.
British power units 1952. Flight **62**, 269.
Canada aviation expands to make Orenda. Aviation Week **57**, 40 (Oct. 20).
Engines at the show. Aeroplane **83**, 402.
Latest British Proteus propeller turbine engine. Automotive Inds. **107**, 38 (July 15).
New jet delivers thrust of 9,750 lb. Automotive Inds. **107**, 33 (Aug. 1).
Olympus. Flight **62**, 2.
"Proteus" 700-series propeller turbine. Engineering **173**, 792.
Running mate of the Orenda; Nene to power trainers. Can. Aviation **25**, 36 (May).
Specifications of aircraft and engines: leading foreign jet engines. Aviation Week **56**, 158 (Feb. 25).
Stepping-up the Sapphire. Aeroplane **82**, 508.
Tailoring Ghosts to fit Comet a big job. Aviation Week **57**, 21 (Aug. 25).
The Adder—power for research. Aeroplane **82**, 275.
The Bristol "Olympus" turbojet. Engineer **194**, 24.
The Bristol "Proteus III" (series 700) propeller turbine. Engineer **193**, 791.
The "Olympus" turbojet engine. Engineering **174**, 13.
"Two-spool" turbojet. Aviation Age **18**, 45 (Aug.).
Uprated Double Mamba. Aeroplane **83**, 707.
What makes the Sapphire tick. Aviation Week **56**, 24 (June 9).
10,000-lb. thrust British jet engine. Aviation Week **57**, 17 (July 7).

1953

A. D. Baxter, British progress in propulsion since the war. Aircraft Eng. **25**, 250.
A. Vandyk, British jet engine plans revealed. Am. Aviation **16**, 19 (Mar. 13).
A new Bristol engine. Aeroplane **86**, 87.
Armstrong-Siddeley Sapphire engine. Automotive Inds. **108**, 62 (Apr. 1).
Armstrong Siddeley's Viper. Aeroplane **85**, 139.
Avon development details. Aeroplane **84**, 279.
Avon overhaul life tests. Aeroplane **84**, 538.
British aero-engines today. Aeroplane **85**, 375.
British power units. Flight **64**, 321.
De Havilland's latest engine. Aeroplane **85**, 130.
Development of a turbine engine. Aeroplane **85**, 579.
Development of Rolls-Royce "Avon" engines. Engineering **175**, 448.
Jet progress in twelve years. Aeroplane **85**, 830.
Leading foreign jet engines. Aviation Week **58**, 247 (Mar. 2).
New Avons pass military tests. Aviation Week **58**, 39 (Apr. 13).
Proof of a turboprop. Aeroplane **84**, 540.
Report on the engine exhibit. Aeroplane **85**, 413.
Rolls-Royce Avons show 600-hr. life. Aviation Week **58**, 36 (June 1).
Source of all power. Flight **62**, 617.
The Viper. Flight **64**, 170.
"Viper ASV3" jet engine. Engineering **176**, 329.

202.3 Engines of Other Nations

1950

A Russo-German turbojet—the M-012. Interavia **5**, 586.
The Turbomeca ducted fan. Aeroplane **79**, 385.

1951

G. L. Christian, Stratos to produce French baby turbine. Aviation Week **55**, 51 (Aug. 27).
B. Eckert, The Aspin I turbojet engine. Motortech. Z. **12**, 6.
W. D. Perreault, French turbines set for U. S. production. Am. Aviation **15**, 11 (Oct. 1).
P. H. Wilkinson, Russian power plants. Aviation Age **16**, 50 (July).

P. H. Wilkinson, The French aircraft gas turbine industry. Aviation Age **16**, 42 (Nov.).
P. H. Wilkinson, The French jet engine industry. Aviation Age **15**, 34 (Mar.).
A French jet ordered. Aeroplane **80**, 161.
A Swedish gas-turbine. Aeroplane **80**, 66.
Aspin 1—Turbomeca jet unit with variable augmentation by ducted fan. Flight **59**, 135.
Fans for the future. Aviation Age **16**, 32 (Oct.).
French turbines enter U. S. field. Aviation Week **55**, 32 (Oct. 15).
French turbojet engine Atar-101. Engineering **172**, 173.
Power plants on show. Aeroplane **80**, 771.
Successful trials of a ducted fan. Aeroplane **80**, 170.
Tests resumed on French Aspin I. Aviation Week **54**, 30 (Apr. 2).
The Aspin ducted fan. Aeroplane **81**, 747.

1952

C. F. Bachle, Gas turbines necessary for small aircraft progress. Automotive Inds. **106**, 46 (Jan. 1).
J. Blanc, Le developpement du T. R. 300 par Hispano Suiza. Technique et Science Aéronaut. No. 3, 175.
J. Blanc, Problemes poses par la fabrication du turbo-reacture Nene. Technique et Science Aéronaut. No. 3, 164.
W. F. Bradley, Hispano-Suiza jet engine performs well in tests. Automotive Inds. **107**, 54 (July 1).
W. Collins, Turbomeca—Continental small gas turbines. SAE Pre. No. 761, New York (Apr. 22).
P. H. Wilkinson, Russia lags in big jet class. Aviation Age **18**, 40 (July).
A big French jet. Aviation Week **57**, 37 (Oct. 20).
A French axial-flow gas turbine. Aeroplane **83**, 718.
A new turbo-compressor. Aeroplane **83**, 666.
Auxiliary turbines. Aeroplane **82**, 320.
Blackburn's Turbomeca licence. Aeroplane **83**, 568.
Gemeaux IV flies with Aspin I ducted fan. Aviation Week **56**, 35 (Apr. 28).
Nationalized aero-engines in France. Aeroplane **82**, 599.
New Swedish turbojet. Aviation Age **18**, 33 (Dec.).
Russian versions of the Nene. Aeroplane **83**, 163.
The light turbojet in France. Esso Air World **4**, 132 (Mar./Apr.).
Turbines for take-off assistance. Aeroplane **82**, 48.
Turbomeca engines in England. Aircraft Eng. **24**, 49.
Turbomeca power units to be built in Britain. Oil Engine **20**, 260.

1953

D. A. Anderton, Hisso boosts centrifugal jet's thrust. Aviation Week **59**, 45 (Oct. 19).
A small French jet engine. Aeroplane **84**, 258.
First detailed view of the SNECMA Atar. Am. Aviation **17**, 76 (July 20).
Japan's first postwar jet engine. Am. Aviation **17**, 87 (Dec. 7).
Jet engine thrust increased, specific fuel reduced. Automotive Inds. **110**, 96 (Jan. 1).
More about engines at Paris. Aeroplane **85**, 43.
New French jet. Aeroplane **85**, 67.
Swedes may license jet engine abroad. Am. Aviation **17**, 37 (June 8).
Turbines à gas au Bourget. Aeroplane **85**, 172.

202.4 Engine Accessories and Control

1948

A. S. Boksenbom and M. S. Feder, Analysis of parameters for thrust control of a turbojet engine equipped with air-inlet throttle and variable-area exhaust nozzle. NACA Research Memo. No. E8B27 (Aug.).
H. Gold and R. J. Koenig, Bench and engine operation of a fuel-distribution control. NACA Research Memo. No. E8A28a (June).
H. Gold and D. M. Straight, A fuel-distribution control for gas-turbine engines. NACA Research Memo. No. E8C08 (June).
R. J. Koenig and M. Dandois, Control during starting of gas-turbine engines. NACA Research Memo. No. E7L17 (June).
D. Novik and E. W. Otto, An analysis of control requirements and control parameters for direct-coupled turbojet engines. NACA Research Memo. No. E7I25a (Feb.).

1950

A. S. Boksenbom and R. Hood, General algebraic method applied to control analysis of complex engine types. NACA Rept. No. 980.

G. L. Christian, Screens keep jet engines clean. Aviation Week **53,** 42 (Nov. 13).

M. S. Feder and R. Hood, Analysis for control application of dynamic characteristics of turbojet engine with tail-pipe burning. NACA Tech. Note No. 2183 (Sept.).

M. F. Heidmann, Analysis of effects of primary variables on time constant and turbine-inlet-temperature overshoot of turbojet engine. NACA Tech. Note No. 2182 (Sept.).

P. T. Kunigonis, Electrical starting of aircraft jet engines. Elec. Eng. **69,** 335 (Apr.).

M. E. LaVerne and A. S. Boksenbom, Methods for determining frequency response of engines and control systems from transient data. NACA Rept. No. 977.

W. O. Meckley, Jet nozzles for aircraft gas turbines. Aeronaut. Eng. Rev. **9,** 33 (Oct.).

E. W. Otto and B. L. Taylor, III, Dynamics of a turbojet engine considered as a quasi-static system. NACA Tech. Note No. 2091 (May).

J. C. Sanders and E. C. Chapin, Equilibrium operating performance of axial-flow turbojet engines by means of idealized analysis. NACA Rept. No. 987.

H. Shames, S. C. Himmel, and D. Blivas, Frequency response of positive-displacement variable-stroke fuel pump. NACA Tech. Note No. 2109 (June).

I. Stone, New props for turbine power. Aviation Week **53,** 21 (Oct. 30).

B. L. Taylor, III, and F. L. Oppenheimer, Investigation of frequency response characteristics of engine speed for a typical turbine-propeller engine. NACA Tech. Note 2184 (Sept.).

A. M. Trout and E. W. Hall, Method for determining optimum division of power between jet and propeller for maximum thrust power of a turbine-propeller-engine. NACA Tech. Note No. 2178 (Sept.).

A starter for turbines. Aeroplane **79,** 514.

Avro system provides fast starting for jets. Aviation Operations, 15 (Aug.).

Cartridge turbo-starters for aeronautical gas turbines. Engineer **190,** 635.

Hydrogen-peroxide auxiliary power plants. Aero Dig. **61,** 52 (Aug.).

Hydrogen-peroxide starting motors. Aero Dig. **61,** 33 (July).

1951

W. D. Downs, A starter for turbojet engines. SAE Pre. No. 569, Detroit; CADO Tech. Data Dig. **16,** 14 (Feb.).

J. L. Fletcher, Calculation of airflow through an ejector-operated engine cooling system for a turbojet powered airplane. Douglas Aircraft Co. Rept. No. SM-14020 (May).

W. F. Hilton, Supersonic propellers. J. Roy. Aeronaut. Soc. **55,** 751.

R. R. LaMotte and M. Brooks, Aeroproducts turboprop developments. Aviation Age **15,** 26 (June).

H. R. Leather and P. Britt, Negative thrust propellers for turbines. de Havilland Gazette No. 64, 83 (Aug.).

S. V. Manson, Regenerator-design study and its application to turbine-propeller engines. NACA Tech. Note No. 2254 (Jan.).

F. C. Mock, Turbojet and turboprop engine controls. SAE Quart. Trans. **5,** 376.

P. H. Schweitzer, Closed-circuit oil system for turbojet and turboprop aircraft engines. Aeronaut. Eng. Rev. **10,** 16 (June).

N. Sharp, Aero-engine oil systems for cold climates. Aircraft Eng. **23,** 368.

R. C. Treseder and D. D. Bowe, A prop for turboprop engines, Abstract: SAE Journal **59,** 61 (Apr.).

H. C. Towle and F. V. H. Judd, Ejectors for cooling a turbojet installation. Aeronaut. Eng. Rev. **10,** 20 (Sept.).

R. C. Treseder and D. D. Bowe, A prop for turboprop engines, Abstract: SAE Journal **59,** 29 (Apr.).

P. H. Wilkinson, British gas turbine starters. Aviation Age **15,** 36 (Apr.).

M. A. Zipkin, H. E. Sheets, and C. N. Scott, Develops ignition system for turbojets. Abstract: SAE Journal **59,** 70 (Apr.); Abstract: Automotive Inds. **104,** 35 (Feb 1).

A cartridge starter for turbines. Aeroplane **81,** 793.

Airscrew braking. Aeroplane **81,** 55.

A propeller-turbine brake. Engineer **192,** 28.

A turbo-starter for turbines. Aeroplane **81,** 35.

Cartridge starter for the "Nene" turbojet engine. Engineering **172,** 819.

Cartridge turbo-starter features high horsepower. Design News **6,** 62 (May).

Cordite-charge starter for aircraft gas turbines. Engineering **171**, 31.
Electronic "brain" controls jet fuel flow. CADO Tech. Data Dig. **16**, 14 (Sept.); Aviation Week **55**, 40 (Sept. 3).
Fuel action studied in lab "flight". Aviation Week **55**, 24 (Sept. 3).
New automatic fuel control for J-57 turbojet engine. Automotive Inds. **105**, 148 (Nov. 15).
New "muscle" for British jets. Aviation Week **54**, 31 (Jan. 8).
O-rings for jets. Aviation Week **54**, 48 (Jan. 15).
Propellers readied for 1,000-MPH turboprop planes. CADO Tech. Data Dig. **16**, 10 (Jan.).
Self-aligning thrust bearing developed for jet engine. Aviation Age **15**, 10 (Apr.).
Turbine starting: MK3 Plessey starter for Nene 4 turbojet. Flight **60**, 815.
Turbo-liner self-starting system. Shell Aviation News No. 153, 24 (Mar.).
Unit controls jet starter current. Aviation Week **55**, 38 (Sept. 3).
1000 horses to start high-thrust jets. Aviation Week **54**, 22 (Jan. 22).

1952

A. S. Boksenbom and R. Hood, Automatic control systems satisfying certain general criterions on transient behavior. NACA Rept. No. 1068.
J. Boyd and P. R. Eklund, Some performance characteristics of ball and roller bearings for aviation gas turbines. Abstract: Mech. Eng. **74**, 37.
G. W. Brady, The high-speed propeller. Aeronaut. Eng. Rev. **11**, 22 (July).
C. S. Brandt, Turbine engines complicate fuel system design. Abstract: SAE Journal **60**, 50 (Aug.).
G. S. Brown and D. P. Campbell, Control systems. Sci. American **187**, 57 (Sept.).
C. S. Constantino, Turbojet power control trends. Shell Aviation News No. 174, 14 (Dec.); Abstract: Aircraft Eng. **24**, 371.
D. Desoutter, Turboprop props. Aviation Age. **18**, 31 (Dec.).
G. F. Drake, The development of gas-turbine controls. Abstract: Mech. Eng. **74**, 923.
L. J. Elliott, Jet ignition systems. Aero Dig. **64**, 28 (Feb.).
J. F. Engelberger, Design of turbojet engine controls. Aero Dig. **64**, 60 (Jan.).
J. F. Engelberger and H. W. Kretsch, The application of temperature control to turbojet engines. Abstract: Mech. Eng. **74**, 923.
T. P. Farkas, J. A. Osterman, and S. G. Best, Mechanical engineering applied to electronic fuel control design. SAE Pre. No. 769, New York (Apr. 23).
S. E. Gregoire, Improvements in jet engine ignition systems. Automotive Inds. **107**, 48 (Sept. 1).
J. E. Johnson, Regenerator heat exchangers for gas turbines. Ministry of Supply, Aeronaut. Research Council (Gt. Brit.) R and M 2630; ARC 11, 770.
J. Jonas, Effect of aerodynamic heating on fuel systems. SAE Pre. No. 812, Los Angeles (Oct. 2).
P. Klass, New ignition better, yet cheaper. Aviation Week **57**, 47 (Sept. 22).
A. L. London and W. M. Kays, Liquid-coupled regenerators for turboprops. Aeronaut. Eng. Rev. **11**, 42 (Oct.).
L. J. Lyons, Turbojet installation cooling and associated performance losses. Abstract: Aircraft Eng. **24**, 371.
T. MacNew, Analyzing ignition problems of piston and jet engines. Automotive Inds. **107**, 46 (Sept. 1).
J. M. Mergen and J. H. Kasley, Characteristics of propellers for turboprop airplanes. SAE Quart. Trans. **6**, 332.
B. J. Ryder, Services favor emergency protection for controls of single-engine jets. Abstract: SAE Journal **60**, 67 (Sept.).
J. W. Tomlinson, The fuel system in jet engines. Can. Aviation **25**, 36 (Oct.).
J. E. Walker, Fuel systems for turbine-engined aircraft. J. Roy. Aeronaut. Soc. **56**, 657; Aeroplane **82**, 563; Flight **61**, 531.
P. H. Wilkinson, Synchronizing the Comet's engines. Aviation Age **18**, 32 (Dec.).
Airscrews for the Britannia and Princess. Aeroplane **83**, 460.
Fast starter for Nene 4 turbojet. Aviation Week **56**, 56 (Feb. 9).
Flying in step. Flight **61**, 328.
High-energy spark ignition units for gas turbines. Gas and Oil Power **47**, 314.
Jet heat exchangers made lighter. Aviation Week **56**, 58 (June 9).
Jet ignition. Aviation Week **57**, 67 (Nov. 10).
Self-starters for jets. Science News Letter **62**, 331.
Some combustion developments in aeronautical turbines. Engineer **194**, 383.
Temperature control for jet-engined aircraft. Aeroplane **83**, 639.
U. S. buys French portable jet starter. Aviation Week **56**, 79 (June 16).

1953

J. S. Alford and C. R. Heising, Fast thermocouples as control-system elements sensing exhaust-gas temperatures in aircraft gas turbines. Trans. ASME **75**, 7.

A. S. Boksenbom and R. Hood, Automatic control systems satisfying certain general criteria on transient behavior. SAE Trans. **61**, 594.

J. W. Calvert, New accessories spur pneumatics growth. Am. Aviation **17**, 21 (Oct. 26).

G. L. Christian, Comets use high-energy ignition. Aviation Week **59**, 83 (Oct. 12).

C. S. Constantino, British turbojets feature simplicity, reliability and low weight in controls and fuel systems. Abstract: SAE Journal **61**, 55 (Jan.).

A. K. Forney, Pneumatic starters best for gas turbines. Abstract: SAE Journal **61**, 118 (July).

R. R. Higginbotham and W. R. Peterson, Fuel system complexity—how much is necessary? SAE M. P., Los Angeles (Oct.).

O. H. Jacobson and P. Volkman, Starting jet engines with turbo-compressor. Automotive Inds. **109**, 50 (Oct. 1).

P. Klass, F-86D flies with "automatic engineer." Aviation Week **59**, 48 (Sept. 21).

L. J. Lyons, Turbojet cooling systems. Abstract: SAE Journal **61**, 42 (Feb.).

H. C. Simmons, Dowty universal fuel governor for aircraft turbines. Shell Aviation News No. 178, 15 (Apr.).

A. Vandyk, Props for Britain's turboprops: Rotol. Am. Aviation **16**, 48 (Feb. 2).

F. W. Wellons Jet-engine bearings are stumbling block. Abstract: SAE Journal **61**, 55 (Feb.).

P. H. Wilkinson, New turbine accessories—in remote installation. Aviation Age **19**, 32 (Jan.).

Air-turbine accessory drives for aircraft. Engineering **176**, 777.

A fuel-air turbine starter. Aeroplane **85**, 796.

A new turbine starter. Aeroplane **85**, 5.

The Dowty spill-burner fuel system. Aeroplane **83**, 747 (1952); Aircraft Eng. **25**, 133.

202.5 Installation and Maintenance

1950

J. W. Bailey, Turbojet engines—service experience. Abstract: SAE Journal **58**, 23 (Dec.).

G. F. Champlin, Overhaul center for jet engines. Am. Helicopter **19**, 6 (Aug.).

W. D. Perreault, A study of turbojet overhaul experience. Am. Aviation **14**, 30 (June).

H. W. Sidwell, Gas turbine installation. Hawker Siddeley Rev. **3**, 13 (Dec.).

A. F. streamlines jet overhaul. Aviation Week **53**, 26 (Sept. 18).

Jet engines prove complex to overhaul men at Tinker AF Base. CADO Tech. Data Dig. **15**, 18 (Nov.).

Jet installation design problems. Symposium by a panel of experts. Aeronaut. Eng. Rev. **9**, 28 (Apr.).

Servicing the Jetliner. The Technical Instructor **5**, 13 (Nov.).

Turboprop installation design highlights on XP5Y-2. Aviation Week **53**, 24 (Aug. 7).

1951

F. H. Sharp, Meeting turboprop installation problems. Abstract: SAE Journal **59**, 74 (Jan.).

D-H Goblin overhaul. Can. Aviation **24**, 16 (Feb.).

J-42 overhaul time set at 1,000 hours. Aviation Week **55**, 17 (Sept. 17).

New jet tester speeds overhaul. Aviation Week **55**, 50 (Nov. 12).

1952

M. Conklin, Gas turbine engine overhaul factory. Can. Machinery **63**, 124 (Oct.).

D. Desoutter, Jet airliner maintenance. Aviation Age **17**, 34 (June).

F. B. Lary, Installing turbojet presents cooling and vibration problems. Abstract: SAE Journal **60**, 80H (Dec.).

Inflatable jet pod maintenance shelter. Shell Aviation News No. 165, 11 (Mar.).

1953

D. A. Anderton, The case for pod-mounted jet engines. Aviation Week **58**, 29 (May 18).

C. E. Dixon, Cost savings by component replacement in line maintenance. SAE Pre. No. 35, Detroit (Jan. 15).
M. W. Galliers, Turbine engine design. Abstract: SAE Journal **61**, 40 (July).
C. Garside, Inspection problems of modern jet engines. Engineering **175**, 345 and 409; Trans. Inst. Engrs. Shipbuilders (Scotland) **96**, 265.
W. H. Hand, Jet power installation. Abstract: SAE Journal **61**, 78 (Mar.).
S. M. Saeed The repair and overhaul of gas turbines. Aircraft Eng. **25**, 200.
B. T. Salmon, High speed transport turbojet installation considerations. Abstract: Aircraft Eng. **25**, 194.
B. T. Salmon, The case for the underslung nacelle on the jet transport. Aviation Age **19**, 84 (May).
G. S. Schairer, Why pod-mounted engines make sense. Aero Dig. **67**, 100 (Sept.); Aircraft Eng. **25**, 194; Engineer **196**, 406.
J. R. Steding, Flight tests are vital to jet installation development. Abstract: SAE Journal **61**, 47 (Apr.).
In praise of pods. Aeroplane **84**, 611.
Overhaul life of the "Avon" turbojet engine. Engineer **195**, 648.

202.6 Air Intake and Exhaust-Gas Discharge Systems

1947

H. N. Cohen, Investigation of intake ducts for a high-speed subsonic jet-propelled airplane. NACA Research Memo. No. L7C24a (Apr.).

1948

L. E. Wallner, Investigation of performance of turbojet engine with constant and variable-area exhaust nozzle. NACA Research Memo. No. E8J25d (Nov.).

1949

B. T. Lundin, Investigation of several clamshell variable-area exhaust nozzles for turbojet engines. NACA Research Memo. No. E9B02 (May).

1950

E. W. Conrad and A. E. Sobolewski, Investigation of effects of inlet-air velocity distortion on performance of turbojet engine. NACA Research Memo. No. E50G11 (Sept.).
J. L. Edwards, Design of tail pipes for jet engines including reheat. Engineering **169**, 191; J. Roy. Aeronaut. Soc. **54**, 217.
J. L. Frank, Pressure-distribution and ram-recovery characteristics of NACA submerged inlets at high subsonic speeds. NACA Research Memo. No. A50E02 (July).
J. Persh, The effect of the inlet Mach number and inlet-boundary-layer thickness on the performance of a 23° conical diffuser-tail-pipe combination. NACA Research Memo. No. L9K10 (March).

1951

J. R. Blackaby, An investigation of the effects of jet-outlet cut-off angle on thrust direction and body pitching moment. NACA Tech. Note No. 2379 (June).
M. Cristescou, Les entrees d'air pour turboreacteurs. Technique et Science Aéronaut. No. 4, 200.
A. Ferri and L. M. Nucci, Preliminary investigation of a new type of supersonic inlet. NACA Tech. Note No. 2286 (Apr.).
E. P. Neumann and F. Lustwerk, High-efficiency supersonic diffusers. J. Aeronaut. Sci. **18**, 369.
A. H. Sacks and J. R. Spreiter, Theoretical investigation of submerged inlets at low speed. NACA Tech. Note No. 2323 (Aug.).
G. S. Schairer, Performance characteristics of jet nozzles. 3d Anglo-Amer. Aeronaut. Conf. (Brighton), Roy. Aeronaut. Soc. 155, (Sept.); Abstract: Aeroplane **81**, 361.
L. Servanty, Les entrées d'air pour turboreacteurs. Techinque et Science Aéronaut. No. 4, 191.
D. D. Wyatt, Aerodynamic forces associated with inlets of turbojet installations. Aeronaut. Eng. Rev. **10**, 20 (Oct.).
Air inlet. Aero Dig. **62**, 76 (Apr.).
Flexible tail cone developed for jet fighters. CADO Tech. Data Dig. **16**, 13 (June).

1952

G. Dubois, R. Kling, and R. Jean, Study of the structure of a turbojet injector nozzle jet stream by wire screen interception. Recherche aéronaut. No. 28, 31 (July/Aug.).

V. D. Naylor, An experiment on nozzle flow. Aircraft Eng. **24**, 344.

J. Seddon, Air intakes for aircraft gas turbines. J. Roy. Aeronaut. Soc. **56**, 747; Engineering **173**, 94.

1953

J. Kestin and S. K. Zaremba, One-dimensional high-speed flows. Aircraft Eng. **25**, 172.

W. A. Kilrain, The iris nozzle: answer for jet controls? Am. Aviation **17**, 38 (Sept. 14).

R. G. Laucher and J. S. Winter, Optimum exit-nozzle performance for jet engines. Aeronaut. Eng. Rev. **12**, 41 (Sept.); Aeroplane **85**, 391.

Y. R. Mayhew and G. F. C. Rogers, One-dimensional irreversible gas flow in nozzles. Engineering **175**, 355.

J. D. Stanitz, Aerodynamic design of efficient two-dimensional channels. Trans. ASME **75**, 1241.

D. D. Wyatt, An analysis of turbojet-engine-inlet matching. NACA Tech. Note No. 3012 (Sept.).

A French jet thrust spoiler. Aeroplane **84**, 31; Am. Aviation **17**, 15 (June 8); Aviation Week **58**, 40 (June 8).

202.7 Fuels and Lubricants

1947

R. E. Bolz and J. B. Meigs, Fuel tests on an I-16 jet-propulsion engine at static sea-level conditions. NACA Research Memo. No. E7B01 (Apr.).

R. T. Dittrich, Combustion-efficiency investigation of special fuels in single tubular-type combustor at simulated altitude conditions. NACA Research Memo. No. E7F11 (Aug.).

1948

J. D. Wear and E. R. Jonash, Combustion-efficiency and altitude-limit investigations of five fuels in an annular turbojet combustor. NACA Research Memo. No. E7L30 (June).

1949

L. W. Acker and K. S. Kleinknecht, Comparison of flight performance of AN-F-58 and AN-F-32 fuels in J35 turbojet engine. NACA Research Memo. No. E8L02 (April).

E. G. Stricker and W. D. Rayle, Altitude performance of AN-F-58 fuels in J35-C-3 single combustor. NACA Research Memo. No. E8L20a (June).

J. D. Wear and E. R. Jonash, Carbon deposition of 19 fuels in an annular turbojet combustor. NACA Research Memo. No. E8K22 (Feb.).

1950

E. E. Bisson and R. L. Johnson, Turbojet engine lube problem aided by supplemental lubes, additives. Abstract: SAE Journal **58**, 39 (March).

A. M. Busch, Correlation of laboratory smoke test with carbon deposition in turbojet combustors. NACA Research Memo. No. E9K04 (Feb.).

E. A. Droegemueller, Aircraft turbine engine fuel requirements. Standard Oil Co. of Cal., Aviation Div., Commercial Aircraft Turbine Engine Fuel and Lubricant Symposium, Los Angeles; Esso Air World **3**, 64 (Nov./Dec.).

W. V. Hanley, Economic aspects of a wide variety of possible commercial aircraft turbine engine fuels. Standard Oil Co. of Cal., Aviation Div., Commercial Aircraft Turbine Engine Fuel and Lubricant Symposium, Los Angeles.

K. C. Hunt, Aircraft lubrication. Gas turbine engines. Sci. Lubrication (London) **2**, No. 11; J. Inst. Petroleum **37**, 247A.

A. R. Ogston, Fuel for commercial jets. Aero Dig. **60**, 17 (June).

A. R. Ogston Jet fuels—what kind and at what cost? Petroleum Processing, 824 (Aug.).

W. D. Perreault, Petroleum experts look at turbine fuels. Am. Aviation **14**, 25 (Nov. 27).

J. D. Rogers, Performance characteristics of commercial aircraft turbine fuels. Standard Oil Co. of Cal., Aviation Div., Commercial Aircraft Turbine Engine Fuel and Lubricant Symposium, Los Angeles.

A. E. Smith, Aviation gas-turbine engine lubricants. Aero Dig. **61**, 46 (Oct.).
J. M. Stokely and J. G. Carroll, Lubrication problems of commercial aircraft turbines. Standard Oil Co. of Cal., Aviation Div., Commercial Aircraft Turbine Engine Fuel and Lubricant Symposium, Los Angeles.
Food for the gas turbine. Aero Dig. **61**, 23 (Dec.).
Kerosene for commercial jet transports. – Am. Aviation **14**, 29 (June 15).

1951

D. P. Barnard, Jet fuel quality requirements. Petroleum Processing **6**, 1229.
S. Barron, Low-temperature lubrication of turbojet and turboprop engines. CADO Tech. Data Dig. **16**, 16 (Apr.).
E. L. Bass, I. Lubbock, and C. G. Williams, The gas turbine and its fuels. Shell Aviation News No. 156, 14 (June).
E. A. Droegemueller and D. N. Harris, Temperature extremes complicate lubrication. Abstract: SAE Journal **59**, 63 (Sept.).
L. C. Gibbon, Fuel requirements for aircraft gas-turbine engines. ASME M. P., Atlantic City.
J. T. Hendren and J. G. Borger, Jet fuels—the airline viewpoint. Esso Air World **4**, 32 (Sept./Oct.).
K. C. Hunt, Petroleum requirements of British gas turbines. Esso Air World **3**, 119 (Mar./Apr.) and 147 (May/June); Abstract: SAE Journal **59**, 62 (Oct.).
E. M. Phillips, Lubrication-bearing problems in aircraft gas turbines. Mech. Eng. **73**, 983
S. Rothberg and R. S. Jessup, Net heat of combustion of AN-F-58 aircraft fuels. Ind. Eng. Chem. **43**, 981.
M. O. Scott, R. Stansfield, and T. Tait, Fuels for aviation and industrial gas turbines. J. Inst. Petroleum **37**, 487.
J. G. Sharp, Fuels for gas-turbine aero-engines. Aircraft Eng. **23**, 2.
Altitude performance of gas turbine fuels of varying volatility. Rept. of Coordinating Research Council, New York (Apr.).
Jet fuels. World Petroleum **22**, 90 (July).
New fuels specified for jet engines. Aviation Week **55**, 28 (Aug. 20).
Review of current and anticipated lubricant problems in turbojet engines. NACA Research Memo. No. 51D20 (Apr.).
Synthetic lubricant developed for gas turbine engines. Automotive Inds. **105**, 22 (Dec.).
What properties should jet fuel have? Aviation Week **54**, 26 (Jan. 29).

1952

B. G. Adams, How jet fuel is blended to specifications. Petroleum Refiner **31**, 95 (Feb.).
S. Barron, Low-temperature lubrication of aircraft engines. SAE Quart. Trans. **6**, 175.
O. C. Blade, National annual survey of aviation gasoline and aviation jet fuel. U. S. Bur. Mines, Rept. Invest. No. 4889; Oil Gas J. **51**, 112 (Aug. 25).
L. D. Christensen, The development of a turboprop synthetic lubricant. Lubrication Eng. **8**, 177.
L. D. Derby, E. B. Evans, B. A. Faulkner, and E. C. G. Jelfs, Vapour and air release from aviation fuels. J. Inst. Petroleum **38**, 475.
E. A. Droegemueller, Suitability of jet fuels. Petroleum Engr. **24**, C13 (Nov.).
A. L. Foster, Jet engines and their fuels. Petroleum Engr. **24**, C3 (Nov.).
M. F. Granville, Aircraft-turbine-fuel supply problems. Oil Gas J. **51**, 98 (Oct. 6); Petroleum Engr. **24**, C4 (Nov.).
V. B. Guthrie, Jet fuels: present and future. Petroleum Processing **7**, 1425.
J. B. Hill, Fueling civil aircraft. Oil Gas J. **51**, 101 (Oct. 6); Petroleum Engr. **24**, C17 (Nov.).
C. W. Kelley, Development of specifications for jet fuels. Oil Gas J. **51**, 96 (Oct. 6); Petroleum Engr. **24**, C7 (Nov.).
W. F. Krause, Jet fuels: the small refiner's role. Oil Gas J. **51**, 93 (Oct. 6); Petroleum Engr. **24**, C9 (Nov.).
A. Mortsell, The problems of jet engine fuels. Tek. Tidskr. **82**, 875.
A. D. Shellard, Vapour evolution characteristics of aviation turbine fuels. Shell Aviation News No. 164, 20 (Feb.).
P. T. Sulzer, Effect of fuel additives on deposition of ash from oil. Schweiz. Arch. angew. Wiss. **18**, 379.

Fuels for commercial jet transports. World Petroleum **23**, 48 (April).
Fuels for jet aircraft. Natl. Fire Protect. Assoc. Quart. **40**, 147.
Gas-turbine lubrication. Flight **62**, 721.
Heavy fuel. Shell Aviation News No. 170, 3 (Aug.).
The aviation industry. Lubrication **38**, 37 (April).

1953

O. C. Blade, National annual survey of aviation gasoline and aviation jet fuel, 1952 production. U. S. Bur. Mines, Rept. Invest. No. 4982; Oil Gas J. **52**, 95 (July 6).

G. L. Christian, New oil will take hotter jets higher. Aviation Week **58**, 72 (Apr. 27).

G. Cohen, C. M. Murphy, J. G. O'Rear, H. Ravner, and W. A. Zisman, Aliphatic esters, properties and lubricant applications Ind. Eng. Chem. **45**, 1766.

A. B. Crampton, W. W. Gleason, W. E. Lifson, and E. F. H. Pennekamp, Synthetic oils simplify turbo-engine lubrication. Abstract: SAE Journal **61**, 27 (Aug.); Sci. Lubrication (London) **5**, 25 (Feb.).

C. B. Davies, Developing aviation fuels and lubricants. J. Roy Aeronaut. Soc. **57**, 700.

P. D. Doran, Some considerations regarding fuels for turbine-powered transports. SAE Pre. No. 36, Detroit (Jan. 15).

A. L. Foster, Synthetics for jet engines. Petroleum Engr. **25**, C3 (Feb.).

P. Givliani, Fuels for aviation gas turbines. Rev. inst. franc. petrole **8**, 282.

H. J. Hepp, E. O. Box Jr., and G. C. Ray, Utilization of kerosene stocks for jet fuels by treatment with urea. Ind. Eng. Chem. **45**, 112.

R. L. Johnson, M. A. Swikert, and E. E. Bisson, Synthetic lubricants. Abstract: SAE Journal **61**, 26 (Aug.).

W. G. Lovell, Petroleum fuels. Ind. Eng. Chem. **45**, 1426.

J. G. Sharp, Heavy fuels for turbines? Shell Aviation News No. 177, 14 (Mar.).

W. A. Zisman, Engineering possibilities of synthetic lubricants. SAE Trans. **61**, 309.

Civil turbine fuel problems. Aeroplane **84**, 468.

Ester type, synthetic jet lube operates from —65° to 450° F. Chem. Eng. News **31**, 1756.

JP-4 jet fuel. Aero Dig. **67**, 44 (Dec.).

More on jet fuels. Oil Gas J. **51**, 119 (Jan. 12).

Synthetic gas turbine lubricants. Petroleum **16**, 189.

Synthetic oil for jets. Sci. News Letter **63**, 238.

The turbine fuel problem. Aeroplane **85**, 613.

202.8 Instrumentation and Testing

1949

G. J. Delio, G. V. Schwent, and R. S. Cesaro, Transient behavior of lumped-constant systems for sensing gas pressures. NACA Tech. Note No. 1988 (Dec.).

A. C. Hagg, B. Cametti, and G. O. Sankey, A high-speed, high-temperature precision testing machine for gas turbine disk research. Westinghouse Elect. Corp., Westinghouse Research Labs. Sci. Paper. No. 1461 (Aug.).

M. C. LaVerne and A. S. Boksenbom, Methods for determining frequency response of engines and control systems from transient data. NACA Tech. Note No. 1935 (Aug.).

P. Vernotte, The measurement of temperature in aircraft engines. Publs. sci. et tech. ministère air (France) No. 230.

1950

S. Allen and J. R. Hamm, A pyrometer for measuring total temperature in low-density gas streams. Trans. ASME **72**, 851.

P. L. Blackshear, Jr., Sonic-flow-orifice temperature probe for high-gas-temperature measurements. NACA Tech. Note No. 2167 (Sept.).

A. S. Boksenbom and R. Hood, General algebraic method applied to control analysis of complex engine types. NACA Rept. No. 980.

J. D. Broatch, An apparatus for the measurement of ignition delays of self-igniting fuels. Fuel **29**, 106.

M. W. Carbon, H. J. Kutsch, and G. A. Hawkins, The response of thermocouples to rapid gas-temperature changes. Trans. ASME **72**, 655.

R. S. Cesaro, R. J. Koenig, and G. J. Pack, Experimental analysis of a pressure-sensitive system for sensing gas temperature. NACA Tech. Note No. 2043 (Feb.).
C. B. Daish, D. H. Fender, and A. J. Woodal, Use of resistance thermometers in rapidly changing temperatures. Phil. Mag. **41**, 729.
J. R. Erwin and J. C. Emery, New approach to axial compressor cascade testing technique. SAE Quart. Trans. **4**, 275.
S. I. Evans, Radiation from nonluminous flames. Bull. Brit. Coal Utilisation Research Assoc. **14**, 369.
P. B. Gooderum, G. P. Wood, and M. J. Brevoort, Investigation with an interferometer of the turbulent mixing of a free supersonic jet. NACA Rept. No. 963.
M. Hansen, Orifice problems. Forsch. Gebiete Ingenieurw., Forschungsheft No. 428.
R. J. Koenig and R. S. Cesaro, Investigation of spark-over voltage-density relation for gas-temperature sensing. NACA Tech. Note No. 2090 (May).
A. C. Lovesey, Modern methods of testing aero-engines and power plants. J. Roy. Aeronaut. Soc. **54**, 327.
K. J. Lush, Note on the time required to make level speed measurements with a turbine jet aircraft. J. Roy. Aeronaut. Soc. **54**, 651.
D. A. Nutt, Experimental determination of the natural modes of vibration of gas turbine blades. Engineering **170**, 323.
N. Sharp, Starting tests at low temperature of the "Theseus" propeller-turbine engine. Royal Aircraft Establishment (Gt. Brit.) Tech. Note No. Mech. Eng. 52 (Sept.).
J. W. Tomlinson, The dynamic balancing of turbines and impellers. Aircraft Eng. **22**, 175.
E. S. Van Valkenburg and N. W. Matthews, Analogue methods for turbojet thrust instrumentation. Elec. Eng. **69**, 1004.
L. Viaud, Determination of the mean temperature in a combustion chamber. Recherche aéronaut. No. 18, 55 (Nov./Dec.).
W. Wahl and M. A. Sulkin, Jet engine thrust measured in flight. Abstract: SAE Journal **58**, 46 (Sept.).
V. C. Wescott, Some design considerations in connection with the use of high speed thermometry in telemetering. Instruments **23**, 1298.
W. A. Wildhack, A versatile pneumatic instrument based on critical flow. Rev. Sci. Instr. **21**, 25.
H. Wolff, Method of calculating the combustion temperature of gas mixtures. Z. Elektrochem. **54**, 556.
Gas-turbine testing. Flight **57**, 427.
Instrumentation in engine testing. Instr. Practice **4**, 546 (Aug.).
Optical torquemeter. Aviation Week **53**, 30 (Dec. 18).
Testing gas-turbine engines for aircraft. Engineering **169**, 380.
Thrust-measuring "capsules" for jet engines. Engineering **170**, 573.
Thrust-measuring stand. Aeronaut. Eng. Rev. **9**, 11 (Dec.).
Turbine testing. Aeroplane **78**, 435.

1951

H. M. Beede and C. R. Droms, Simplified thermocouple for temperature measurement in high-velocity gas streams. Instruments **24**, 338 (Mar.).
L. Bernath, H. N. Powell, A. G. Robinson, F. Welty, and K. Wohl, The determination of the temperature of nonluminous flames by radiation in the near infrared. Project Squid Tech. Rept. No. 32. Reprinted from Conference of the Inst. Mech. Engrs. and ASME London Conference (Sept.).
H. P. Broida, Rotational temperatures of OH in methane-air flames. J. Chem. Phys. **19**, 1383.
T. W. F. Brown, The testing of motive power machinery. Engineering **171**, 265.
F. P. Bundy, H. M. Strong, and A. B. Gregg, Measurement of velocity and pressure of gases in rocket flames by spectroscopic methods. J. Appl. Phys. **22**, 1069.
J. Christophe, Determination of drag and thrust by means of wake and jet stream survey. Recherche aéronaut. No. 24, 9 (Nov./Dec.).
T. P. Clark, Method for determining distribution of luminous emitters in cone of laminar Bunsen flame. NACA Tech. Note No. 2246 (Jan.).
H. W. Cole, Jr., Some thermocouple details for temperature measurements. Product Eng. **22**, 166 (Aug.).
J. A. Curcio, Method of determination of flame temperatures from emission in the ultraviolet OH band. J. Optical Soc. Amer. **41**, 173.

A. I. Dahl and E. F. Flock, Response characteristics of temperature-sensing elements for use in the control of jet engines. J. Research Nat. Bur. Standards **45,** 292 (1950); Aviation Week **53,** 25 (Nov. 27, 1950); Aero Dig. **63,** 23 (July 1951); Instruments **24,** 1446 (1951); J. Franklin Inst. **251,** 191 (1951); Mech. Eng. **73,** 230 (1951).

H. R. Davidson and D. L. Fuller, A simple analog computer for thermodynamic calculations. J. Phys. & Colloid Chem. **55,** 200.

G. Dixon-Lewis and M. J. G. Wilson, A method for the measurement of the temperature distribution in the inner cone of a Bunsen flame. J. Franklin Inst. **47,** 1106.

D. A. Drew, Measuring stresses in aircraft turbines. Engineering **172,** 761.

M. M. El Wakil, Instantaneous and continuous sodium line reversal pyrometer. Mech. Eng. **73,** 235.

P. D. Freeze, Bibliography on the measurement of gas temperature. Nat. Bur. Standards Circular No. 513.

J. Galey, Measurement of brightness temperatures of monochromatic emission factors and of the true temperatures of luminous flames by photographic photometry. Compt. rend. **233,** 575.

M. Gay, W. F. King, and D. Dalasta, 24,000-HP dynamometer tests jet engines. Allis-Chalmers Elec. Rev. **16,** 23 (Jan.).

C. G. Gettelman and L. N. Krause, Characteristics of a wedge with various holder configurations for static-pressure measurements in subsonic gas streams. NACA Research Memo. No. E51G09 (Sept.).

A. F. Gibson, Two colour infra-red radiation pyrometer. J. Sci. Instr. **28,** 153 (May).

C. G. Hylkema, R. F. Stott, and H. S. Seifert, A central data-recording system for a jet-propulsion laboratory. Elec. Eng. **70,** 957.

R. Jackson, Newer methods of gas temperature measurement. Bull. Brit. Coal Utilisation Research Assoc. **15,** 245.

R. Jackson, Temperature measurement in gases and flames—radiation methods. Bull. Brit. Coal Utilisation Research Assoc. **15,** 205.

L. Jaffee, B. A. Coss, and D. R. Daykin, An electromagnetic flowmeter for rocket research. NACA Research Memo. No. E50L12 (Mar.).

B. Jakobsson, Definition and measurement of jet engine thrust. J. Roy. Aeronaut. Soc. **55,** 226.

F. H. Keast, High-speed cascade testing techniques. ASME M. P. No. 51-SA-31.

R. H. Kemp, W. C. Morgan, and S. S Manson, Advances in high-temperature strain gages and their application to the measurement of vibratory stresses in hollow turbine blades during engine operation. Proc. Soc. Exptl. Stress. Anal. **8,** 209.

G. T. Lalos, Sonic flow pyrometer for measuring gas temperature. J. Research Nat. Bur. Standards **47,** 179.

D. W. Male, Photographic pyrometer. Rev. Sci. Instr. **22,** 769.

W. S. McEwan and S. Skolnik, An analog computer for flame gas composition. Rev. Sci. Instr. **22,** 125 (Mar.).

A. W. Nelson and H. T. Lotee, Launching techniques for rocket testing. ASME M. P., Atlantic City.

S. S. Penner, Two-path method for measuring flame temperatures and concentration in low pressure combustion chamber. J. Chem. Phys. **19,** 272.

A. Perone, Dynamic flow-field measurement. Aero Dig. **62,** 50 (June).

G. Peters, Optical measurements of vibrations in rotating blades of axial compressors and gas turbines. Brennstoff-Wärme-Kraft **3,** 384.

I. I. Pinkel, Determination of ramjet combustion chamber temperatures by means of total-pressure surveys. NACA Tech. Note No. 2526 (Dec.).

E. K. Plyler and C. J. Humphreys, Use of radiation from incandescent particles as an indication of flame temperature. J. Research Nat. Bur. Standards **47,** 456.

G. Ribaud, M. Michaud, M. Riviere, and M. J. Galey, International Committee for study of radiation from flames: comparative results of optical measurements. Chaleur et ind. **32,** 301.

A. M. Roberts and A. A. Gregory, Vibration test equipment for turbine blades. Engineer **191,** 370.

L. Rudlin, Preliminary results of a determination of temperatures of flames by means of K-band microwave attenuation. NACA Research Memo. No. E51G20 (Sept.).

W. R. Russell, W. Gracey, W. Letko, and P. B. Fournier, Wind tunnel investigation of six shielded total-pressure tubes at high angle of attack. Subsonic speeds. NACA Tech. Note No. 2530 (Nov.).

J. Schoen, Temperature measurements in gas flow. Arch. tech. Messen No. 187, T84 (Aug.).
B. H. Schultz, Measuring rapidly fluctuating gas temperatures. Phillips Tech. Rev. **13**, 104 (Oct.).
E. C. Shepherd, Vibration failure. Machine Design **23**, 157 (Dec.).
K. Stehling. Optical methods of rocket motor evaluation. ASME M. P., Toronto.
J. D. Thackrey and J. H. Altseimer, Optical techniques for determining the interior ballistics of liquid-rocket thrust chambers. ASME M. P., Atlantic City.
R. N. Weltman and P. W. Kuhns, An analysis of an X-ray absorption method for measurement of high gas temperatures. NACA Tech. Note No. 2580 (Dec.).
H. W. Wilson, Continuous-trace recording system for flight testing an "Orenda" gas turbine. Nat. Aeronaut. Establ. (Canada), LR-13 (Sept.).
Aircraft gas turbines. Mech. Eng. **73**, 22.
Dart endurance test. Flight **60**, 249.
Endurance test of turbo-propeller engine. Engineer **192**, 17.
Gauging equipment for gas turbine blades. Engineer **191**, 169.
High speed infrared pyrometer. Product Eng. **22**, 168 (Jan.).
How GE tested ramjet for helicopters. Aviation Week **55**, 32 (Sept. 10).
Jet turbine blades tested in flight. Aviation Week **54**, 33 (May 21).
Stress analysis at height; strain-gauging of turbine-blades during flight. Flight **60**, 146.
24,000-HP dynamometer for testing turbojet engines. Automotive Inds. **105**, 36 (Sept. 15).

1952

J. T. Agnew, Line-reversal techniques in the determination of temperature of a gun flash or other rapid transient phenomena. Trans. ASME **74**, 333.
J. H. Altseimer, Photographic techniques applied to combustion studies—two dimensional transparent thrust chamber. J. Am. Rocket Soc. **22**, 86.
M. P. Biles and J. A. Putnam, Use of a consolidated porous medium for measurement of flow rate and viscosity of gases at elevated pressures and temperatures. NACA Tech. Note No. 2783 (Sept.).
I. R. A. E. Bredt, Fundamentals of spectroscopic methods for the measurement of temperature and velocity of very hot, rapidly flowing exhaust gases. Z. Elektrochem. **56**, 71.
A. W. Brunot and R. O. Fulton, A clearanceometer for determining blade-tip clearances of axial-flow compressors. Abstract: Mech. Eng. **74**, 591; Aviation Age **18**, 36 (Sept.).
R. C. Burris and B. G. Hatch, How GE tests gas turbines. Power Eng. **56**, 62 (Oct.).
E. J. Burton and R. K. Hurden, Recent advances in measuring flame and gas temperatures. Iron & Coal Trades Rev. **164**, 1211.
E. Cartotto, Applications of pyrometry to rocket testing. ASME M. P., New York.
J. A. Clark and W. M. Rohsenow, A new method for determining the static temperature of high-velocity gas streams. Trans. ASME **74**, 219.
M. Dandois and D. Novik, Application of linear analysis to an experimental investigation of a turbojet engine with proportional speed control. NACA Tech. Note No. 2642 (Feb.).
J. Dick and L. S. Williams, Elevated-temperature fatigue-testing machine for ceramic materials. Engineering **173**, 422.
D. A. Drew, Turbine stresses in aircraft engines. Shell Aviation News No. 163, 15 (Jan.).
E. Fourel and C. Douchet, Measuring the temperature of rapidly rotating bodies. Recherche aéronaut. No. 27, 33 (May/June).
A. G. Gaydon and H. G. Wolfhard, The spectral-line reversal method of measuring flame temperatures. Proc. Phys. Soc. (London) **65A**, 19.
R. E. Gorton and B. E. Miller, Instrumentation for developing gas turbines. Abstract: SAE Journal **60**, 60 (July).
I. M. D. Halliday, Suction pyrometry. J. Inst. Fuel (London) **24** (Nov. 1951); Chaleur et ind. **33**, 171 (June 1952).
M. F. Heidmann and R. J. Priem, A modified sodium line reversal technique for measurement of combustion temperature in rocket engines. Am. Rocket Soc. Pre. 83-52.
A. P. Helfer, Electrical pressure integrator. NACA Tech. Note No. 2607 (Jan.).

A. H. Howland and M. J. G. Wilson, Design and construction of a high-speed camera and its application to certain combustion problems. Fuel **31**, 274.
J. Kendall, Test equipment new field. Aero Dig. **65**, 114 (Sept.).
P. Klass, Jet instrumentation turns to avionics. Aviation Week **56**, 42 (Mar. 31).
W. J. Kunz, Jr., New equipment maps jet-engine stall areas. Abstract: SAE Journal **60**, 53 (Dec.).
E. R. Letsch and W. J. King, Methods of measuring high temperatures in gas streams. Abstract: Mech. Eng. **74**, 236.
P. Lygrisse, Telemetering devices for supersonic rockets. Recherche aéronaut. No. 28, 43 (July/Aug.).
C. A. Meyer and R. P. Benedict, Instrumentation for axial-flow-compressor research. Trans. ASME **74**, 1327.
E. M. Moffatt, Multiple-shielded high-temperature probes. SAE Quart. Trans. **6**, 567.
A. Moutet, Method for rapidly measuring and recording flame temperatures. Recherche aéronaut. **21** (May/June).
J. H. Povolny, Use of choked nozzle technique and exhaust jet diffuser for extending operable range of jet-engine research facilities. NACA Research Memo. No. E52E12 (July).
H. P. Powell, Flight testing aero engines. Shell Aviation News No. 170, 4 (Aug.).
F. Rossler, Temperature measurement by the line-reversal method for short periodic processes. Z. angew. Phys. **4**, 22.
M. D. Scadron, Analysis of a penumatic probe for measuring exhaust gas temperatures with some preliminary experimental results. NACA Research Memo. No. E52A11 (May).
M. D. Scadron and I. Warshawsky, Experimental determination of time constants and Nusselt numbers for bare-wire thermocouples in high-velocity air streams and analytic approximation of conduction and radiation errors. NACA Tech. Note No. 2599 (Jan.).
W. M. Schulze, G. C. Ashby, Jr., and J. R. Erwin, Several combination probes for surveying static and total pressure and flow direction. NACA Tech. Note No. 2830 (Nov.).
C. H. Shepard and I. Warshawsky, Electrical techniques for compensation of thermal time lag of thermocouples and resistance thermometer elements. NACA Tech. Note No. 2703 (May).
J. R. Steding, Flight testing of prototype engines as primary powerplants in new airplanes. Abstract: Aircraft Eng. **24**, 372.
J. Stephenson, R. T. Shields, and D. W. Bottle, An investigation into the pitot rake method of measuring turbojet engine thrust in flight. Aeroplane and Armament Experimental Establishment (Gt. Brit.) AAEE/Res/265 (Dec. 23).
H. J. Svec, Behaviour of platinum platinum-rhodium thermocouples at high temperatures. J. Sci. Instr. **29**, 100 (Mar.).
J. W. Tomlinson, Dynamic balancing of jet rotors. Can. Aviation **25**, 72 (July).
R. H. Wilson, Jr., Using the sun to measure temperatures of flames in the laboratory. Pub. Astron. Soc. Pacific **64**, 105.
J. H. Zabriskie, Missile testing has own technique. Abstract: SAE Journal **60**, 116 (Aug.).
Velocity of sound in hot gases method of determining temperature. Technol. Rev. **54**, 522 (July).

1953

J. S. Alford and C. R. Heising, Fast thermocouples as control-system elements sensing exhaust-gas temperatures in aircraft gas turbines. Trans. ASME **75**, 7.
E. Balint, Techniques of flow visualization. Aircraft Eng. **25**, 161.
J. L. Beal and J. T. Grey, Sampling and analysis of combustion gas. J. Am. Rocket Soc. **23**, 174.
C. M. Beighley and T. E. Cheatam, Reduction of rocket motor performance data by means of IBM computing machines. J. Am. Rocket Soc. **23**, 150.
J. A. Beirlein and K. Scheller, Methods of measuring thrust. J. Am. Rocket Soc. **23**, 128.
K. Berman and E. H. Scharres, Photographic techniques in jet propulsion studies. J. Am. Rocket Soc. **23**, 170.
P. L. Blackshear, Jr., NACA sonic-flow-orifice temperature probe in high-gas-temperature measurement. Trans. ASME **75**, 51.
A. W. Brunot and R. O. Fulton, A clearanceometer for determining blade-tip clearances of axial-flow compressors. Trans. ASME **75**, 1.
G. L. Christian, Jet fuel controls tested cheaper. Aviation Week, **58**, 62 (June 15).

E. F. Colditz, Raising the limits for thrust measurement in jet engine testing. General Motors Eng. J. 1, 16 (Sept./Oct.).
B. A. Coss, D. R. Daykin, L. Jaffe, and E. M. Sharp, A digital automatic multiple pressure recorder. NACA Tech. Note No. 2880 (Jan.).
C. I. Cummings and A. W. Newberry, Radio telemetry. J. Am. Rocket Soc. 23, 141.
B. E. Drimmer, Average temperatures by eleven parallel-connected thermocouples. J. Appl. Phys. 24, 225.
P. J. Dyne and S. S. Penner, Optical methods for the determination of combustion temperatures. J. Am. Rocket Soc. 23, 165.
E. F. Fiock and A. I. Dahl, The measurement of gas temperatures by immersion-type instruments. J. Am. Rocket Soc. 23, 155.
W. A. Fleming and H. D. Wilsted, Turbojet research techniques utilized in altitude facilities. Abstract: Aircraft Eng. 25, 196.
R. E. Gorton and B. E. Miller, Instrumentation for aircraft gas turbine development. SAE Trans. 61, 650.
J. Grey and F. F. Liu, Methods of flow measurement. J. Am. Rocket Soc. 23, 133.
R. P. Haviland, Telemetry instrumentation for rocket flight tests. Abstract: Aviation Week 58, 44 (Jan. 5).
M. F. Heidmann and R. J. Priem, Application of an electro-optical two-color pyrometer to measurement of flame temperature for liquid oxygen-hydrocarbon propellant combination. NACA Tech. Note No. 3024 (Oct.); J. Am. Rocket Soc. 23, 248; Aviation Week 58, 33 (Jan. 12).
W. L. Howland, Flight test instrumentation status. SAE M. P., Los Angeles (Oct.).
H. B. Jones, Jr., Recording instruments in rocket and jet engine testing. J. Am. Rocket Soc. 23, 146. Abstract: Aviation Week 58, 43 (Feb. 16).
Y. T. Li, Dynamic pressure measuring systems for jet propulsion research. J. Am. Rocket Soc. 23, 124.
W. F. Lindsey and J. Burlock, A variable-frequency light synchronized with a high-speed motion-picture camera to provide very short exposure times. NACA Tech. Note No. 2949 (May).
I. A. Mossop and F. D. Gill, Measurement of blade-tip clearances in aircraft turbines. Engineer 195, 291.
W. Schwarz, Gesamtstrahlungspyrometer für die temperaturmessung an Schaufeln von laufenden Gasturbinen. Brennstoff-Wärme-Kraft 5, 195.
W. C. Shaffer, Application of analog techniques to control design for aircraft engines. Abstract: Aviation Week 58, 44 (Jan. 5).
K. R. Stehling and P. M. Diamond, Flow controls. J. Am. Rocket Soc. 23, 178.
F. E. Swain, Control valves for high air-mass flows. Engineering 176, 705.
Jet engine simulator developed. Am. Aviation 16, 49 (May 11).
Now showing on TV: jet tests. Aviation Week 58, 43 (June 29).
Testing the Navy's jet engines. Aeroplane 85, 251.
XF-88B starts supersonic prop tests. Aviation Week 59, 17 (July 6).

202.9 General

1950

W. Collins, Jet power for light aircraft. Shell Aviation News, 14 (Apr.).
G. A. Grocco, Turboprops and turbojets. Atti accad. naz. Lincei, Rend. Classe sci. fis. mat. e nat. 8, 428.
R. N. Dorey, Extended lift of propeller turbine engines. Esso Air World 3, 34 (Sept./Oct.).
W. V. Hurley, Flight factors in turbojet design. Aviation Operations, 21 (May).
R. McLarren, Bleed happy. Aero Dig. 61, 52 (July).
J. F. Shannon, Research, design and development problems in gas turbines. Trans. Inst. Engrs. Shipbuilders (Scotland) 94, 132.
N. F. Silsbee, The turboprop arrives. Aviation Age 14, 32 (Dec.).
Jet engines in production. Aero Dig. 61, 44 (Aug.).
Present-day gas-turbine engines. Interavia 5, 472.

1951

C. B. Bailey-Watson, Designs of a decade; a review of turbojet and turboprop power units. Flight 59, 559.
F. R. Banks, Rearmament and the aviation gas turbine. Aeroplane 80, 438.
F. R. Banks, The aviation engine. Inst. Mech. Engrs. (London) Proc. 162, 433 (1950); Engineer 191, 259 (1951).

W. V. Hurley, Turbojet-engine design for high-speed flight. Trans. ASME **73**, 915; Aero Dig. **62**, 56 (May).
L. H. Leedham, Experimental gas-turbines; some problems of small-quantity manufacture. Aircraft Production **13**, 27.
A. McSurely, Auto makers get more engine business. Aviation Week **54**, 12 (Feb. 19).
E. J. Tangerman and A. Ashburn, How G. E. makes turbojets. Am. Machinist **95**, 135 (Feb. 5).
W. W. Taylor, Jets save alloys with air cooling. Iron Age **168**, 68 (Oct. 18).
E. S. Thompson and N. Burgess, Comparison of British and American gas-turbine practice. Aeronaut. Eng. Rev. **10**, 47 (Dec.).
B. Thwaites, A note on the design of ducted fans. Aeronaut. Quart. **3**, 173.
P. H. Wilkinson, Power improvements in turbojets. Aviation Age **15**, 34 (June).
P. H. Wilkinson, Turboprop's challenge to turbojets. Aviation Age **15**, 36 (Feb.).
Jet-engine developments. Mech. Eng. **73**, 504.

1952

D. A. Anderton, New frontiers of aeronautical engineering. Aviation Week **57**, 21 (Nov. 17).
C. F. Bachle and W. Collins, The ducted fan jet: Powerplant for future light aircraft. Abstract: SAE Journal **60**, 26 (Nov.).
A. D. Baxter, A comparison of axial and centrifugal compressor gas turbines. Aircraft Eng. **24**, 186.
R. B. Hotz, Split compressors usher in new jet era. Aviation Week **57**, 13 (Oct. 20).
W. E. Kavasch, Power plant fire protection. SAE Pre. No. 825, Los Angeles (Oct.).
Axials, centrifugals and the by-pass engine. Aeroplane **83**, 608.
By-pass engine promises fuel economy. Aviation Week **57**, 23 (Nov. 24).
Ford-Chicago plant to produce J-57s. Aviation Week **56**, 15 (Feb. 4).
Mach two aircraft await new engines. Am. Aviation **16**, 39 (Dec. 22).
Turbine jets of 1952. Interavia **7**, 316.
Turboprops. Aviation Week **57**, 19 (Nov. 24).
Vibration problems of gas turbines. Gas and Oil Power **47**, 139.

1953

F. R. Banks, The birth of an engine. Aeronaut. Eng. Rev. **12**, 31 (June).
J. G. Borger, Curb that jet appetite for fuel. Abstract: SAE Journal **61**, 17 (Oct.).
W. W. Davies and H. N. Taylor, Jet engines from the operator's viewpoint. Abstract: Aircraft Eng. **25**, 194.
I. H. Driggs and O. E. Lancaster, Gas-turbine development—aviation. Trans. ASME **75**, 217.
M. W. Galliers, Turbine engine design. Abstract: SAE Journal **61**, 40 (July).
R. T. Holland, Design for jet engine economy. Aviation Age **20**, 108 (Sept.).
R. T. Holland, Differences in the design and operation of military and commercial transport turbine engines. SAE Pre. No. 33, Detroit (Jan. 15).
A. Silverstein Research and development progress. Propulsion. Aviation Age **19**, 182 (June).
J. H. Stevens, Turboprops: what Europe has learned. Am. Aviation **17**, 28 (Nov. 23).
B. Thwaites, A note on the performance of ducted fans. Aeronaut. Quart. **4**, 179.
Interview with C. W. LaPierre: Design trends in jet engines. Am. Aviation **17**, 26 (Aug. 17).
Interview with G. F. Chapline: Designing jets for simpler production. Am. Aviation **17**, 24 (Dec. 7).
Plan for broadening jet engine design. Aviation Week **58**, 24 (Mar. 16).
Power Jets' gas-turbine patents. Engineering **175**, 481, 516, 549, 583, 609, 644, 679, 706, 743, 773, and 803.
Turboprops. Interavia **8**, 67.
Variations on an original theme. Aeroplane **84**, 206.

203. OTHER TYPES OF GAS TURBINES

203.1 For Locomotives

1950

W. F. Bradley, British experimenting with gas turbine locomotives. Automotive Inds. **103**, 41 (Sept. 15).
Coal-burning gas turbine. Colliery Guardian **180**, 186.

1951

N. C. Dezendorf, Diesel engines or gas turbines for locomotives. Diesel Power and Diesel Transportation **29,** 79 (Apr.).

D. L. Mordell, A coal-burning gas turbine. ASME M. P. No. 51-SA-32.

D. L. Mordell, Coal-burning gas turbine project. McGill University Gas Dynamic Lab. Rept. R27 (Sept.).

A. H. Morey, A résumé of the gas turbine-electric locomotive. Gen. Elec. Rev. **54,** 23 (Mar.).

O. S. Nock, Western Region gas turbine locomotive in service. Engineer **192,** 40.

T. J. Putz, Progress report on Baldwin-Westinghouse gas turbine electric locomotive. Proc. Midwest Power Conf. **13,** 94.

R. A. Williamson, Notes on the gas turbine electric locomotive. Diesel Power and Diesel Transportation **29,** 47 (May).

J. I. Yellott et al., Coal-burning gas turbine. Ry. Age **130,** 39 (June 18); Power Eng. **55,** 60 (July); Automotive Inds. **105,** 47 (Oct. 1).

Brown Boveri gas turbine locomotives. Brown Boveri Rev. **38,** 245.

Coal-burning gas turbine. Mech. Eng. **73,** 58.

First 1,000 hr of coal-burning gas-turbine tests. Power **95,** 104 (June).

Gas turbine locomotive. Mining Congr. J. **37,** 35 (Oct.).

Gas-turbine locomotives. Mech. Eng. **73,** 139.

Gas turbine locomotive successful in tests. Science News Letter **59,** 20.

Locomotive coal-burning gas turbine gets ready for testing. Power **95,** 90 (Aug.).

Oil-burning locomotive power plant. Oil Engine and Gas Turbine **19,** 23.

Operational trials of 4,500 HP gas turbine-electric locomotive. Engineer **191,** 329.

Passenger locomotive powered by twin gas turbines. Oil Engine and Gas Turbine **19,** 334.

Progress in railway mechanical engineering. Mech. Eng. **73,** 293.

Some British schemes for burning coal. Oil Engine and Gas Turbine **19,** 336.

3,000 H. P. gas-turbine electric locomotive; British Railways. Engineering **173,** 161 and 193.

1952

R. Breglia, Open cycle hot air turbine for locomotives. Calore **23,** 566.

C. M. Cock, Motive power for railways. Engineer **194,** 428; Engineering **174,** 421 and 453.

G. R. Higgs, 3,000-H. P. gas turbine locomotive on British railway. Metropolitan Vickers Gaz. **24,** 187.

T. F. Hurley, Ash and the coal-fired gas turbine. J. Inst. Fuel **25,** 185 (July).

E. H. Livesay, A gas turbine electric experience. Engineer **194,** 444 and 477.

D. L. Mordell, Present position and prospects of coal-burning gas turbine. Can. Mining Met. Trans. **55,** 84.

E. C. Poultney, British railways acquire a gas-turbine locomotive. Ry. Age **132,** 65 (Apr. 21).

E. C. Poultney, Performance of the Western Region gas turbine locomotive No. 18,000. Engineer **194,** 102.

T. E. Warren, H. P. Hudson J. D. Robertson, and T. R. Skerry, Coal-fired gas turbines Can. Mining Met. Bull. **45,** 524.

J. I. Yellott and P. R. Broadley, LDC gas turbine runs on coal. Power Eng. **56,** 59 (May).

J. I. Yellott and P. R. Broadley, Tests of a 4,250-HP coal-burning locomotive-type gas turbine. Combustion **23,** 65 (May).

A coal burning gas turbine. Engineer **193,** 251 and 269.

Bituminous coal moves to halt inroads of oil and gas. Chem. Eng. News **30,** 990.

British gas-turbine locomotive. Mech. Eng. **74,** 497.

Gas turbine locomotive. Gas and Oil Power **47,** 73.

Gas turbine locomotive No. 18,000. Engineer **193,** 176, 237 and 283.

Gas turbine locomotives on Union Pacific. Oil Engine **20,** 303.

Progress in railway mechanical engineering, 1950-1951. Mech. Eng. **74,** 285.

Testing U. S. coal burning gas turbine plant. Oil Engine and Gas Turbine **20,** 69.

Tests of the Brown-Boveri gas-turbine locomotive. Engineering **173,** 664.

Tests on gas turbine locomotive No. 18,000. Engineer **193,** 665.

The American coal-burning gas-turbine locomotive. Engineering **173,** 18.

The gas turbine as railroad motive power. Ry. Age **133,** 54 (Nov. 24).

Union Pacific's gas turbines in regular service. Ry. Age **132,** 71 (June 23).

World review of gas-turbine locomotives. Oil Engine and Gas Turbine **20,** 22.

292892—54——3

1,000 B. H. P. gas turbine locomotive of French design. Oil Engine and Gas Turbine **20**, 144.

1953

K. A. Browne, J. I. Yellott, and P. R. Broadley, Gas-turbine progress report—railroad. Trans. ASME **75**, 161.

A. W. J. Dymond, Operating experiences with two gas-turbine locomotives. Engineering **175**, 247 and 276; Engineer **195**, 278 and 327.

C. Kerr, Jr. T. L. Weybrew, and T. J. Putz, Operating record of the Westinghouse-Baldwin gas-turbine locomotive. Abstract: Mech. Eng. **75**, 414.

A. H. Morey and F. Fahland, Gas-turbine electric locomotives on the Union Pacific Railroad. Abstract: Mech. Eng. **75**, 41.

T. E. Warren, H. P. Hudson, J. D. Robertson, and J. C. Mulligan, Comparative performance of coals of different rank in a film cooled gas-turbine combustor. Trans. ASME **75**, 35.

Coal-burning gas turbine. Mech. Eng. **75**, 493.

Coal-burning turbine progress. Ry. Age **134**, 86 (Apr. 20).

Endurance trials of coal-fired turbine. Oil Engine **21**, 30.

Free-piston locomotive attractive in tests. Automotive Inds. **108**, 59 (Mar. 1).

Gas turbine-electric locomotives—a progress report. Diesel Power and Diesel Transportation **31**, 54 (June).

Gas turbine for British railways. Automotive Inds. **108**, 35 (Feb. 1).

Gas turbine success on USA railways. Ry. Gazette **98**, 472.

How gas turbines perform on the Union Pacific. Ry. Age **134**, 39 (Feb. 16).

Loco fleet burning heavy oil. Oil Engine **21**, 164.

Progress in railway mechanical engineering 1951–1952. Mech. Eng. **75**, 291.

The Renault gas turbine locomotive. Engineer **195**, 358.

Union Pacific gas turbine experience. Ry. Gazette **98**, 305.

Year of coal-burning turbine progress. Ry. Age **134**, 86 (Apr. 20)

203.2 For Ships

1950

D. Morosoff, Gas turbine-steam turbine for ship propulsion. Marine Eng. and Shipping Rev. **55**, 40.

A gas turbine driven launch. Engineer **190**, 382.

Gas turbine powered boat undergoes tests in England. Automotive Inds. **103**, 46 (Dec. 1).

Two gas turbines in a 60-foot launch. Oil Engine and Gas Turbine **18**, 170.

60-foot gas-turbine launch. Engineering **170**, 308.

1951

F. H. Slade, Gas turbine for smaller vessels. Ship Boat Builder **5**, 109 (Oct.).

"Auris" set completes shore tests. Oil Engine and Gas Turbine **18**, 348.

Gas-turbine alternator propulsive machinery for tanker "Auris". Engineering **171**, 209 and 224.

Gas turbine engine for use in British ship. Science News Letter **59**, 44.

Gas turbine engine powers minesweepers. Science News Letter **59**, 69.

Gas turbine for Shell tanker. World Petroleum **22**, 71 (May).

Gas turbine in tanker "Auris." Motor Ship **32**, 258 (Oct.).

Gas-turbine launch. Mech. Eng. **73**, 17.

Gas-turbine merchant ship. Engineering **172**, 307.

Marine gas turbo-alternators. Engineer **191**, 250.

Naval gas turbine developments. Engineer **191**, 861.

1952

A. H. Fletcher, A marine gas-turbine from the viewpoint of an aeronautical engineer. Inst. Mech. Engrs. (London), J. and Proc. **166**, 237; Engineer **193**, 187.

E. L. Lomax, Gas turbine powered tanker completes first voyage. World Petroleum **23**, 56 (Mar.).

Allen marine gas turbine trials. Gas and Oil Power **47**, 210.

"Auris" blading corroded by heavy fuel. Oil Engine **20**, 266.

Free piston gasifiers and gas turbines in French coasters. Gas and Oil Power **43**, 327.

Gas turbine alternator propelling machinery in tanker "Auris." Engineering **173**, 119.

Gas-turbine operating experience in the tanker "Auris." Engineering **174**, 639.

Gas turbines for the Royal Navy. Engineer **194**, 873.
Marine gas turbine in M. V. "Auris." Engineer **193**, 168.
Marine gas turbines and the aeronautical engineer. Engineer **193**, 184 and 203.
Pametrada marine gas turbine. Motor Ship **33**, 225 (Sept.).
Reliability trials with the "Auris" gas turbine. Oil Engine and Gas Turbine **19**, 406.
Turbine-diesel motor torpedo boats. Engineer **194**, 732.

1953

W. A. Dolan, Jr., and A. A. Hafer, Gas-turbine progress report; marine applications. Trans. ASME **75**, 169, 177 and 185.
B. E. G. Forsling, Main propulsion gas turbine set for the oil tanker "Auris". Engineer **196**, 733.
J. J. McMullen, Combination propulsion plants for naval vessels. Abstract: Mech. Eng. **75**, 737.
A gas-turbine tanker. Engineering **175**, 307.
B. T. H. marine gas turbine. Oil Eng. **20**, 380.
British 6500 S. H. P. long life marine unit. Oil Engine **20**, 398; Gas and Oil Power **48**, 72.
Further research on marine gas turbines. Oil Engine **21**, 66.
Gas turbine power for Royal Navy vessels. Oil Engine **20**, 454.
Gas turbine prospects in merchant vessels. Oil Engine **21**, 161.
Gas turbines with particular reference to their use for marine purposes. Trans. Inst. Marine Engrs. **65**, 1 (May).
"G.2" naval gas turbine. Engineer **195**, 58.
Naval gas turbines for intermittent use. Oil Engine **20**, 378.
Remarkable gas turbine proposal. Marine Eng. **76**, 19 (Jan.).
"R. M. 60" marine gas turbine. Engineer **196**, 617.
Rolls-Royce gas turbine for marine propulsion. Engineering **176**, 673.
Rolls-Royce 6,000-S.H.P. marine gas turbines. Oil Engine **20**, 342.
Sea-going gas turbine. Automotive Inds. **108**, 35 (May 1).
Shell all gas turbine tanker ordered. Oil Engine **20**, 397.
The G2 4,500-S.H.P. naval gas turbine. Engineering **175**, 129.
The Pametrada marine gas turbine. Engineering **176**, 491.
U. S. Navy's 2,000-S.H.P. unit. Oil Engine **20**, 397.
6,500 H.P. naval gas turbine. Engineer **195**, 238.

203.3 For Miscellaneous Applications

1949

A. T. Bowden and J. L. Jefferson, The design and operation of the Parsons experimental gas turbine. Inst. Mech. Engrs. (London), J. and Proc. **160**, 454.
S. D. Hage, Boeing develops small gas-turbine power plant. Abstract: SAE Journal **57**, 40 (April).

1950

J. W. Blake, Huey gas turbine establishes excellent operating record. Elec. Light and Power **28**, 62 (Aug.).
J. W. Blake and R. W. Tumey, Huey gas turbine ticks off 3,400 hours. Power **94**, 96 (Feb.).
A. T. Bowen, Gas turbines for industrial purposes. Engineer **190**, 333; Engineering **170**, 214.
W. M. Brown, Gas-turbine-powered truck has power braking. Automotive Inds. **103**, 43 (Dec. 15).
W. M. Brown, More payload for same GVW possible with truck turbines. Abstract: SAE Journal **58**, 52 (Nov.).
H. R. Cox, Industrial gas turbines. Engineering **169**, 578 and 607; J. Inst. Metals, 287 (June).
S. H. Evans, "Lesser flea" turbine-starting; some observations on the AiResearch pneumatic system. Flight **58**, 534.
J. F. Field, The application of gas-turbine techniques to steam power. Inst. Mech. Engrs. (London), J. and Proc. **162**, 209.
H. C. Hill, Will the low priced car be turbine powered? Automotive Inds. **103**, 41 (July 15).
H. M. Jacklin, Jr., Boeing's model 502 gas turbine. Abstract: SAE Journal **58**, 53 (Aug.).
C. Keller, Closed-cycle gas turbine. Trans. ASME **72**, 835.

E. C. Robertson, Power generation—a comparison of costs for gas and steam turbo alternators. National Gas Turbine Establishment (England) Rept R. 72 (June).
G. G. Smith, Rover's turbocar operation and design. Abstract: SAE Journal **58**, 36 (July).
W. A. Turunen, Gas turbines in automobiles. SAE Quart. Trans. **4**, 102.
P. H. Wilkinson, Gas-turbine auxiliary power plants. Aero Dig. **61**, 30 (Mar.).
C. C. Willis and E. C. Goldworth, The Huey gas turbine. Mech. Eng. **72**, 881.
H. J. Wood and F. Dallenback, Auxiliary gas turbines for pneumatic power in aircraft applications. SAE Quart. Trans. **4**, 196.
Closed-cycle gas turbine for waste heat recovery. Engineering **170**, 243.
Gas turbine for a waste-heat-recovery installation. Engineer **190**, 295.
Gas turbines for electrical generation in Belgium. Engineering **169**, 249.
Lightweight accessory power plants being built for supersonic missiles. CADO Tech. Data Dig. **15**, 6 (Sept.).
The "Rover" gas-turbine motor car. Engineering **169**, 305.
1,070 brake-horse-power industrial gas turbine. Engineering **169**, 85.

1951

J. W. Blake, Combination gas turbine-steam turbine unit. Mech. Eng. **73**, 14.
W. M. Brown, Gas turbine propulsion for ground vehicles? SAE Quart. Trans. **5**, 81.
H. F. Dunholter and B. T. Salmon, Very high altitude power unit developments. SAE Pre. No. 571, Detroit.
J. F. Eichelmann and J. S. Quill, Gas turbine-centrifugal compressor stations for gas-pipe-line pumping. Gen. Elec. Rev. **54**, 23 (June); Oil Gas J. **50**, 81 (Sept. 6).
G. B. R. Feilden, Operating experience with a 750-KW gas turbine. Engineering **171**, 358, 384 and 416; Engineer **191**, 345.
B. G. Hatch, Gas-turbine power plant completes year and a half of operation. Gen. Elec. Rev. **54**, 17 (Mar.).
W. E. P. Johnson, Gas turbines for electricity and process-heat production. Engineering **172**, 601.
K. Leist, Gas turbines in power stations. Elektrotech. Z. **72**, 331.
A. G. Mellor, Power generation by gas turbines. Gen. Elec. Rev. **54**, 21 (July); Combustion **22**, 57 (June).
K. Nakata, Gas turbine. J. Fuel Soc., Japan, **30**, 20 (Jan/Feb.).
W. Neuschaefer, Gas turbines for motor vehicles. Z. Ver. deut. Ing. **93**, 400.
R. C. Norrie, Latest facts about turbine-driven trucks. Abstract: SAE Journal **59**, 25 (Oct.).
J. L. Oberseider, Combustion gas turbine—important new prime mover for the gas pipe-line industry. Oil Gas J. **50**, 102 (Aug. 9).
K. Schaff, Combustion turbine, air turbine and steam turbine processes in German industry. Z. Ver. deut. Ing. **93**, 181 and 263.
P. H. Wilkinson, Baby turbojets. Aviation Age **16**, 30 (Sept.).
W. B. Wilson, Gas turbines in industry. Eng. J. (Can.) **34**, 5.
A. D. Zakarian and R. R. Peterson, Small gas turbine that may be started by hand. Automotive Inds. **105**, 34 (Sept. 15).
A. D. Zakarian and R. R. Peterson, The T–45 power plant. A small gas turbine prime mover driving a portable fire pump. J. Am. Soc. Naval Engrs. **63**, 555.
AiResearch air turbine assembly. Aero Dig. **62**, 23 (June).
AiResearch ground heater powered by gas turbine. Aviation Age **15**, 16 (June).
Allen auxiliary service marine gas turbine. Gas and Oil Power **46**, 265; Oil Engine and Gas Turbine **19**, 281.
Automotive turbine progress. World Petroleum **22**, 50 (Feb.).
Auxiliary power for guided missiles. Aviation Week **54**, 32 (June 11).
Belle Isle gas turbine sets records. Power **95**, 99 (Feb.).
British industrial and marine gas turbines. Oil Engine and Gas Turbine **19**, 159.
Development running at Lincoln. One peat-burning and three oil-burning Ruston turbines on order. Oil Engine and Gas Turbine **18**, 268.
Dutch gas turbine progress. Gas and Oil Power **46**, 64.
Gas turbine for portable fire pump. Product Eng. **22**, 140 (Dec.).
Gas turbine plants line up for review. Power **95**, 71 (Dec.).
Gas-turbine power plants. Mech. Eng. **73**, 741.
Gas turbine power station. Engineer **192**, 495.
Gas turbines for autos. Science News Letter **60**, 100.
Gas turbines for process drying. Mech. World **130**, 497 (Nov.).
Missile unit. Am. Aviation **14**, 33 (May 28).

Pipe line plan. El Paso to use gas turbines in intermediate stations. Oil Gas J. **50,** 127 (May).
Power generation, gas turbines. Brown Boveri Rev. **38,** 14.
Review of road transport gas turbines. Oil Engine and Gas Turbine **19,** 287.
Simple 45 B. H. P. gas turbine for U. S. Navy. Oil Engine and Gas Turbine **19,** 248.
Small turbine powers accessories. Machine Design **23,** 125 (Oct.).
Sulzer semiclosed gas turbine. Gas and Oil Power **46,** 58.
175-HP gas turbine. Mech. Eng. **73,** 1010.
1,000-KW marine gas turbine set. Engineer **192,** 612 and 652.
1,000-KW gas-turbine alternator set for the Royal Navy. Engineering **172,** 609.
15,000-KW gas turbine. Mech. Eng. **73,** 583.

1952

K. E. Allen, The case for pneumatic power. Aero Dig. **65,** 48 (Aug.).
G. H. Atherton and S. E. Corder, Waste-wood-fired gas-turbine power unit. Abstract: Mech. Eng. **74,** 409.
I. G. Bowen, Gas turbines for industry. Power & Works Engr. **47,** 351 and 369; Coke and Gas **14,** 87, 125, 161 and 201.
W. F. Bradley, French gas-turbine tested in sports car. Automotive Inds. **107,** 32 (Nov. 15).
W. F. Bradley, French gas turbine truck has two free-piston engines. Automotive Inds. **106,** 52 (Feb. 15).
B. O. Buckland and D. C. Berkey Design features of a 5,000-HP gas turbine. Trans. ASME **74,** 655.
G. L. Christian, AiResearch extends gas turbine field. Aviation Week **46,** 48 (Jan. 21).
W. J. Coughlin, "Pinwheel" power package for missiles. Aviation Week **57,** 21 (Oct. 6).
J. F. Eichelmann, Gas-turbine-driven compressors possess high flexibility. Oil Gas J. **50,** 178 (May 5).
J. F. Eichelmann, Gas turbines in intermediate stations. Petroleum Engr. **24,** D-38 (Aug.).
A. K. Forney, Pneumatic starting systems. SAE Pre. No. 813, Los Angeles (Oct. 2); Abstract: Aircraft Eng. **24,** 371.
W. Gregson, *Waste-heat gas-turbine plant for Coventry gasworks.* Engineering **174,** 740; Oil Engine **20,** 302.
H. C. Hill, Progress of gas turbine truck tests. SAE Quart. Trans. **6,** 395.
W. Karrer, Gas turbines and their applications. Stahl u. Eisen **72,** 885.
A. Kellersberger, The industrial gas turbine. Eng. J. (Can.) **35,** 188.
C. G. Lloyd, Gas turbine for B. E. A. Metropolitan Vickers Gaz. **24,** 267.
I. Lubbock, Gas turbines and their possible applications to the chemical industry. Chemistry and Industry, 201 (Mar. 8).
C. L. Moore and C. Homan, Something new in compressor stations. World Oil **135,** 302.
R. S. Parks, Jet-powered car approaches reality. Abstract: SAE Journal **60,** 105 (June).
W. J. Pattison, Single-system pneumatic auxiliary power. Aviation Age **18,** 44 (Oct.).
R. R. Peterson and P. G. Carlson Design features of a 250-KW gas-turbine engine. Mech. Eng. **74,** 197.
A. W. Pope, The application of gas turbines in the gas industry. Gas. J. **269,** 363 and 479.
T. J. Putz, Gas turbine in pipe line pumping. Petroleum Engr. **24,** D-15 (Aug.): Abstract: Mech. Eng. **74,** 234.
T. R. Rhea and J. S. Quill, Gas turbine and centrifugal compressors for natural gas pipe-lines. ASME M. P. No. 52-A-157.
S. T. Robinson, The closed-cycle gas-turbine-power plant. Abstract: Mech. Eng. **175,** 328.
P. R. Sidler, Operating experiences with stationary gas turbines. Mech. Eng. **74,** 381.
J. O. Stephens, The gas turbine, its place in pipe line pumping. Pipe Line News **24,** 35 (Nov.).
W. B. Wilson, Combustion gas turbine. Iron Steel Engr. **29,** 92 (Aug.).
H. J. Wood, Characteristics of expansion turbines for auxiliary power. SAE Quart. Trans. **6,** 438.
C. G. L. Woodford, Ancillary power for large aircraft. Aeroplane **83,** 543.

L. R. Wosika, Radial-flow compressors and turbines for the simple small gas turbine. Trans. ASME **74**, 1337.
A coal-burning gas turbine. Engineer **194**, 643.
A 250-KW gas turbine electric generating set. Engineer **193**, 428.
A 1,000-KW gas turbine-alternator set for the Admiralty. J. Am. Soc. Naval Engrs. **64**, 370.
American 5,000 B. H. P. gas turbine. Gas and Oil Power **47**, 243.
B. E. A.'s first gas turbo-generator. Oil Engine **20**, 178; Gas and Oil Power **47**, 228.
Boeing gas turbine. Motorship **37**, 24 (Nov.).
Boeing G. T. lorry test. Oil Engine **20**, 304.
Boeing 502 turbine in truck test. Aviation Week **57**, 32 (July 21).
British Rover gas turbine develops over 200 horsepower. Automotive Inds. **107**, 50 (Sept. 15).
Centrax 120 B. H. P. gas turbines. Oil Engine and Gas Turbine **20**, 111.
Contributions of the gas turbine to Big Inch gas line pumping. World Petroleum **23**, 36 (July).
Design features of small gas turbine for driving ship generator. Automotive Inds. **106**, 33 (Jan. 1).
Experimental peat-fired closed-cycle gas turbine. Engineering **173**, 8; Oil Engine and Gas Turbine **19**, 380.
First British production gas turbine. Oil Engine and Gas Turbine **19**, 409.
French automotive gas turbine. Gas and Oil Power **47**, 326.
German vehicle gas turbines. Oil Engine **20**, 304.
Lower unit costs achieved in gas turbine pumping test. Gas **28**, 94 (June).
Mobile gas-turbine plant. Mech. Eng. **74**, 147.
Operating experience at Beznau power station. Oil Engine and Gas Turbine **19**, 448.
Peat-burning gas turbine. Engineer **194**, 689; Engineering **174**, 721.
Performance of a 1,000-KW gas turbine. Engineering **174**, 138.
Portable gas turbine. Mech. Eng. **74**, 26.
Progress with the Ruston and Hornsby gas turbine. Engineering **173**, 74.
Promising gas turbine applications in industry. Oil Engine and Gas Turbine **19**, 505.
Report on St. Denis gas turbine. Gas and Oil Power **47**, 105.
Sawdust feeds turbine for running sawmills. Science News Letter **61**, 230.
Simple 400 B. H. P. generator-driving turbine. Oil Engine and Gas Turbine **19**, 377.
Speed records established by pioneer car. Oil Engine and Gas Turbine **20**, 106.
Tractor gas turbine. Automotive Inds. **106**, 15 (Mar. 1).
Utilizing process waste heat. Oil Engine and Gas Turbine **19**, 506.
12.5-MW gas turbine set at St. Denis power station, Paris. Engineer **193**, 186.
15-MW gas-turbine alternator set at Trafford power station. Engineering **174**, 335; Engineer **194**, 233 and 343.
1,000-KW marine gas turbine set. Engineer **194**, 153.
15,000-KW gas turbine for electric power generation. Engineering **174**, 216.

1953

T. E. Abraham, Operation problems of air-turbine accessory drive. Elec. Eng. **72**, 530.
H. Bachl, Gasentspannungturbinen in Ferngasleitungen. Brennstoff-Wärme-Kraft **5**, 306.
F. R. Bell, Applications of the small gas turbine. Engineer **196**, 627.
F. R. Bell, Gas turbine car. Automobile Eng. **43**, 96.
F. R. Bell, Gas turbine arrangements. Automobile Eng. **43**, 325.
F. R. Bell, Small industrial type gas turbine. Oil Engine **21**, 114.
L. W. Biwer and R. L. McManus, Small turbines—The heart of modern aircraft accessory power systems. SAE M. P., Los Angeles (Oct.).
J. W. Blake, Gas turbine on the line 27,000 hours. Elec. Light and Power **31**, 89 (May).
G. C. Cooper, Jr., First pipe-line centrifugal compressor. Oil Gas J. **52**, 131 (July 13).
B. G. Hatch, The combustion gas turbine and its applications. Elec. Eng. **72**, 252.
J. F. Lee The gas turbine as a combustion topping unit. Combustion **25**, 38 (Sept.).

W. H. Miller, Gas-turbine-driven centrifugal compressors. Oil Gas J. **51**, 244 (Apr. 27).
P. Reed, Gas-turbine report. Oil Gas J. **51**, 104 (Apr. 20).
T. R. Rhea and J. S. Quill, Gas turbines and centrifugal compressors. Mech. Eng. **75**, 534.
C. G. A. Rosen, More power ahead for commercial vehicle engines. Abstract: SAE Journal **61**, 33 (Jan.).
L. N. Rowley, Jr., and B. G. A. Skrotzki, Gas-turbine progress report—industrial. Trans. ASME **75**, 211.
S. Sawyer, Sr., Application of gas turbines in gas transmission lines. ASME M. P., Houston, Tex. (Sept. 28).
L. Schneitter, Gas-turbine progress report—stationary electric generation. Trans. ASME **75**, 201.
F. L. Schwartz, Gas-turbine progress report—automotive. Trans. ASME **75**, 153.
I. E. Speer, Design and development of a broad-range, high-efficiency centrifugal compressor for a small gas-turbine-compressor unit. Trans. ASME **75**, 395.
G. Waller, Firedamp-burning experimental gas turbine. Oil Engine **20**, 343.
H. J. Wood, Has the teapot tempest come of age. SAE M. P. Los Angeles (Oct.).
A gas turbine generator power station in Texas. Engineer **196**, 187.
Applications of small gas turbines. Engineering **176**, 668.
Auxiliary gas turbines in new U. S. minesweepers. Oil Engine **20**, 374.
Design and development of a production gas turbine. Gas and Oil Power **48**, 140 (June).
Development of a peat-burning gas turbine. Engineering **175**, 308; Engineer **195**, 350.
Development of a 750-KW gas turbine for industrial use. Engineering **175**, 321.
First Italian gas turbine. Oil Engine **20**, 460.
Four standard sets covering wide power range. Oil Engine **21**, 196.
Gas-turbine power plant. Mech. Eng. **75**, 15.
Gas-turbine pumping station. Mech. Eng. **75**, 32.
Gas-turbine set at engineering, marine and welding exhibition. Engineering **176**, 11.
Gas turbines for nitric acid manufacture. Oil Engine **21**, 154.
Gas turbines in industry. Iron and Steel (London) **26**, 137 (Apr.).
Hand started 60 B. H. P. gas turbine engine. Oil Engine **21**, 194.
Harland and Wolff's gas turbine. Oil Engine **21**, 201.
Liquid-fuel turbo-starter for gas turbines. Engineering **176**, 733.
New power for ancillaries. Aeroplane **85**, 202.
Peat burning gas turbines. Gas and Oil Power **48**, 183 (Aug.).
Peat fuel in open cycle plant. Oil Engine **20**, 458.
Production planned for 50-HP turbine. Am. Aviation **17**, 41 (July 20).
Small gas turbines. Aeroplane **85**, 698.
Solar delivers small generator for C-124. Aviation Week **59**, 22 (July 13).
The Plessy turbine starter. Aeroplane **85**, 236.
Tiny gas turbine engine supplies power to drive portable fire pump. Chem. Eng. News **31**, 3408.
Versatile modern gas turbine in production. Oil Engine **20**, 394.
Waste gas drives compressor in ammonia plant. Chem. Eng. **60**, 112 (Aug.).
750-KW open-cycle gas turbine. Engineer **195**, 381.

203.4 General

1950

D. Aronson, Design of regenerators for gas-turbine service. Trans. ASME **72**, 967.
B. O. Bulkland, A. Y. Hillman, and H. W. Nelson, Producer gas for gas turbines Mech. Eng. **72**, 748.
M. Cox and R. K. P. Stevens, The regenerative heat exchanger for gas-turbine power plants. Inst. Mech. Engrs. (London), J. and Proc. **163**, 193.
C. T. Evans, Jr., Coal-ash corrosion of metals at elevated temperatures. ASTM Symposium on corrosion of materials at elevated temperatures, Spec. Tech. Pub. No. 108, 340.
D. P. Heath and E. Albat, Properties and characteristics of fuel oils for industrial gas-turbine usage. Trans. ASME **72**, 331.
C. F. Kottcamp and L. O. Crocket, Some aspects of the application of residual oil as fuel for the gas turbine. ASME M. P. No. 50-A-131.

P. Lloyd and R. P. Probert, The problem of burning residual oils in gas turbines. Inst. Mech. Engrs. (London) J. and Proc. **163**, 164.
A. L. London and W. M. Kays, The gas-turbine regenerator—the use of compact heat-transfer surfaces. Trans. ASME **72**, 611.
A. K. Oppenheim and A. L. London, Design analysis of free-piston engine. Automotive Inds. **103**, 46 (July 1).
A. G. Smith and R. D. Pearson, The cooled gas turbine. Inst. Mech. Engrs. (London), J. and Proc. **163**, 154.
Gas turbine production. Mech. Eng. **72**, 816.
Gas turbine progress in France. Oil Engine and Gas Turbine **18**, 139.
World progress in design. Oil Engine and Gas Turbine **17**, 396.

1951

B. O. Buckland, A. Y. Hillman, Jr., and H. W. Nelson, Producer gas for gas turbines. Gen. Elec. Rev. **54**, 12 (Dec.).
A. C. Hardy, Pescara free piston gas generator Gas and Oil Power **46**, 34.
D. C. Hoffman, A. G. Mellor, and N. E. Starkey, Control of gas turbines for power generation. Abstract: Elec. Eng. **70**, 129.
W. Hryniszak, Turbo-regenerators as applied to gas turbines. Inst. Mech. Engrs. (London), Proc. general discussion on heat transfer, 460 (Sept.); Abstract: Aircraft Eng. **23**, 316.
C. E. Iliffe, Proportioning of contra-flow heat exchange apparatus. Engineering **172**, 252.
J. Ipfelkofer, Gas turbine and its influence on public power economy. Gas- u. Wasserfach **97**, 249.
A. L. London and W. M. Kays, The liquid-coupled indirect-transfer regenerator for gas-turbine plants. Trans. ASME **73**, 529.
F. Münzinger, The economy of steam-, gas- and mercury turbines in stationary powerplants. Z. Ver. deut. Ing. **93**, 281.
W. M. Rohsenow, T. R. Yoos, and J. F. Brady, Optimum design of gas-turbine regenerators. Abstract: Mech. Eng. **73**, 425.
M. Ruddick, Economic design of heat exchanges for gas turbines. Engineering **172**, 229.
W. Sacks, Properties of residual petroleum fuels. II. Canadian No. 6 residual fuel oils for gas turbines. Nat. Research Council Can. NRCC MP—1 (July).
W. Sacks, Reduction of the vanadium content of residual petroleum fuels by solvent precipitation. Can. J. Technol. **29**, 492.
Closed cycle developments. Oil Engine and Gas Turbine **19**, 202.
Combustion systems for powdered fuels. Oil Engine and Gas Turbine **18**, 304.
Further experience of coal ash separation. Oil Engine and Gas Turbine **19**, 204.
Recuperative heat exchanger for gas turbines. Engineering **172**, 449.
Trends in British industrial gas turbine design. Gas and Oil Power **46**, 345.

1952

D. Aronson, Review of optimum design of gas-turbine regenerators. Trans. ASME **74**, 675.
G. H. Atherton and S. E. Corder, Sawdust as fuel for new type gas turbine. Paper Trade J. **134**, 18.
J. B. Bucher, The use of low-grade fuels in gas turbines. Gas and Oil Power **47**, 284.
L. Chiappa, Use of methane in gas turbines. Calore **23**, 284.
A. Egerton, Methane and coal. Fuel **31**, 385.
J. Fox, Peat as a fuel for gas turbines. Power and Works Eng. **47**, 363.
S. Holm and R. L. Lyerly, Design and performance of an extended-surface regenerator for a gas-turbine plant. Trans. ASME **74**, 1163.
G. L. Hopps and A. A. Berk, Determination of vanadium in fuel-oil ash. Anal. Chem. **24**, 1050.
W. Karrer, The gas turbine in relation to fuel economy. Engineer **194**, 274; Motortech. Z. **13**, 129.
A. L. London and A. K. Oppenheim, The free-piston engine development—present status and design aspects. Trans. ASME **74**, 1349.
N. Mancuso, Present position of gas turbine using natural gas. Calore **23**, 293; Termotecnica **6**, 237.
A. M. G. Moody and K. F. Kayan, Noncombustion gas turbines. ASME M. P., New York.
H. W. Nelson, H. H. Kouns, and B. O. Buckland, Gas-turbine fuel from a pressurized gas producer. Gasification and Liquefaction of Coal Symposium, Ann. Meeting AIME, New York, 109 (Feb. 20).

S. T. Robinson, The closed-cycle gas-turbine power plant. ASME MP No. 52-A-137.
L. N. Rowley and B. G. A. Skrotzki, Gas turbines. Power **96**, 79 (Dec.).
G. D. Toogood, Gas turbine heat exchangers. Power and Works Eng. **47**, 370.
G. Waller, Prospects of inward flow radial gas turbine. Oil Engine **20**, 222.
M. Widmer, Combustion turbines. Bull. assoc. franç. techniciens pétrole No. 93, 15.
Gas turbine activities of leading French maker. Oil Engine **20**, 298.
Sauer rotation-diffuser turbine. Oil Engine **20**, 186.
The development of gas turbines. Gas and Oil Power **47**, 149.
2000-KW plant involving coal gasification. Oil Engine and Gas Turbine **20**, 111.

1953

J. Biert and R. Schneidegger, Verschlackung von Gasturbinen-Anlagen durch die Aschen der Brennstoffe und die damit verbundene Korrosion der Werkstoffe. Schweiz. Arch. angew. Wiss. u. Tech. **19**, 359.
A. T. Bowden, P. Draper, and H. Rowling, Fuel-ash deposition in open-cycle gas turbines. Engineer **195**, 639; Inst. Mech. Engrs. (London), J. and Proc. **167**, 291.
A. T. Bowden and W. Hryniszak, The rotary regenerative air preheater for gas turbines. Trans. ASME **75**, 767.
B. O. Buckland, C. M. Gardiner, and D. G. Sanders, Residual fuel-oil ash corrosion. Abstract: Mech. Eng. **75**, 246.
J. E. Coppage and A. L. London, The periodic-flow regenerator—a summary of design theory. Trans. ASME **75**, 779.
C. S. Cronan, Free-piston gas turbine. Chem. Eng. **60**, 206 (July).
P. Draper, The use of residual fuel oils in gas turbines. Abstract: Mech. Eng. **75**, 246.
D. B. Harper and W. M. Rohsenow, Effect of rotary regenerator performance on gas-turbine-plant performance. Trans. ASME **75**, 759.
R. A. Lasley, The development of high-output free-piston gas generators. Abstract: Mech. Eng. **75**, 496.
T. F. Leahy, Gas turbine and free piston engine applied to automotive practice. J. Inst. Automotive Aeronaut. Eng. **13**, 372.
J. Mannin, Soviet trends in gas turbine development. Engrs. Dig. **14**, 47 (Feb.).
L. W. Shallenberg, J. O. White, and K. E. Schlachter, Installation factors related to gas turbines in closed compartments. Abstract: Mech. Eng. **75**, 327.
P. R. Sidler, Operating experiences with gas turbines. Midwest Eng. **5**, 3 (Apr.).
D. H. Stormont, Problem for refiners. Oil Gas J. **51**, 66 (Mar. 9).
M. Taddei, Gas turbine with free piston generator. Termotecnica **7**, 205.
L. Walter, Gas turbines—survey of their industrial use. Mech. World **133**, 342.
Ash deposition in gas turbines. Engineer **195**, 627 and 659.
Der Bau ortsfester Gasturbinen in England und in den USA. Brennstoff-Wärme-Kraft **5**, 347.
Development of the free piston engine. Engrs. Dig. **14**, 201 (June).
Free-piston engines: U. S. development in high gear. Power **97**, 82 (May).
Free piston gasifiers of U. S. origin. Oil Engine **21**, 156.
Gas-turbine business. Mech. Eng. **75**, 235.
Gas turbine fuel. Motor Ship **34**, 89 (June).
Industrial gas turbines and residual fuels. Engineer **195**, 634.
New additives improve residuals outlook in gas-turbine operation. Oil Gas J. **52**, 90 (Dec. 14).
Portable turbo-compressors and industrial gas turbines. Engineering **175**, 801.
Revolution in engines? Oil Gas J. **52**, 146 (June 22).
Ruston gas turbine orders and progress during 1952. Oil Engine **20**, 344.
Some types of rotary regenerative heat exchanger. Oil Engine **20**, 338.

204. INTERMITTENT OR PULSEJETS

1950

E. Sänger, On the theory of the stationary and pulsating ramjet engine. Schweiz. Arch. angew. Wiss. u. Tech. **16**, 341 and 369.
P. Schmidt, Pulsating jet engines—a survey of the development of ignition. Engrs. Digest **11**, 378 (Nov.).
P. Torda, Approximate theory of compressible air inflow through reed valves for pulsejet engines. Proc. Midwestern Conf. Fluid Dynamics, J. W. Edwards, Ann Arbor, Mich. **1**, 362.

1951

Pulsejet possibilities. Aeroplane **81**, 248.
Something new from France. Aeroplane **80**, 65.

1952

H. Lembcke, The Schmidt tube. Z. Ver. deut. Ing. **94**, 1005.

J. Logan, Theoretical and experimental investigation of a valveless intermittent engine. ASME M. P., New York.

B. T. Morris, The pulsejet as a present day powerplant. Abstract: Aviation Week **57**, 26 (Oct. 6).

D. G. Stewart, An experimental analysis of the pulsejet. Department of Supply, Aeronaut. Research Labs. (Australia), Rept. No. E70 (Jan.).

S. M. Yen, H. H. Korst, and R. W. McCloy, Gas dynamic investigation of a valveless pulsejet tube. Proc. Sec. Midwest. Conf. Fluid Mech., Ohio State Univ. Press. **2**, 507.

Escopette pulsejet; its background, history and working principle. Flight **61**, 101.

S. N. E. C. M. A. "Escopette" pulsejet unit. Aircraft Eng. **24**, 17.

1953

J. Bertin and J. LeFoll, The SNECMA Escopette pulsejet. Interavia **8**, 343.

British pulsejet to power copters. Aviation Week **59**, 42 (Sept. 28).

Pulsejet engines for helicopters. Engineering **176**, 319.

Pulsejets for rotation. Aeroplane **85**, 242.

205. RAMJETS

1947

P. W. Huber, Preliminary tests of a burner for ramjet applications. NACA Research Memo. No. L6K08b (Jan.).

1948

A. J. Cervenka and R. C. Miller, Effect of inlet-air parameters on combustion limit and flame length in 8-inch diameter ramjet combustion chamber. NACA Research Memo. No. E8C09 (July).

P. R. Hill and A. A. Gammal, An analysis of ducted-airfoil ramjets for supersonic aircraft. NACA Research Memo. No. L7I24 (July).

G. F. Kinghorn and J. F. Disher, Free-flight investigation of 16-inch diameter supersonic ramjet unit. NACA Research Memo. No. E8A26 (May).

E. Perchonok, W. H. Sterbentz, and S. H. Moore, Indirect methods for obtaining ramjet exhaust-gas temperature applied to fuel-metering control. NACA Research Memo. No. E7H27 (Jan.).

1949

J. R. Henry, Experimental determination of the subsonic performance of ramjet unit containing thin-plate burners. NACA Research Memo. No. L9B17 (June).

1950

E. F. Chandler, Solid-fuel ramjet. Aero Dig. **61**, 19 (Sept.).

D. F. Collins and F. M. Gordon, Revised and extended performance characteristics of ramjets. Ministry of Supply, Aeronaut. Research Council (Gt. Brit.) C. P. No. 11.

J. F. Connors, Effect of ramjet pressure pulsations on supersonic-diffuser performance. NACA Research Memo. No. E50H22 (Nov.).

R. A. Dunlap, An investigation into resonance in ramjet-type burners. U. of Mich., USAF Tech. Rept. No. 6588 (Oct.).

H. Oberth, A rocket researcher's reflections on supersonic flight. Interavia **5**, 382.

J. Reid, The gas dynamic theory of the ramjet. Ministry of Supply, Aeronaut. Research Council (Gt. Brit.) R and M 2370.

M. Roy, Application of jet propulsion to supersonic aircraft. ONERA (France) Note No. 1 (April 27).

Ramjet-engine testing. Mech. Eng. **72**, 736.

1951

P. Kahn and F. Clay, A cheap power unit for light aircraft. Aeroplane **80**, 480 and 664; **81**, 75.

O. Schrenk, Contribution to the aerodynamic theory of subsonic ramjets. Publs. sci. et tech, ministère air (France) No. 253.

J. R. Singham, F. W. Pruden, and R. C. Tomlinson, Tests on a working model ramjet in a supersonic wind tunnel. Ministry of Supply, Aeronaut. Research Council (Gt. Brit.) R and M 2568.

Marquardt Aircraft C-30-1.0. Aero Dig. **62**, 90 (March).

1952

J. O. Charshafian, Problems of development of ramjets for supersonic application. Abstract: Aviation Week **57**, 26 (Oct. 6).

W. Green, Simplest known power plant for tomorrow's fighter. Aircraft **30**, 20 (Aug.).

F. R. Rand, The shock ignition engine. Aeronaut. Eng. Rev. **11**, 22 (Oct.).

M. Roy, J. Fabri, R. Siestrunck, and E. LeGrives, Thrust load and specific fuel consumption of a supersonic ramjet. ONERA (France) Note No. 8.

M. Salmon, The supersonic ramjet at moderate Mach numbers. Publs. sci. et tech. ministère air (France) No. 274.

Ramjet favored for Mach 2–4 range. Aviation Week **57**, 21 (Dec. 15).

René Leduc's ramjets. Interavia **7**, 341.

1953

P. J. Carpenter and E. J. Radin, Investigation of a ramjet-powered helicopter rotor on the Langley helicopter test tower. NACA Research Memo. No. L53D02 (June).

M. Harned, Ramjet applications to aircraft propulsion. Aviation Age **19**, 60 (Jan.); Aero Dig. **66**, 44 (Feb.).

W. A. Kilrain, Mach 2–4: ramjet stamping ground. Am. Aviation **16**, 24 (Feb. 2).

J. Lukasiewicz, Supersonic ramjet performance. Aircraft Eng. **25**, 298.

R. E. Marquardt, Tomorrow's power plant today. Aviation Age **20**, 24 (July).

B. W. Marsh and G. A. Sears, Introduction to the analysis of supersonic ramjet powerplants. Am. Rocket Soc. Pre. No. 103–53.

J. E. B. Perkins, The ramjet engine. Shell Aviation News No. 180, 19 (June).

E. J. Radin and P. J. Carpenter, Comparison of the performance of a helicopter-type ramjet engine under various centrifugal loadings NACA Research Memo. No. L53H18a (Oct.).

S. H. Reiniger, Ramjets or rockets for missiles? Aviation Week **58**, 25 (Jan. 12).

I. Sänger-Bredt, Flying tow tests on supersonic ramjet tubes at low subsonic speed. Forsch. Gebiete Ingenieurw. **B19**, Forschungsheft 437, 40.

N. F. Svendson and J. W. Braithwaite, Development of ramjet power. ASME M. P., Los Angeles (June).

J. C. Wise, Holding the reins on 300,000 horsepower. SAE M. P., Los Angeles (Oct.).

Ramjet developments in France. Aeroplane **85**, 679.

Ramjet possibilities. Flight **64**, 7.

206. ROCKETS

206.1 Liquid-Propellant Rockets and Fuels

1948

P. M. Ordin, R. O. Miller, and J. M. Diehl, Preliminary investigation of hydrazine as a rocket fuel. NACA Research Memo. No. E7H21.

1949

R. M. Corelli, Exothermic decomposition of nitromethane and its utilization. Chimica e industria **31**, 436.

G. Nebbia, An analysis of properties of some rocket fuels. Ann. fac. econ. e com. univ. Bari **9**, 3.

1950

R. Bloom, Jr., N. S. Davis, Jr., and S. D. Levine, Hydrogen peroxide as a propellant. J. Am. Rocket Soc. No. 80, 3.

N. Bowman, Nitrogen dioxide derivatives in rocket fuels. J. Space Flight **2**, 1 (Jan.).

N. Bowman and W. Proell, Hydrides and organometallic compounds as high energy rocket fuels. J. Space Flight **2**, 6 (Jan.).

W. G. Cass, Exothermic decomposition of nitromethane. Aircraft Eng. **22**, 238.

T. L. Cottrell and T. J. Reid, The thermal decomposition of nitromethane. J. Chem. Phys. **18**, 1306.

R. Crépin and R. Levy, Evolution of the systems of gas in chemical equilibrium. Application to the propergols. Mém. artillerie franç. **24**, 679.

C. De Vore, Project Reach. Navigation **2**, 275 (Dec.).

M. P. Dunnam, Hazards involved in the use of rocket propellants. CADO Tech. Data Dig. **15**, 30 (Nov.).

H. Gartmann, Rocket propellants. Interavia **5**, 527.

L. J. Grant, Jr., Lithium as a suggested rocket fuel. J. Space Flight **2,** 3 (Dec.).
J. Himpan, Evaluating rocket propellant performance. Interavia **5,** 530.
D. H. Ross, Nitrogen tetroxide as an oxidizer in rocket propulsion. J. Am. Rocket Soc. No. 80, 24.
K. B. Schoenberger, Rocket experiments with hydrogen and oxygen. Weltraumfahrt No. 4, 80.
G. E. Simpson, Handling liquid oxygen. J. Am. Rocket Soc. No. 80, 18.
J. A. Van Allen, Rockets for studying the upper atmosphere. Aero Dig. **61,** 20 (Sept.).
M. J. Zucrow and C. F. Warner, Application of white fuming nitric acid and jet-engine fuel (AN-F-58) as rocket propellants. J. Am. Rocket Soc. No. 82, 139.
Britain unveils rocket motor. Aviation Week **53,** 30 (Oct. 9).
Micro rocket. Mech. Eng. **72,** 816.

1951

S. Allen, Rockets for aircraft propulsion. Aeroplane **81,** 726.
M. Barrére, Investigation of propergol rocket propellants by means of micro rocket test elements. Recherche aéronaut. No. **21,** 25 (May/June).
J. D. Clark, Choice of rocket propellants discussed. J. Am. Rocket Soc. No. 84, 40.
T. L. Cottrell, T. E. Graham, and T. J. Reid, Thermal decomposition of nitromethane. Trans. Faraday Soc. **47,** 584.
R. P. Haviland, The long-range rocket. Ordnance **36,** 326.
L. J. Hillenbrand, Jr., and M. L. Kilpatrick, Thermal decomposition of nitromethane. J. Chem. Phys. **19,** 381.
W. Ley, The first large rockets. Weltraumfahrt No. 1, 17.
M. Sittig, The petrochemical engineer looks at rocket fuels. Petroleum Refiner **30,** 115 (May).
C. E. Thorp, The properties and production of concentrated gaseous and liquid ozone. ASME M. P., Minneapolis.
C. H. Trent and M. J. Zucrow, The hypergolic reaction of dicyclopentadiene with fuming nitric acid. J. Am. Rocket Soc. **21,** 129.
P. F. Winternitz and D. Horvitz, Rocket propellant performance and the energy of the chemical bond. J. Am. Rocket Soc. No. 85, 51.
Advance man to the moon. Aero Dig. **63,** 25 (Oct.).
Altitude record. Mech. Eng. **73,** 138.
Bumper takes off. Automotive Inds. **105,** 23 (July 15).
Chemical fuel still best for long-range rockets. Chem. Eng. News **29,** 2054.
Clothing protects rocket fuel handlers. Aviation Week **54,** 34 (Jan. 15).
Concentrated liquid ozone proposed as rocket fuel. Science News Letter **59,** 242.
High altitude research rockets. Aeroplane **81,** 688.
Inside the Navy Viking test rocket. Aviation Week **54,** 33 (Jan. 22).
Long-distance rocket flight. Mech. Eng. **73,** 656.
Night firing of Viking rocket produces "New Star." Western Flying **31,** 10 (Jan.).
Ozone handling technique studied. Aviation Week **54,** 32 (May 21).
Rocket fuel handlers protected by clothing. Science News Letter **59,** 5.
Three new ideas for rocket fuels. Aviation Week **55,** 24 (Dec. 17).
What we have learned from V-2 firings. Aviation Week **55,** 23 (Nov. 26).

1952

P. Brown, Design of liquid propellant booster rockets. Am. Rocket Soc. Pre. 76-52.
E. Burgess, High-altitude research. Engineer **194,** 338 and 370.
J. D. Clark, Rocket propellants. Ordnance **36,** 661.
H. L. Coplen, Large-scale production and handling of liquid hydrogen. J. Am. Rocket Soc. **22,** 309.
N. S. Davis, Jr. and J. H. Keeft, Equipment for use with high strength hydrogen peroxide. J. Am. Rocket Soc. **22,** 63.
S. V. Gunn, The effects of several variables upon ignition lag of hypergolic fuels oxidized by nitric acid. J. Am. Rocket Soc. **22,** 33.
K. C. Halliday, Ignition of fuel with nitric acid. Am. Rocket Soc. Pre. 80-52.
R. P. Haviland, A report on the Bumper programme. J. Brit. Interplanet. Soc. **11,** 9.
Y. C. Lee, Liquid propellant pressurization systems. Abstract: Aviation Week **57,** 26 (Oct. 6).
J. Lorrel and A. R. Hibbs, Optimum performance for rockets with fixed propellant volume and using high-density additives. ASME M. P., New York.

W. R. Maxwell, Rocket fuels demonstration. J. Brit. Interplanet. Soc. **11**, 211.
G. W. Meckert, Hydrogen peroxide, problems and operating procedures. Am. Rocket Soc. Pre. 78–52.
P. M. Ordin, Preliminary investigation of hydrazine as a rocket fuel. NACA Research Memo. No. E7H21.
F. E. Osborne, High temperature propellant reactions. Aircraft Eng. **24**, 134.
S. S. Penner, Quantitative evaluation of rocket propellants. Am. J. Phys. **20**, 26.
W. G. Purdy, The Viking rocket. Aeronaut. Eng. Rev. **11**, 16 (Jan.).
M. W. Rosen and R. B. Snodgrass, The high altitude sounding rocket. ASME M. P., Chicago.
H. S. Seifert, The effect of variable propellant density on rocket performance. J. Am. Rocket Soc. **22**, 213.
R. J. Thompson, The nitric acid-ammonia propellant combination for rockets. Am. Rocket Soc. Pre. 82–52.
C. H. Trent and M. J. Zucrow, Behavior of liquid hydrocarbons with white fuming nitric acid. Ind. Eng. Chem. **44**, 2668.
J. E. Zimmerman, Effect of pump performance on liquid propellant rocket design. Am. Rocket Soc. Pre. 79–52.
M. J. Zucrow and C. M. Beighley, Experimental performance of WFNA–JP–3 rocket motors at different combustion pressures. J. Am. Rocket Soc. **22**, 323.
Eighth Viking rocket has triangular fins. Aviation Week **56**, 31 (Mar. 17).
Handling hydrogen peroxide. Flight **61**, 155.
Peroxide rocket propellant. Aviation Age **17**, 35 (Apr.).
Rocket propellants demonstrated. Aeroplane **82**, 436.
Rockets a day early. Aeroplane **83**, 652.
V–2 rocket tests. Mech. Eng. **74**, 329.

1953

C. Beighley and L. Dean. Investigation of boiling heat transfer and burnout to JP–4. Am. Rocket Soc. Pre. No. 114–53.
J. E. Dalgleish and A. O. Tischler, Experimental investigation of a light-weight rocket chamber. NACA Research Memo. No. E52L19a (Mar.).
H. Davies, Some aspects of design and fabrication of liquid propellant engines. Am. Rocket Soc. Pre. No. 111–53.
B. R. Diplock, D. L. Lofts, and R. A. Grimston, Liquid propellant rocket motors. J. Roy. Aeronaut. Soc. **57**, 19.
K. A. Ehricke, A comparison of propellants and working fluids for rocket propulsion. J. Am. Rocket Soc. **23**, 287.
C. F. Green, G–E reveals operational data on White Sands missiles. Aviation Age **20**, 146 (Oct.).
C. F. Green, V–2 rocket in upper atmosphere research. Aero Dig. **67**, 20 (Nov.).
K. C. Halliday, Jr., The ignition of fuels with nitric acid. Abstract: Aviation Week **58**, 33 (Jan. 12).
R. Lea, Structural design considerations for a high altitude sounding rocket of the Viking type. Am. Rocket Soc. Pre. No. 115A–53.
Y. C. Lee, M. R. Gore, and C. C. Ross, Stability and control of liquid propellant rocket systems. J. Am. Rocket Soc. **23**, 75.
J. Lorell and A. Hibbs, The effect of variation of propellant density on rocket performance. Abstract: Aviation Week **58**, 33 (Jan. 12).
G. W. Meckert, Jr., Hydrogen peroxide—problems and operating procedures at the Air Force Flight Test Center. Abstract: Aviation Week **58**, 33 (Jan. 12).
M. W. Rosen and R. B. Snodgrass, The high altitude sounding rocket. Aero Dig. **67**, 90 (Sept.).
V. Sivori, Problemi tipici nel progetto di missili a propellenti liquidi. Aerotecnica **33**, 118.
E. T. B. Smith, Some simple considerations of combustion and gas dynamics in liquid propellant rocket motors. J. Brit. Interplanet. Soc. **12**, 53 (Mar.).
I. Stone, Production study of Martin Viking. Aviation Week **59**, 55 (Nov. 9).
H. Walter, Experience with the application of hydrogen peroxide for power production. Am. Rocket Soc. Pre. No. 120–53.
A guide to high-altitude rocket design. Aviation Week **59**, 28 (Dec. 28).
Martin Viking 9. Aviation Week **58**, 7 (Jan. 5).
Pushing on. Aeroplane **84**, 3.
Rocket engine design advances. Aviation Week **58**, 47 (Apr. 13).
Soviet A–A rocket development. Aviation Age **20**, 6 (Oct.).

206.2 Rocket Assist

1950

A. V. Cleaver, Rockets and RATO. Flight **58**, 482; Engineering **170**, 575.
Rockets for takeoff. Aeroplane **79**, 516.

1951

C. M. Bolster, Assisted takeoff. Aero Dig. **62**, 65 (Jan.).
A. V. Cleaver, Rockets and assisted takeoff. J. Roy Aeronaut. Soc. **55**, 87.
H. Gartmann, JATO and auxiliary rocket power plants. Weltraumfahrt No. 6, 134.
W. L. Rogers, Designing a JATO engine. Machine Design **23**, 102 (Jan.).
R. J. Thompson, High-thrust liquid-propellant-booster rocket development. ASME M. P., Atlantic City.
A new rocket unit. Aeroplane **81**, 263.
Britain's new Snarler rocket motor. Aviation Week **55**, 221 (Sept. 24).
British rocket engine doubles jet power. Aviation Age **16**, 23 (Oct.).
Details of British Snarler revealed. Aviation Week **55**, 36 (Oct. 29).
Smokeless JATO. Mech. Eng. **73**, 21.
Snarler. Hawker Siddeley Rev. **4**, 90 (Dec.).
The Sprite gets airborne. Aeroplane **80**, 591.

1952

R. Hawthorne, The Sprite rocket motor. Aviation Age **17**, 36 (Apr.).
J. Jarry, Les moteurs d'appoint. Technique et science aéronaut. No. 3, 139.
T. von Karman, Jet assisted takeoff. Interavia **7**, 376.
Armstrong Siddeley Snarler. Aeronautics **26**, 83 (Sept.).
Snarler. Flight **62**, 92.
Snarler boosts the jets. Aviation Age **18**, 44 (Nov.).
The Armstrong-Siddeley "Snarler" rocket motor. J. Brit. Interplanet. Soc. **11**, 73.

1953

An assisted takeoff rocket motor. Engineer **196**, 252.
De Havilland Super Sprite. Aeroplane **85**, 216; Engineering **176**, 287.

206.3 General

1950

H. L. Clark, Sun follower for V-2 rocket. Electronics **23**, 71 (Oct.).
R. Engel and U. T. Boedewadt, Effect of recombination on rocket performance. Recherche aéronaut. No. 18, 23 (Nov./Dec.).
L. W. Fraser and R. S. Ostrander, Photographic determination of the orientation of a rocket. Phot. Eng. **1**, 105.
H. Gartmann, Cooling of the rocket combustion chamber. Weltraumfahrt No. 5, 109.
R. Gordon, Heat transfer problems in liquid-propellant rocket motors. J. Am. Rocket Soc. No. 81, 65.
D. F. Gunder and D. R. Friant, Stability of flow in a rocket motor. J. Appl. Mech. **17**, 327.
J. Himpan, Calculation of the volume of rocket combustion chambers. Aircraft Eng. **22**, 191.
G. A. Long, Jr., Missile guidance. Navigation **2**, 290 (Dec.).
G. Nebbia Performance calculations of some fuels for rocket motors. J. Brit. Interplanet. Soc. **9**, 286.
H. Oberth, The optimum velocity. Rocketscience **4**, 51 (Sept.) and 75 (Dec.).
H. Oberth, Three equations for rapid calculation of rocket motor thrust. J. Brit. Interplanet. Soc. **9**, 275.
V. Re, Comparison between single and multistage rockets. Riv. marittima Suppl. tecn., 71 (Dec.).
R. H. Reichel, The energy problem of rocket propulsion. Weltraumfahrt No. 6, 141.
A. L. Stanly, Some statistical considerations of the jet alignment of rocket-powered vehicles. J. Am. Rocket Soc. No. 83, 155 (Dec.).
A. G. Thatcher, The turborocket-propellant feed system. J. Am. Rocket Soc. No. 82, 127.
C. E. Wilson, Jr., Pacific coast rocket news. Rocketscience **4**, 69 (Sept.).

1951

H. Bartenbach, Rockets as extremely rapid transportation. J. Space Flight **3**, 1 (Feb.).

P. Blanc, Note on rocket propulsion with separated source of energy. Mém. artillerie franç. **25**, 108.

R. H. Boden, Heat transfer in rocket motors and the application of film and sweat cooling. Trans. ASME **73**, 385.

N. J. Bowman, The effect of solid particles in rocket exhausts. J. Space Flight **3**, 1 (June).

R. Drenick, The perturbation calculus in missile ballistics. J. Franklin Inst. **251**, 423.

L. G. Dunn, W. B. Powell, and H. S. Seifert, Heat transfer studies relating to rocket power-plant development. Abstract: J. Roy. Aeronaut. Soc. **55**, 680; Abstract: Aeroplane **81**, 494.

K. A. Ehricke, A comparison of rocket propulsion at contant thrust and at constant acceleration. Rocketscience **5**, 50.

M. E. Ellison, New technique for obtaining heat-transfer parameters of the wall and combustion gas in a rocket motor. Trans. ASME **73**, 109.

W. E. Frye, On the accuracy of the long-range ballistic rocket. J. Appl. Phys. **22**, 585.

H. Gartmann, Thrust and dynamic tests of a small rocket. Weltraumfahrt No. 1, 11.

S. Greenfield, Determination of rocket-motor heat-transfer coefficients by the transient method. J. Aeronaut. Sci. **18**, 512.

J. B. Hatcher, High-flux heat transfer and coke deposition of JP-3. ASME M. P., Atlantic City.

C. O. Herb, Motors that propel the 3.5 inch rockets. Machinery (New York) **57**, 164 (Jan.).

G. R. Hill, Probing the atmosphere with rockets. J. Am. Soc. Naval Engrs. **63**, 293.

M. E. Holbrook, The rocket firing submarine. U. S. Naval Inst. Proc. **77**, 55.

W. F. Kaufman and B. N. Abramson, The principle of the concentric nozzle. ASME M. P., Atlantic City.

F. J. Krieger, Chemical kinetics and rocket nozzle design. J. Am. Rocket Soc. **21**, 179.

W. Ley, The upper atmosphere—its exploration and exploitation. Aeronaut. Eng. Rev. **10**, 20 (Feb.).

M. Meyer, Throttling thrust-chamber control. J. Am. Rocket Soc. No. 85, 68.

R. P. Northrup, Flow stability in small orifices. ASME M. P., Atlantic City.

T. F. Reinhardt, Unusual applications of the momentum principle. ASME M. P., Atlantic City.

C. C. Ross, Principles of rocket-turbopump design. J. Am. Rocket Soc. No. 84, 21.

E. Roth-Desmeulles, On the calculation of groups of trajectories of remote controlled rockets. Z. angew. Math. u. Phys. **2**, 487.

O. A. Saunders and P. H. Calder, Some experiments on the heat transfer from a gas flowing through a convergent-divergent nozzle. Paper presented at Heat Transfer and Mechanics Institute, Stanford, Cal. (June 21).

W. R. Sheridan, Expellant bags for rocket propellant tanks. J. Am. Rocket Soc. No. 85, 80.

W. R. Sheridan, Materials for use in uncooled liquid propellant rocket motors. Am. Rocket Soc. Reprint 31T-51.

H. S. Tsien and R. C. Evans, Optimum thrust programming for a sounding rocket. J. Am. Rocket Soc. **21**, 99.

H. Ziebland, A proposed method for determining heat flow densities in rocket motors. Abstract: Aircraft Eng. **23**, 315.

Aircraft rockets. Interavia **6**, 551.

Early rocket research. Mech. Eng. **73**, 136.

Handling rocket motors. Flight **59**, 77.

Missile flight scanners. Aviation Week **54**, 25 (Mar. 12).

Nitro-sphere. Mech. Eng. **73**, 415.

Rocket researches. Aeroplane **80**, 600.

Rockets and models. Aeroplane **80**, 482.

Sun follower. Mech. Eng. **73**, 324.

Upper atmosphere. Aero Dig. **63**, 80 (Oct.).

Viking flights prove research worth. Aviation Week **54**, 24 (Jan. 15).

20th century rocket research. Mech. Eng. **73**, 322.

1952

D. Altman and J. Lorell, Effect of local variation in mixture ratio on rocket performance. J. Am. Rocket Soc. **22,** 252.

D. A. Anderton, Poor coordination slows missiles work. Aviation Week **56,** 27 (Mar. 31).

M. Barrère, Graphic representation of various parameters used in the study of rocket motors. Recherche aéronaut. No. 25, 29 (Jan./Feb.).

U. T. Boedewadt. Determination of the mixture ratio of rocket propellants. Weltraumfahrt No. 4, 123.

J. V. Charyk and G. Sutherland, The 1951 ARS annual convention: a technical summary. J. Am. Rocket Soc. **22,** 3.

G. L. Christian, Rocket model does work of wind-tunnel. Aviation Week **56,** 21 (June 9).

L. Crocco, An approximate theory of porous, sweat or film cooling with reactive fluids. J. Am. Rocket Soc. **22,** 331.

F. V. Davies and R. J. Monaghan, The determination of skin temperatures attained in high speed flight. Royal Aircraft Establishment (Gt. Brit.) Rept. No. RAE Aero 2454 (Feb.).

I. Elias and R. Gordon, Longitudinal vibrations of gas at ambient pressure in a rocket thrust chamber. J. Am. Rocket Soc. **22,** 263.

J. Geschelin, Rockets for Bazookas. Automotive Inds. **106,** 34 (Jan. 1).

L. Green, Gas cooling of a porous heat source. J. Appl. Mechanics **19,** 173.

S. V. Gunn, Effects of several variables upon ignition lag of hypergolic fuels oxidized by nitric acid. J. Am. Rocket Soc. **22,** 33 (Jan./Feb.).

H. Haber, Manned flight at the borders of space. Abstract: Aviation Week **57,** 29 (Oct. 6).

H. Haber, Medical research in development of manned rocket flight. CADO Tech. Data Dig. **17,** 12 (Feb.).

H. Haber, The human factor of manned rocket flight. ASME M. P., Chicago.

H. Hösli, Disturbance of rocket flight by the action of wind and associated influences. Flugwehr u. Tech. **14,** 177.

D. Hurden, The design of rocket motors. J. Brit. Interplanet. Soc., **11,** 101.

G. R. Kinney, Internal-film-cooling experiments with 2- and 4-inch smooth-surface tubes and gas temperatures to 2,000° F. NACA Research Memo. No. E52B20 (Apr.).

G. R. Kinney, A. E. Abramson, and J. L. Sloop. Internal-liquid-film cooling experiments with air stream temperatures to 2,000° F. in 2- and 4-inch diameter horizontal tubes. NACA Rept. No. 1087.

E. B. Konecci, Team of engineer and physiologist in rocketry. ASME M. P., New York.

E. Mayer, Heat flow in composite slabs. J. Am. Rocket Soc. **22,** 150.

H. Newell and J. W. Siry, Rocket upper air report. ASME M. P., Chicago.

H. Oberth, Errors in rocket development. Rocketscience **6,** 2, 26 and 50.

E. Perret, E. Roth, R. Sänger, and H. R. Voellmy, Trajectories of beam riding rockets with gas jet control. Z. angew. Math. u. Phys. **3,** 241.

E. W. Price, Steady-state one-dimensional flow in rocket motors. J. Appl. Phys. **23,** 142.

L. N. Randall, Rocket applications of the cavitating venturi. J. Am. Rocket Soc. **22,** 28.

H. S. Seifert and D. Altman, A comparison of adiabatic and isothermal processes in rocket nozzles. J. Am. Rocket Soc. **22,** 159.

F. L. Shipple, Results of rocket and meteor research. Bull. Am. Meteorol. Soc. **33,** 13 (Jan.).

S. F. Singer, Research in the upper atmosphere with sounding rockets and earth satellite vehicles. J. Brit. Interplanet. Soc. **11,** 62.

G. P. Sorber, Combustible plugs. Pacific Rocket Soc. Bull. **5,** 1 (Feb. 10).

G. P. Sutton, Rocket propulsion progress: a literature survey. J. Am. Rocket Soc. **22,** 17.

H. S. Tsien, The transfer functions of rocket nozzles. J. Am. Rocket Soc. **22,** 139.

H. S. Tsien and C. M. Cheng, A similarity law for stressing rapidly heated thin-walled cylinders. J. Am. Rocket Soc. **22,** 144.

H. Wise, Chemical kinetics and heat transfer in rocket motors. ASME M. P., New York.

H. Ziebland, Proposed method for determining heat flow densities in rocket motors. Inst. Mech. Engrs. (London), Proc. of general discussion on heat transfer, p. 368.
Republic speeds rocket servicing. Aviation Week **56**, 34 (Mar. 17).

1953

W. L. Bade, Relativistic rocket theory. Am. J. Phys. **21**, 310.
E. Burgess, Military and civilian rocket research. Engineer **196**, 581.
E. Burgess, Rocket exploration of the upper atmosphere. Aircraft Eng. **25**, 307; Engineer **196**, 302.
J. V. Charyk, I. Glassman, S. I. Cheng, and G. Sutherland, The 1952 ARS annual convention: a technical summary. J. Am. Rocket Soc. **23**, 41.
G. A. Crocco, Dal dirigible al missile. Aerotecnica **33**, 6.
L. Crocco, Supercritical gaseous discharge with high frequency oscillations. Aerotecnica **33**, 46.
A. L. Feldman, The evaluation of competing rocket power plant components for two-stage long-range rockets. J. Am. Rocket Soc. **23**, 297.
F. A. Freswold, Television monitors rocket engine flame. Electronics **26**, 187 (Oct.).
J. R. Goodykoontz, The internal reaction engine. J. Am. Soc. Naval Engrs. **65**, 97.
L. Green, Jr., Flow separation in rocket nozzles. J. Am. Rocket Soc. **23**, 34.
H. Haber, The concept of missile weight. Aero Dig. **66**, 86 (Apr.).
J. Hett, Instantaneous rocket flame temperature measurement. Am. Rocket Soc. Pre. No. 102A–53.
J. Humphries, Rocket exploration of the upper atmosphere. Engineering **176**, 360.
D. Hurden, Rocket-motor testing. J. Brit. Interplanet. Soc. **12**, 101.
W. A. Kilrain, Advantage seen in solid rocket propellants. Am. Aviation **17**, 42 (Sept. 28).
H. H. Kölle, On the determination of the optimal pressure in combustion chambers of rocket motors. Weltraumfahrt No. 1, 9 (Jan.).
H. G. L. Krause, General theory of multistage rockets. Weltraumfahrt No. 2, 52 (Apr.).
G. C. Kretschmar, The velocity of sound in some rocket propellant liquids. J. Am. Rocket Soc. **23**, 82.
E. F. Lype, Determination of the pressure-time curve for motors of gun-launched rockets. Abstract: Aviation Week **58**, 44 (Jan. 5).
B. W. Martin, Normal shock wave phenomena in a convergent-divergent nozzle. J. Roy. Aeronaut. Soc. **57**, 455.
E. Mattioli, Il rendimento di propulsione del razzo. Aerotecnica **33**, 270.
W. J. Mizen, Oxidant pumps. Am. Rocket Soc. Pre. No. 99–53.
J. Nuding, PRS launching of May 17, 1953. Pacific Rocket Soc. Bull. **6**, No. 6, 1.
H. Olden, Rocket research roundup. Aviation Age **19**, 44 (Feb.).
R. L. Potter, The effect of chemical reactions upon predicted performance of rocket motors. Abstract: Aviation Week **58**, 44 (Jan. 5).
E. W. Price, Theory of steady flow with mass addition applied to solid propellant rocket motors. J. Am. Rocket Soc. **23**, 237.
T. F. Rheinhardt, The problem of cooling a rocket flame deflector. Am. Rocket Soc. Pre. No. 107–53.
W. L. Rogers, Determination of thrust alignment in rocket engines. J. Am. Rocket Soc. **23**, 355.
E. Sänger, Theory of the photon rocket. Ingenieur-Archiv **21**, 213.
I. Sänger-Bredt, Optimum conditions for multistage rockets rising vertically in a gravitational field. Forsch. Gebiete Ingenieurw. **B19**, Forschungsheft 437, p. 26.
J. H. Schraeder, Effect of vibrational excitation on the theoretical performance of the stoichiometric carbon-oxygen propellant system. J. Am. Rocket Soc. **23**, 25.
K. Scheller and J. A. Bierlein, Some experiments on flow separation in rocket nozzles. J. Am. Rocket Soc. **23**, 28.
R. K. Sherburne and W. L. Weeks. Momentum thrust of a rocket. Am. J. Phys. **21**, 139.
Sin-I Cheng, Low frequency combustion stability of liquid rocket motor with different nozzles. Am. Rocket Soc. Pre. No. 110A–53.
D. Smolenski, Rocket propellants. Wiadomosie Chem. **7**, 58.
G. P. Sutton, Rockets behind the Iron curtain. J. Am. Rocket Soc. **23**, 186.
D. J. H. Wort, The atomic hydrogen rocket. J. Brit. Interplanet. Soc. **12**, 167.
R. W. Young, Propellant injector design. Abstract: SAE Journal **61**, 37 (Aug.).

292892—54——4

Rocket flights of mammals to 200,000 ft. J. Brit, Interplanet. Soc. **12**, 6.
Rocket motors for wind tunnels? Aviation Week **59**, 54 (Sept. 14).

207. ENGINE COMPONENTS

1947 — 207.1 Combustion and Combustion Chambers

E. R. Jonash, H. C. Barnett, and E. G. Stricker, Investigation of carbon deposition in an I-16 jet-propulsion engine at static sea-level conditions. NACA Research Memo. No. E6K01 (April).

A. O. Tischler and R. T. Dittrich, Fuel investigation in a tubular-type combustor of a turbojet engine at simulated altitude conditions. NACA Research Memo. No. E7F12 (Aug.).

E. V. Zettle, R. E. Bolz, and R. T. Dittrich, Effect of fuel on the performance of a single combustor of an I-16 turbojet engine at simulated altitude conditions. NACA Research Memo. No. E7A24 (July).

1948

D. R. Bellman and J. C. Humphrey, Photographic study of combustion in a rocket engine. NACA Research Memo. No. E8F01 (Aug.).

J. H. Childs and R. J. McCafferty, Simulated altitude performance of combustor of Westinghouse 19XB-1 jet-propulsion engine. NACA Research Memo. No. E8J29 (Nov.).

G. W. Haddock and J. H. Childs, Preliminary investigation of combustion in flowing gas with various turbulence promoters. NACA Research Memo. No. E8C02 (June).

W. A. Leary, E. S. Taylor, C. F. Taylor, and J. V. Jovellanos, A rapid compression machine for studying short ignition delays. NACA Tech Note. No. 1332 (Feb.).

R. J. McCafferty, Effect of fuels and fuel-nozzle characteristics on performance of an annular combustor at simulated altitude conditions. NACA Research Memo. No. E8C02a (Sept.).

D. L. Mordell, Stability of gas-turbine combustors. Trans. Roy. Soc. Can. **42**, 51.

J. E. C. Topps, Thermodynamics of the combustion process in gas turbines. Trans. Inst. Chem. Engrs. **26**, 66.

H. D. Wilsted, R. T. Duffy, and R. E. Grey, Operating temperatures of I-40-5 turbojet burner liners and the effect of temperature variation on burner-liner service life. NACA Research Memo. No. E8F29 (Aug.).

E. V. Zettle and W. P. Cook, Performance investigation of can-type combustor. NACA Research Memo. No. E8F17 (Sept.).

1949

G. A. E. Godsave, Combustion of droplets in fuel spray. Nature **164**, 708.

P. Vernotti, Thermokinetics. Publs. sci. et tech. ministère air (France) No. 224.

1950

R. B. Canright, Problems of combustion in liquid-propellant rocket motors. Chem. Eng. Progress **46**, 228.

J. S. Clark, Combustion in aero gas turbines. Engineering **170**, 230.

E. A. De Zubay, Characteristics of disk-controlled flames. Aero Dig. **61**, 54 (July).

C. Foure, The problem of combustion of a liquid fuel in a turbojet chamber. Recherche aéronaut. **8**, 5 (Mar./Apr.).

H. R. Hazard, A progress report on gas-turbine combustors for pulverized coal. Abstract: Mech. Eng. **72**, 749.

P. Lloyd and R. P. Probert, The problem of burning residual oils in gas turbines. Inst. Mech. Engrs. (London), J. and Proc. **163**, 206.

I. Lubbock, Combustion problems of the gas turbine. Trans. North East Coast Inst. Engrs. and Shipbuilders **67**, 131.

H. Mark and E. V. Zettle, Effect of air distribution on radial temperature distribution in one-sixth sector of annular turbojet combustor. NACA Research Memo. No. E9I22 (April).

W. C. Randels, The mechanism of unstable combustion J. Aeronaut. Sci. **17**, 124.

K. L. Rieke and A. E. Hershey, Gas-turbine combustors for gaseous fuels. Mech. Eng. **72**, 657.

F. W. Ruegg and C. Halpern, Gravimetric analysis of exhaust gas from gas turbine combustion chambers. J. Research Nat. Bur. Standards **45**, 113.

M. Sibulkin and W. K. Koffel, Chart for simplifying calculation of pressure drop of a high-speed compressible fluid under simultaneous action of friction and heat transfer—application to combustion-chamber cooling passages. NACA Tech. Note No. 2067 (Mar.).

D. B. Spalding, Combustion of liquid fuel in a gas stream. Fuel **29**, 2 and 25.
S. Way and R. L. Hunstad, Behavior of an experimental combustion chamber at reduced pressures. Westinghouse Elect. Corp., Westinghouse Research Labs. Sci. Paper. No. 1557; ASME M. P., 50–A–112.
J. D. Wear and T. E. Locke, Effect of retractable ignition plug on plug fouling by carbon deposits. NACA Research Memo. No. E50F14 (Aug.).
J. G. Withers, Gas turbine combustion efficiency calculations. Aircraft Eng. **22**, 218.
E. V. Zettle and H. Mark, Simulated performance of two annular combustors with continuous axial openings for admission of primary air. NACA Research Memo. No. E50E18a (Aug.).

1951

K. Bammert, Design of constant-pressure combustion chambers. Forsch. Gebiete Ingenieurw. **17**, 40.
A. D. Baxter, Combustion in the rocket motor. J. Brit. Interplanet. Soc. 10, 123.
F. J. Bayley, Air cooling methods for gas turbine combustion systems. National Gas Turbine Establishment (Gt. Brit.), R. 101 (Aug.).
C. B. Davies, Combustion of hydrocarbon mists. Shell Aviation News No. 157, 151 (July).
J. G. Dawson, The combustion in gas turbines. J. Inst. Petroleum **37**, 509.
G. E. Eggleston, Flame propagation velocities under pressure. Trend Eng. **3**, 28 (Apr.).
J. B. Fenn, H. B. Forney, and R. C. Garmon, Burners for supersonic ramjets. Instability in a two-inch ramjet burner. Ind. Eng. Chem. **43**, 1663.
F. H. Garner and H. A. Cheetham, The flow pattern of gas-turbine combustion. J. Inst. Petroleum **37**, 554.
J. F. Hill, Summary of combustion studies for generation of inert gas. SAE Pre. No. 660, Los Angeles (Oct. 4).
R. Höger, The temperature distribution in the outlet section of combustion chambers. Arch. ges. Wärmetech. **2**, 60.
T. F. Hurley, Design of combustion chambers for coal-fired gas turbines. J. Inst. Petroleum **37**, 517.
I. Lubbock, Combustion problems of the gas turbine. Aircraft Eng. **23**, 196.
K. J. Mackenzie and J. H. Boddy, Fuel testing in gas turbines. Some effects of atmospheric humidity on the operation of combustion chambers used for fuel testing. Aircraft Eng. **23**, 40.
G. H. Markstein, Interaction of flow pulsation and flame propagation. J. Aeronaut. Sci. **18**, 428.
J. W. Mullen, II, J. B. Fenn, and R. C. Garmon, Burners for supersonic ramjets. Ind. Eng. Chem. **43**, 195.
R. E. Pavia, Static pressures and air flows in the flame tube of a Derwent V combustor. Australian Aeronaut. Research Lab. Eng. Note No. 154.
R. E. Pavia, The Derwent V combustor with separated air supplies. I—Atomization effects with "normal" air distribution. Australian Aeronaut. Research Lab. Eng. Note No. 155.
J. Rappeneau, Method for the determination of the efficiency of turbojet combustion chambers. Recherche aéronaut. No. 21, 19 (May/June).
E. Sänger, P. Goercke, and I. Bredt, On ionization and luminescence in flames. NACA Tech. Memo. No. 1305 (Apr.).
D. G. Shepherd, Review of combustion phenomena for the gas turbine. Trans. ASME **73**, 921.
D. B. Spalding, Combustion of fuel particles. Fuel **30**, 121.
E. S. Starkman, A. G. Cattaneo, and S. H. McAllister, Carbon formation in gas turbine combustion chambers. Ind. Eng. Chem. **43**, 2822.
M. Summerfield, A theory of unstable combustion in liquid propellant rocket systems. J. Am. Rocket Soc. **21**, 108.
C. W. Tait, A. G. Whittaker, and H. Williams, Measurement of the burning rate of liquid propellants. J. Am. Rocket Soc. No. 85, 83.
J. E. C. Topps, An experimental study of the evaporation and combustion of falling droplets. J. Inst. Petroleum **37**, 535.
H. S. Tsien, Influence of flame front on the flow field. J. Appl. Mechanics **18**, 188.
R. J. Wakelin, R. Heron, and R. R. Baldwin, Study of the flame stability characteristics of different vaporized fuels in a small scale combustion chamber. Fuel **30**, 82.

E. P. Walsh, J. R. Hamm, and W. L. Christensen, Characteristics of vaporizing combustors for aviation gas turbines. ASME M. P., Atlantic City.
R. L. Wehrli, Experimental problems in high-pressure combustion. ASME M. P. Atlantic City.
Combustion research by Westinghouse. Oil Engine and Gas Turbine **19**, 110.
Jet fuel carbon probed in tiny cell. Aviation Week **55**, 28 (Aug. 27).
New method for analysis of jet engine exhaust gas. Automotive Inds. **105**, 60 (July 15).

1952

N. P. Bailey, Flow and combustion stability. Abstract: Mech. Eng. **74**, 39.
P. Barret, Temperature and thermal equilibrium in a diffusion flame. Publs. sci. et tech. ministère air (France) No. 273.
A. L. Berlad and R. R. Hibbard, Effect of radiant energy on vaporization and combustion of liquid fuels. NACA Research Memo. No. E52I09 (Nov.).
K. Berman and S. H. Cheney, Jr., Combustion studies in rocket motors. Abstract: Aviation Week **57**, 32 (Dec. 22).
K. Berman and S. E. Logan, Combustion studies with a rocket motor having a full-length observation window. J. Am. Rocket Soc. **22**, 78.
P. L. Blackshear, Jr., Driving standing waves by heat addition. NACA Tech. Note No. 2772 (Aug.).
I. Bowen, Protection of flame zone wall. Engineering **173**, 559.
T. P. Clark, Examination of smoke and carbon from turbojet-engine combustors. NACA Research Memo. No. E52I26 (Nov.).
L. Crocco, Aspects of combustion stability in liquid propellant rocket motors. J. Am. Rocket Soc. **21**, 163 (1951); **22**, 7 (1952).
R. E. Cullen, A nondimensional correlation of flame propagation at subatmospheric pressures. Abstract: Mech. Eng. **74**, 668.
C. E. Frank and A. U. Blackham, Investigation of hydrocarbon ignition. NACA Tech. Note No. 2549 (Jan.).
H. Hausenblas and A. Pfleghaar, Die Vorausberechnung der Strömungsverhältnisse in einer Brennkammer für Gasturbinen. Motortech. Z. **13**, 193.
M. S. Kuhring, Combustion problems in the gas turbine. Nat. Aeronaut. Establishment (Canada), Aeronaut. Labs. Quart. Bull. Rept. No. NAE 1952 (2).
M. S. Kuhring, Jet engine combustion. Airports and Air Transportation **6**, 97 (Nov./Dec.).
M. S. Kuhring, Research expert reviews jet engine combustion. Can. Aviation **25**, 98 (Sept.).
C. Larsson, Combustion chambers in jet engines. Tek. Tidsk. **82**, 733.
R. S. Levine and R. B. Lawhead, A survey of combustion instability in liquid propellant rocket engines. Am. Rocket Soc. Pre. No. 63–52.
P. Lloyd, Combustion in the gas turbine. Ministry of Supply, Aeronaut. Research Council (Gt. Brit.) R. and M. 2579.
P. Meyers, Combustion of low-volatility fuel in a turbojet combustion chamber—effects of fuel vaporization. ASME M. P., New York.
R. K. Newmann, D. Dembrow, W. G. Berl, and R. Prescott, A simplified combustion analysis system. Abstract: Aviation Week **57**, 32 (Dec. 22).
J. B. Nichols, An energy basis for comparison of performance of combustion chambers. Abstract: Mech. Eng. **74**, 669.
F. W. Ruegg and H. J. Klug, Analytical and experimental studies with idealized gas turbine combustors. J. Research Nat. Bur. Standards **49**, 279.
W. Sacks and M. T. I. Ziebell, Effect of aliphatic halogen compounds on carbon deposition from aircraft gas turbine fuels. Nat. Aeronaut. Establishment (Canada) Fuels and Lubricants Lab. Rept. LR–17 (Jan.).
K. Schiller and J. A. Bierlein, Isothermal combustion under flow conditions. J. Am. Rocket Soc. **22**, 245.
C. S. Stone, Design factors in the development of a small high-heat-release combustor. Abstract: Mech. Eng. **74**, 669.
L. Topper, Radiant heat transfer from flames in a single tubular turbojet combustor. NACA Research Memo. No. E52F23 (Aug.).
H. S. Tsien, Servo-stabilization of combustion in rocket motors. J. Am. Rocket Soc. **22**, 256.
H. Wehner, Combustion chambers for turbine power plants. Interavia **7**, 395.
J. E. Williams, A simple method of determining gas turbine combustor efficiencies. Aeronaut. Research Laboratories (Australia) Engines Note No. 164 (July).

G. G. Younger, D. S. Gabriel, and W. R. Mikelsen, Experimental study of isothermal wake-flow characteristics of various flameholder shapes. NACA Research Memo. No. E51K07 (Jan.).
Altitude boost claimed for device. Aviation Week **57**, 74 (Sept. 29).
Torture chambers for the J-47. Aviation Age **18**, 15 (Oct.).

1953

D. Anson, Influence of the quality of atomization on the stability of combustion of liquid-fuel sprays. Fuel **32**, 39.
W. H. Avery and R. W. Hart, Combustor performance with instantaneous mixing. Ind. Eng. Chem. **45**, 1634.
K. Berman and S. H. Cheney, Jr., Combustion studies in rocket motors. J. Am. Rocket Soc. **23**, 89.
F. M. Comerford, Carbon particle formation in a gaseous fuel. Fuel **32**, 67.
L. Crocco and S. I. Cheng, High-frequency combustion instability in rocket motor with concentrated combustion. J. Am. Rocket Soc. **23**, 301.
R. E. Cullen, A nondimensional correlation of flame propagation at subatmospheric pressures. Trans. ASME **75**, 43.
J. Fellows, Methods of determining combustion efficiency in gas turbine. Rev. inst. franç. pétrole **8**, 277.
R. Friedman, Kinetics of the combustion wave. J. Am. Rocket Soc. **23**, 349.
V. V. Holmes, A. J. Pahnke, O. H. Uyehara, and P. S. Myers, Combustion of a low-volatility fuel in turbojet combustion chambers—effects of fuel vaporization. Trans. ASME **75**, 1303.
S. Letwin, Industrial-type oil and gas-fired combustion chambers. Abstract: Mech. Eng. **75**, 328.
R. S. Levine and R. B. Lawhead, Combustion instability in liquid fuel rockets. Aviation Age **19**, 50 (Jan.).
J. P. Longwell, E. E. Frost, and M. A. Weiss, Flame stability in bluff body recirculation zones. Ind. Eng. Chem. **45**, 1629.
F. E. Marble and D. W. Cox, Servo-stabilization of low-frequency oscillations in a liquid bipropellant rocket motor. J. Am. Rocket Soc. **23**, 63.
B. P. Mullins, Spontaneous ignition of fuels injected into a hot air stream. Fuel **32**, 211, 234, 327, 343, 363, 451, 467, and 481.
R. K. Newmann, D. Dembrow, W. G. Berl, and R. Prescott, A simplified combustion analysis system. J. Am. Rocket Soc. **23**, 244.
J. B. Nichols, An energy basis for comparison of performance of combustion chambers. Trans. ASME **75**, 29.
A. K. Oppenheim, Water-channel analog to high-velocity combustion. J. Appl. Mechanics **20**, 115.
. D. Puchot and J. R. Hamm, Characteristics of a vaporizing combustor for aviation gas turbines. ASME M. P. No. 53-A182.
A. A. Putnam and W. R. Dennis, A study of burner oscillations of the organ-pipe type. Trans. ASME **75**, 15.
K. L. Rieke, Temperature and gas-analysis surveys in the combustion zone of a gas-fired gas-turbine combustor. Trans. ASME **75**, 1233.
P. Rosen and R. W. Hart, A constant-area, constant temperature combustor. J. Aeronaut. Sci. **20**, 549.
E. T. B. Smith, Some simple considerations of combustion and gas dynamics in liquid propellant rocket motors. J. Brit. Interplanet. Soc. **12**, 53.
D. B. Spalding, Theoretical aspects of flame stabilization. Aircraft Eng. **25**, 264.
A. O. Tischler and D. R. Bellman, Combustion instability in an acid-heptane rocket with a pressurized-gas propellant pumping system. NACA Tech. Note No. 2936 (May).
C. H. Trent, Combustion in rocket thrust chambers as investigated by a mechanical probe. ASME M. P., Los Angeles (July).
C. H. Trent, Experimental study of combustion in rockets. ASME M. P., Los Angeles (July).
T. von Kármán, Aerothermodynamics and combustion theory. Aerotecnica **33**, 80.
T. E. Warren, H. P. Hudson, J. D. Robertson, and J. C. Mulligan, Comparative performance of coals of different rank in a film-cooled gas-turbine combustor. Trans. ASME **75**, 35.
A. Weir, High temperature combustion chamber. Ind. Eng. Chem. **45**, 1637.
Combustion in the jet engine. Aeroplane **84**, 344.

207.2 Fuel Nozzles, Jets, and Sprays

1948

H. Gold and D. M. Straight, Gas-turbine-engine operation with variable-area fuel nozzle. NACA Research Memo. No. E8D14 (July).

1950

F. C. Mock and D. R. Ganger, Practical conclusions on gas turbine spray nozzles. SAE Quart. Trans. **4**, 357.

C. M. Sliepcevich, J. A. Consiglio, and F. Kurata, Operating characteristics of a vibrating-type atomizing nozzle. Ind. Eng. Chem. **42**, 2253.

D. M. Straight and H. Gold, Experimental and analytical study of balanced-diaphragm fuel distributors for gas-turbine engines. NACA Research Memo. No. E50F05 (Aug.).

1951

R. D. Ingebo, Vaporization rates and heat transfer coefficients for pure liquid drops. NACA Tech. Note No. 2368 (July).

W. R. Lane, Shatter of drops in streams of air. Ind. Eng. Chem. **43**, 1312.

K. D. Miller, Jr., Some interactions of splashing liquid jets. ASME M. P., Atlantic City.

R. A. Mugele and H. D. Evans, Droplet size distribution in sprays. Ind. Eng. Chem. **43**, 1317.

G. Nebbia, The method for determination of the characteristics of mixtures for carburetting for rockets. Ann. fac. econ. e com. univ. Bari **10**, 3.

1952

M. F. Heidmann and J. C. Humphrey, Fluctuations in a spray formed by two impinging jets. NACA Tech. Note No. 2349 (Apr. 1951); J. Am. Rocket Soc. **22**, 127 (1952).

N. Manson, F. Ferrié, and R. Kling, Methods of measuring dimensions of droplets in fuel sprays in reciprocating engines and gas turbines. J. soc. ing. automobile **25**, 191 (Aug.).

M. N. Olsen, A photographic study of injection. Am. Rocket Soc. Pre. 66–52.

K. R. Stehling, Injector spray and hydraulic factors in rocket motor analysis. J. Am. Rocket Soc. **22**, 132.

1953

D. W. Bahr, Evaporation and spreading of isooctane sprays in high-velocity air streams. NACA Research Memo. No. E53I14 (Nov.).

F. C. Engel, Fuel-spray examination methods. Abstract: Mech. Eng. **75**, 329.

F. H. Garner and V. E. Henney, Behaviour of sprays under high altitude conditions. Fuel **32**, 151.

F. W. Hartwig, Maximum evaporation rates for nonisothermal droplets. J. Am. Rocket Soc. **23**, 242.

R. D. Ingebo, Pressure effects on vaporization rate of drops in gas streams. NACA Tech. Note No. 2850 (Jan.).

S. Katzoff and S. L. Smith, A theoretical analysis of the distortion of fuel-spray-particle paths in a helicopter ramjet engine due to centrifugal effects. NACA Research Memo. No. L53A02 (April).

C. C. Miesse, Correlation of experimental data on the disintegration of liquid jets. ASME M. P., Los Angeles (July).

S. S. Penner, On maximum evaporation rates of liquid droplets in rocket motors. J. Am. Rocket Soc. **23**, 85.

207.3 Compressors and Their Components

1947

E. Boxer, Influence of wall boundary layer upon the performance of an axial-flow rotor. NACA Research Memo. No. L6J18b (May).

J. R. Erwin, L. C. Wright, and A. Kantrowitz, Investigation of an experimental supersonic axial-flow compressor. NACA Research Memo. No. L6J01b (Aug.).

E. B. Laskin and M. G. Kofskey, Increase in stable air flow operating range of a mixed flow compressor by means of surge inhibitor. NACA Research Memo. No. E7C05 (April).

1948

A. D. S. Carter, Some tests on compressor cascades of related aerofoils having different positions of maximum camber. Aeronaut. Research Council (Gt. Brit.) R & M No. 2694 (Dec.).

P. D. Dugan, J. J. Mahoney, and W. A. Benser, Effect of Mach number on performance of an axial-flow compressor rotor-blade row. NACA Research Memo. No. E8D29 (Sept.).
A. Ginsburg, J. W. R. Creagh, and W. K. Rittter, Performance investigation of a large centrifugal compressor from an experimental turbojet engine. NACA Research Memo. No. E8H13 (Oct.).
A. W. Goldstein, Design and performance of experimental axial-discharge mixed-flow compressor. NACA Research Memo. No. E8F04 (Aug.).
H. Mankuta and D. C. Guentert, Investigation of performance of single-stage axial-flow compressor using NACA 5509–34 blade sections. NACA Research Memo. No. E8F30 (Sept.).
A. J. Meery, Jr., and M. P. Hanson, Vibration survey of NACA 24-inch supersonic axial-flow compressor. NACA Research Memo. No. ESD30 (July).
W. K. Ritter and I. A. Johnsen, Performance of a 24-inch supersonic axial-flow compressor in air. NACA Research Memo. No. E7L10 (May).
J. T. Sinnette, Jr., and W. J. Voss, Extension of useful range of axial-flow compressors by use of adjustable stator blades. NACA Rept. No. 915.
J. D. Stanitz, Two-dimensional, compressible flow in conical, mixed-flow compressors. NACA Tech. Note No. 1744 (Nov.).
L. C. Wright, Investigations to determine contraction ratio for supersonic-compressor rotor. NACA Research Memo. No. E7L23 (April).

1949

J. R. Burtt, Investigation of performance of typical inlet stage of multistage axial-flow compressor. NACA Research Memo. No. E9E13 (July).
H. B. Finger, H. J. Schum, and H. A. Buckner, Jr., Investigation of inlet guide vanes for a multistage axial-flow compressor. NACA Tech. Note No. 1954 (Oct.).
A. Ginsburg, I. A. Johnsen, and A. C. Redlitz, Determination of centrifugal-compressor performance on basis of static-pressure measurements in vaneless diffuser. NACA Tech. Note No. 1880 (June).
A. W. Goldstein and A. Mager, Attainable circulation of airfoils in cascade. NACA Tech. Note No. 1941 (Sept.).
J. T. Hamrick and W. L. Beede, Method of determining centrifugal-flow-compressor performance with water injection. NACA Research Memo. No. E9G12 (Sept.).
A. J. Meyer, Jr., and H. F. Calvert, Vibration survey of blades in 10-stage axial-flow compressor. NACA Research Memo. No. E8J22; E8J22a and b (Jan.).
H. Pearson and T. Bowmer, Surging of axial compressors, Aeronaut. Quart. 1, 195.
J. D. Stanitz and G. O. Ellis, Two-dimensional compressible flow in centrifugal compressors with straight blades. NACA Tech. Note No. 1932 (Aug.).
L. E. Wallner and W. A. Fleming, Reynolds number effect on axial-flow compressor performance. NACA Research Memo. No. E9G11 (Sept.).
L. C. Wright and J. F. Klapproth, Performance of supersonic axial-flow compressors based on one-dimensional analysis. NACA Research Memo. No. E8L10 (March).

1950

E. Boxer and J. R. Ervin, Investigation of a shrouded and an unshrouded axial-flow supersonic compressor. NACA Research Memo. No. L50G05 (Sept.).
J. R. Erwin and W. M. Schulze, Investigation of an impulse axial-flow compressor. NACA Research Memo. No. L9J05a (Feb.).
H. B. Finger, Method of experimentally determining radial distributions of velocity through axial-flow compressor. NACA Tech. Note No. 2059 (Apr.).
A. W. Goldstein and A. Mager, Attainable circulation of airfoils in cascade. NACA Rept. No. 953.
M. P. Hanson, Effect of blade-root fit and lubrication on vibration characteristics of ball-root-type axial-flow-compressor blades. NACA Research Memo. No. E50C17 (June).
M. J. Hartmann and E. R. Tysl, Performance of 24-inch supersonic axial-flow compressor. NACA Research Memo. No. E50D27 (July).
A. R. Howell and R. P. Bonham, Over-all and stage characteristics of axial-flow compressors. Inst. Mech. Engrs. (London), J. and Proc. **163**, 165.
A. Kantrowitz, The supersonic axial-flow compressor. NACA Rept. No. 974.
S. Lieblein and D. M. Sandercock, Compressibility correction for turning angles of axial-flow inlet guide vanes. NACA Tech. Note No. 2215 (Dec.).

J. J. Mahoney, P. D. Dugan, R. E. Budinger, and H. F. Goelzer, Investigation of blade-row flow distributions in axial-flow compressor stage consisting of guide vanes and rotor-blade row. NACA Research Memo. No. E50G12 (Nov.).

S. S. Manson, A. J. Meyer, H. F. Calvert, and M. P. Hanson, Factors affecting vibrations of axial-flow compressor blades. Proc. Soc. Exptl. Stress Anal. **7**, 1.

R. McLarren, The supersonic compressor. Aero Dig. **61**, 50 (Oct.).

A. J. Meyer, Jr. H. F. Calvert, and C. R. Morse, Effects of obstructions in compressor inlet on blade vibration in 10-stage axial-flow compressor. NACA Research Memo. No. E9L05 (Feb.).

C. Mortarino, Experiments on blade cascades for compressors. Aerotecnica **30**, 59.

C. Pfleiderer, The sonic barrier in compressors. Z. Ver. deut. Ing. **92**, 129; Engrs. Dig. **11**, 316 (Sept.).

J. J. Rebeske, Jr., R. B. Parisen, and H. J. Schum, Investigation of centrifugal compressor operated as a centripetal refrigeration turbine. NACA Research Memo. No. E50I20 (Dec.).

B. I. Sather and M. J. Tauschek, Study of compressor systems for a gas-generator engine. NACA Research Memo. No. E50H08 (Oct.).

M. Savage and W. R. Westphal, Analysis on the effect of design pressure ratio per stage and off-design efficiency on the operating range of multistage axial-flow compressors. NACA Tech. Note No. 2248 (Dec.).

W. M. Schulze, J. R. Erwin, and W. R. Westphal, Investigation of an impulse axial-flow compressor rotor over a range of blade angles. NACA Research Memo. No. L50F27a (Aug.).

J. D. Stanitz and G. O. Ellis, Two-dimensional compressible flow in centrifugal compressors with straight blades. NACA Rept. No. 954.

Compressor using water for gas-turbine research. Engineering **170**, 485.

Compressors for aircraft gas turbines. Engineering **170**, 511.

1951

A. D. Baxter and C. W. R. Smith, Contra-flow turbo-compressor tests. Ministry of Supply, Aeronaut. Research Council (Gt. Brit.) R and M 2607.

S. M. Bogdonoff, The performance of axial-flow compressors as affected by single-stage characteristics. J. Aeronaut. Sci. **18**, 319.

J. T. Bowen, R. H. Sabersky and W. D. Rannie, Investigations of axial-flow compressors. Trans. ASME **73**, 1.

M. J. Brunner and R. E. McNair, Blading for axial-flow compressors. Abstract: Mech. Eng. **73**, 153.

J. R. Burtt and R. J. Jackson, Performance of single-stage compressor designed on basis of constant total enthalpy with symmetrical velocity diagram at all radii and velocity ratio of 0.7 at rotor hub. NACA Research Memo. No. E51F06 (Sept.).

Chung-Hua Wu, Survey of available information on internal flow losses through axial turbomachines. NACA Research Memo. No. E50J13 (Jan.).

Chung-Hua Wu and C. A. Brown, A method of designing turbomachine blades with a desirable thickness distribution for compressible flow along an arbitrary stream filament of revolution. NACA Tech. Note No. 2455 (Sept.).

Chung-Hua Wu and E. L. Costilow, A method of solving the direct and inverse problem of supersonic flow along arbitrary stream filaments of revolution in turbomachines. NACA Tech. Note No. 2492 (Sept.).

G. R. Costello, R. L. Cummings, and J. T. Sinnette, Jr., Detailed computational procedure for design of cascade blades with prescribed velocity distributions in compressible potential flows. NACA Tech. Note No. 2281 (Feb.).

I. M. Davidson, Some data pertaining to the supersonic axial-flow compressor. Ministry of Supply, Aeronaut. Research Council (Gt. Brit.) R and M No. 2554.

G. O. Ellis and J. D. Stanitz, Two-dimensional compressible flow in centrifugal compressors with logarithmic-spiral blades. NACA Tech. Note No. 2255 (Jan.).

J. R. Foley, Compressor surge topic at SAE round table. Abstract: SAE Journal **59**, 46 (Sept.).

G. Jarre, Flow of a compressible fluid through a radial flow turbomachine impeller. Termotecnica **5**, 77 (Feb.).

H. Kottas, Performance of centrifugal compressor operated as radial-inflow turbo-expander. Refrig. Eng. **59**, 762.

R. Legendre, Calcul d'un profil d'ailette de turbomachine. Recherche aéronaut. No. 24, 39 (Nov./Dec.).

S. Lieblein and R. H. Ackley, Secondary flows in annular cascades and effects on flow in inlet guide vanes. NACA Research Memo. No. E51G27 (Aug.).

A. G. Meller, Synthese sur la détermination des fréquences et des formes propre de vibrations des aubes de compresseur. Recherche aéronaut. No. 22, 55 (July/Aug.).

J. J. Moses and G. K. Serovy, Effect of blade-surface finish on performance of a single-stage axial-flow compressor. NACA Research Memo. No. E51C09 (April).

E. S. Moult and H. Pearson, The relative merits of centrifugal and axial compressors for aircraft gas turbines. J. Roy. Aeronaut. Soc. **55**, 129.

J. E. O'Neill, An experimental investigation of supersonic lattice flow. Aeronaut. Eng. Rev. **10**, 28 (Jan.).

M. Panetti, A limit hypothesis for calculation of the characteristics of axial compressors. Termotecnica **5**, 5.

R. W. Pinnes, The theoretical possibilities for balanced flow in compressor and turbine design. Abstract: Mech. Eng. **74**, 150.

V. D. Prian and D. J. Michel, An analysis of flow in rotating passage of large radial-inlet centrifugal compressor at tip speed of 700 feet per second. NACA Tech. Note No. 2584 (Dec.).

H. Quenzer and G. Schwarz, Aerodynamic calculation method for high power axial compressors. Schweiz. Bauztg. **69**, 432 and 462.

H. J. Reissner and L. Meyerhoff, Analysis of an axial compressor stage with infinitesimal and finite blade spacings. NACA Tech. Note No. 2493 (Oct.).

R. Resnick and L. J. Green, Velocity distributions and design data for ideal incompressible flow through cascades of airfoils. J. Appl. Mechanics **18**, 253.

V. Rubbo, Axial compressors. Termotecnica **5**, 113.

J. R. Schnittger, Three-dimensional flow in axial compressors. Tek. Tidskr. **15**, 1087.

J. T. Sinnette, Jr., and G. R. Costello, Possible application of blade boundary-layer control to improvement of design and off-design performance of axial flow turbomachines. NACA Tech. Note No. 2371 (May).

J. T. Sinnette, Jr., G. R. Costello, and R. L. Cummings, Expressions for measuring the accuracy of approximate solutions to compressible flow through cascades of blades with examples of use. NACA Tech. Note No. 2501 (Oct.).

W. E. Spraglin, Flow through cascades in tandem. NACA Tech. Note No. 2393 (June).

J. D. Stanitz, Approximate design method for high-solidity blade elements in compressors and turbines. NACA Tech. Note No. 2408 (July).

J. D. Stanitz and V. D. Prian, A rapid approximate method for determining velocity distribution on impeller blades of centrifugal compressors. NACA Tech. Note No. 2421 (July).

C. H. Voit and A. R. Thomson, An analytical investigation upon aerodynamic limitations of several designs of high stage pressure ratio multistage compressors. NACA Tech. Note No. 2589 (Dec.).

F. L. Wattendorf, Simplified design comparisons of axial compressors. J. Aeronaut. Sci. **18**, 447.

J. R. Withee, Jr., K. Kovach, and A. Ginsburg, Experimental investigation of effects of design changes on performance of large-capacity centrifugal compressors. NACA Research Memo. No. E50K10 (March).

Jet blade production. Shell Aviation News No. 151, 6 (Jan.).

Research compressor. Mech. Eng. **73**, 229.

1952

A. Betz, Energy conversion for compressible gases in a cascade of blades. Forsch. Gebiete Ingenieurw. **18**, 61.

W. B. Briggs, Effect of Mach number on the flow and application of compressibility corrections in a two-dimensional subsonic-transonic compressor cascade having varied porous-wall suction at the blade tips. NACA Tech. Note No. 2649 (Mar.).

R. O. Bullock and H. B. Finger, Surging in centrifugal and axial-flow compressors. SAE Quart. Trans. **6**, 220.

Chung-Hua Wu, C. A. Brown, and E. L. Costilow, Analysis of flow in a subsonic mixed-flow impeller. NACA Tech. Note No. 2749 (Aug.).

Chung-Hua Wu, C. A. Brown, and V. D. Prian, An approximate method of determining the subsonic flow in an arbitrary stream filament of revolution cut by arbitrary turbomachine blades. NACA Tech. Note No. 2702 (June).

J. Lalive d'Epinay, Theoretical and experimental research in the field of centrifugal and axial-flow compressors. Brown Boveri Rev. **39**, 161.
D. Desoutter, British standardize compressor blade dimensioning. Aviation Age **18**, 35 (July).
G. O. Ellis and J. D. Stanitz, Comparison of two- and three-dimensional potential-flow solutions in a rotating impeller passage. NACA Tech. Note No. 2806 (Oct.).
H. B. Finger and J. F. Dugan, Jr., Analysis of stage matching and off-design performance of multistage axial-flow compressors. NACA Research Memo. No. E52D07 (June).
A. W. Goldstein, Axisymmetric supersonic flow in rotating impellers. NACA Rept. No. 1083.
J. T. Hamrick, A. Ginsburg, and W. M. Osborn, Method of analysis for compressible flow through mixed-flow centrifugal impellers of arbitrary design. NACA Rept. No. 1082.
J. T. Hamrick and J. Mizisin, Investigations of flow fluctuations at the exit of a radial-flow centrifugal impeller. NACA Research Memo. No. E52H11.
A. G. Hansen, G. R. Costello, and H. Z. Herzig, Effect of geometry on secondary flows in blade rows. NACA Research Memo. No. E52H26 (Oct.).
Hsuan Yeh, The development of cascade profiles for high subsonic potential flows. J. Aeronaut. Sci. **19**, 630.
K. H. Khalil, Rotational effects on a cascade of aerofoil blades. Engineer **193**, 831.
K. H. Khalil, Wind-tunnel investigation on rotating blades of aerofoil section. Inst. Mech. Engrs. (London), J. and Proc. **166**, 419.
K. Kovach and J. R. Withee, Jr., Investigation of effects of Reynolds number on large double-entry centrifugal compressor. NACA Research Memo. No. E52H19 (Oct.).
A. Mager, J. J. Mahoney, and R. E. Budinger, Discussion of boundary-layer characteristics near the wall of an axial-flow compressor. NACA Report No. 1085.
A. W. McCoy and A. V. Hooper, Blade adjustment in axial-flow compressor stages. Abstract: Aeronaut. Eng. Rev. **11**, 63 (Nov.).
D. J. Michel, J. Mizisin, and V. D. Prian, Effect of changing passage configuration on internal-flow characteristics of a 48-inch centrifugal compressor. I—Change in blade shape. NACA Tech. Note No. 2706 (May).
J. Mizisin and D. J. Michel, Effect of changing passage configuration on internal-flow characteristics of a 48-inch centrifugal compressor. II—Change in hub shape. NACA Tech. Note No. 2835 (Nov.).
J. E. B. Perkins, The supersonic axial compressor. Shell Aviation News No. 167, 20 (May).
M. Savage and L. A. Beatty, A technique applicable to the aerodynamic design of inducer-type multistage axial-flow compressors. NACA Tech. Note No. 2598 (Apr.).
J. R. Schnittger, Three-dimensional flow in axial compressors. Engrs. Dig. **12**, 89 (Mar.).
Shao-Lee Soo, Wet compression in an axial-flow compressor. Trans. ASME **74**, 879.
H. E. Sheets, Nondimensional compressor performance for a range of Mach numbers and molecular weights. Trans. ASME **74**, 93.
I. E. Speer, Design considerations and development of a broad range, high-efficiency centrifugal compressor for a small gas-turbine compressor. Abstract: Mech. Eng. **74**, 503.
J. D. Stanitz, Aerodynamic design of efficient two-dimensional channels. ASME M. P. No. 52-A-110.
J. D. Stanitz, One-dimensional compressible flow in vaneless diffusers of radial- and mixed-flow centrifugal compressors, including effects of friction, heat transfer and area change. NACA Tech. Note No. 2610 (Jan.).
J. D. Stanitz, Some theoretical aerodynamic investigations of impellers in radial- and mixed-flow centrifugal compressors. Trans. ASME **74**, 473.
J. D. Stanitz and G. O. Ellis, Flow surfaces in rotating axial-flow passages. NACA Tech. Note No. 2834 (Nov.).
J. D. Stanitz and G. O. Ellis, Two-dimensional flow on general surfaces of revolution in turbomachines. NACA Tech. Note No. 2654 (Mar.).
J. M. Stephenson, The gas bending stress on a blade in an axial-flow compressor. J. Aeronaut. Sci. **20**, 357.
L. N. Thompson, Some notes on centrifugal compressors. Aircraft Eng. **24**, 231.

W. van Ryswyk, Operating experience with centrifugal and axial-flow turbo-compressors. Brown Boveri Rev. **39**, 175.
Jet compressor blades. Mech. Eng. **74**, 319.

1953

J. S. Alford, Design of extremely light weight high speed compressor rotors for aircraft gas turbines. ASME M. P. Los Angeles (June).
A. D. Baxter, Axial and centrifugal compressor aero gas turbines. Research **6**, 210.
P. Botto, Calco delle sollecitazioni centrifughe di dischi conici e a spessore constante con preso specifico variabile lungo il raggio. Aerotecnica **33**, 291.
C. Casci, Sul motore composito, Aerotecnica **33**, 263.
Chung-Hua Wu, Subsonic flow of air through a single-stage compressor. NACA Tech. Note No. 2961 (June).
B. Downs, The "intrinsic efficiency" of a flow type air compressor. Engineer **196**, 101.
P. de Haller, Das Verhaltern von tragflugelgittern in Axialverdichtern und in Windkanal. Brennstoff-Wärme-Kraft **5**, 333.
H. S. Fowler and V. Walker, Fluid flow in turbo-machinery. Trans. Inst. Engrs. Shipbuilders (Scotland) **97**, 113.
J. Gruber, Design of blade profiles for axial-flow turbomachines. Maschinenbau Technik **2**, 209.
J. T. Hamrick and W. L. Beede, Some investigations with wet compression. Trans. ASME **75**, 409.
A. G. Hansen, H. Z. Herzig, and G. R. Costello, A visualization study of secondary flows in cascades. NACA Tech. Note No. 2947 (May).
M. C. Huppert and W. A. Benser, Some stall and surge phenomena in axial-flow compressors. J. Aeronaut. Sci. **20**, 835.
T. Iura and W. D. Rannie, Experimental investigation of propagating stall in axial-flow compressors. Abstract: Mech. Eng. **76**, 736.
O. H. Jacobson and P. Volkman, On the application of the Palouste turbo compressor. ASME M. P. 53–SA–70 Los Angeles (June).
R. B. Johnson, Jr., What we know about stress-corrosion cracks in compressor blades. Abstract: SAE Journal **61**, 28 (Dec.).
J. A. Johnsen and A. Ginsburg, Some NACA research on centrifugal compressors. Trans. ASME **75**, 805.
N. H. Kemp and W. R. Sears, Aerodynamic interference between moving blade rows. J. Aeronaut. Sci. **20**, 585.
W. J. Kunz, Jr., Investigation of jet engine compressor stall and other transient characteristics. SAE Trans. **61**, 55.
F. E. Marble, Propagation of stall in compressor blade rows. Abstract: Aviation Week **58**, 58 (Feb. 9).
A. W. McCoy and A. V. Hooper, Blade adjustment in axial-flow compressor stages. J. Aeronaut. Sci. **20**, 43.
V. D. Naylor, Propeller parameters and the axial compressor. Aircraft Eng. **25**, 190.
H. Pearson, The aerodynamics of compressor blade vibration. Engineer **196**, 473; Aircraft Eng. **25**, 309.
J. Revuz, Blade profile for axial compressors. Recherche aéronaut. No. 31, 21 (Jan./Feb.).
J. R. Schnittger, Single degree of freedom flutter of compressor blades in separated flow. Abstract: Aeronaut. Eng. Rev. **12**, 55 (Nov.).
W. R. Sears, On asymmetric flow in an axial-flow compressor stage. J. Appl. Mechanics **20**, 57.
F. Sisto. Stall-flutter in cascades. J. Aeronaut. Sci. **20**, 598.
L. H. Smith, S. C. Traugott, and G. F. Wislicenus, A practical solution of a three-dimensional flow problem of axial-flow turbomachinery. Trans. ASME **75**, 789.
J. D. Stanitz, Design considerations for mixed-flow centrifugal compressors with high weight-flow rates per unit frontal area. NACA Research Memo. No. E53A15 (March).
J. M. Stephenson, A note on the weight of the blades in an axial-flow compressor. J. Aeronaut. Sci. **20**, 427.
J. M. Stephenson, Efficiency and drag of an axial flow compressor stage. Aircraft Eng. **25**, 158.
J. M. Stephenson, On the stability of the flow of gas out of a compressor. J. Roy. Aeronaut. Soc. **57**, 345.

J. M. Stephenson, Measurement of the profile drag of compressor and turbine cascade and the effect of wakes in exciting vibration. J. Roy. Aeronaut. Soc. **57**, 722.
J. M. Stephenson, The elimination of wall effects in axial-flow compressor stages. J. Roy. Aeronaut. Soc. **57**, 241.
I. Stone, Why designers are using more plastics. Aviation Week **58**, 43 (June 15).
T. P. Torda, H. H. Hilton, and F. C. Hall, Viscous flow through axial turbo machines. J. Appl. Mech. **20**, 401.

207.4 Turbines and Their Components

1947

W. B. Brown, J. B. N. Livingood, et al., Cooling of gas turbines. NACA Research Memos. No. E7B11c, d, e, f, and g.
J. G. Reuter and C. Gazley, Jr., Computed temperature distribution and cooling of solid gas-turbine blades. NACA Research Memo. No. E7B11h (Feb.).

1948

W. D. Bowman, Analytical investigation of effect of water-cooled turbine blades on performance of turbine-propeller power plants. NACA Research Memo. No. E8E10 (Aug.).
W. B. Brown and J. N. B. Livingood, Cooling of gas turbines. IX. Cooling effects from use of ceramic coatings on water-cooled turbine blades. NACA Research Memo. No. E8H03 (Oct.).
J. E. Farmer, Relation of nozzle-blade and turbine-bucket temperatures to gas temperatures in a turbojet engine. NACA Research Memo. No. E7L12 (April).
R. H. Kemp and W. C. Morgan, Analytical investigation of distribution of centrifugal stresses and their relation to limiting operating temperatures in gas-turbine blades. NACA Research Memo. No. E7L05 (April).
R. C. Kohl and R. G. Larkin, Effect of pressure ratio and inlet pressure on the performance of experimental gas turbine at inlet temperature of 800° R. NACA Research Memo. No. E8I03 (Nov.).
H. Kottas and B. W. Sheflin, Investigation of high-temperature operation of liquid-cooled gas turbine. NACA Research Memo. No. E8D12 (July).
G. L. Meyer, Determination of average heat-transfer coefficients for a cascade of symmetrical impulse turbine blades. NACA Research Memo. No. E8H12 (Oct.).
M. B. Millenson and S. S. Manson, Determination of stresses in gas-turbine disks subjected to plastic flow and creep. NACA Rept. 906.
W. C. Morgan, R. H. Kemp, and S. S. Manson, Vibration of turbine blades in a turbojet engine during operation. NACA Research Memo. No. E7L18 (April).

1949

I. M. Davidson, Some properties of the compression shock in turbine and compressor blade passages. Inst. Mech. Engrs. (London), J. and Proc. **161**, 182.
E. Eckert and K. v. Vietinghoff-Scheel, Experimental study of flow past turbine blades. NACA Tech. Memo. No. 1209 (June).
R. E. English and C. H. Hauser, Turbine-rotor-blade designs based on one-dimensional flow theory. NACA Research Memo. No. E9C15 (June).
R. E. English, R. J. McCready, and J. S. McCarthy, Some effects of stator cone angle and blade-tip leakage on 40-percent reaction turbine having rotor-blade caps. NACA Research Memo. No. E8I21 (March).
M. C. Huppert and C. MacGregor, Comparison between predicted and observed performance of gas-turbine stator blade designed for free-vortex flow. NACA Tech. Note No. 1810 (April).
R. H. Kemp and J. Schifman, Vibrational modes of several hollow turbine blades and of solid turbine blade of similar aerodynamic design. NACA Research Memo. No. E9G25 (Oct.).
F. D. Kochendorfer and J. C. Nettles, An analytical method of estimating turbine performance. NACA Rept. 930.
W. C. Morgan, R. H. Kemp, and S. S. Manson, Vibration of loosely mounted turbine blades during service operation of a turbojet engine with centrifugal compressor and straight-flow combustion chambers. NACA Research Memo. No. E9I07 (Nov.).
C. Yaker and F. B. Garrett, Cyclic operation of cast vitallium turbine blades at an exhaust-cone gas temperature of 1,440°±20° F. NACA Research Memo. No. E9G13 (Sept.).

1950

G. M. Ault and G. C. Deutsch, Review of NACA research on materials for gas-turbine blades. SAE Quart. Trans. **4**, 398.

C. Bellenot and J. Lalive d'Epinay, Self-induced vibrations of turbomachine blades. Brown Boveri Rev. **37**, 368.

W. B. Brown and P. L. Donoughe, Extension of boundary-layer heat-transfer theory to cooled turbine blades. NACA Research Memo. No. E50F02 (Aug.).

W. B. Brown and J. B. Esgar, Analytical determination of local surface heat-transfer coefficients for cooled turbine blades from measured metal temperatures. NACA Research Memo. No. E50F09 (Aug.).

E. Duncombe, A method of estimating optimum turbine operating conditions for a range of nozzle and blade angles. Nat. Research Council Can. Rept. No. MT-13 (June 2).

E. R. G. Eckert and T. W. Jackson, Analytical investigation of flow and heat transfer in coolant passages of free-convection liquid-cooled turbines. NACA Research Memo. No. E50D25 (July).

H. H. Ellerbrock, Jr., and L. J. Schafer, Jr., Application of blade cooling to gas turbines. NACA Research Memo. No. E50A04 (May).

H. H. Ellerbrock, Jr., and R. R. Ziemer, Preliminary analysis of problem of determining experimental performance of air-cooled turbine. NACA Research Memos. No. E50A05 (June) ; E50A06 (June) ; E50E18 (Aug.).

G. W. Englert and A. O. Ross, Investigation of first stage of a two-stage turbine designed for free-vortex flow. NACA Tech. Note No. 2107 (June).

G. Flügel, Design and systematic analysis of new blade profiles for steam- and gas-turbines. Forsch. Gebiete Ingenieurw. **16**, 125.

J. C. Freche, Further investigation of a gas turbine with National Bureau of Standards body 4811C ceramic rotor blades. NACA Research Memo. No. E9L07 (March).

J. C. Freche and A. J. Diaguila, Heat-transfer and operating characteristics of aluminum forced-convection and stainless-steel natural-convection water-cooled single-stage turbines. NACA Research Memo. No. E50D03a (June).

J. Geiger, The influence of twist on the natural frequency and the direction of vibration of steam and gas turbine blades. Schweiz. Bauztg. **68**, 17 and 38.

A. W. Goldstein and A. Mager, Attainable circulation of airfoils in cascade. NACA Rept. No. 953.

T. J. Hargest, The theoretical pressure distributions around some conventional turbine blades in cascade. Aeronaut. Research Council Gt. Brit. R and M 2765 (Mar.).

C. H. Hauser, H. W. Plohr, and G. Sonder, Study of flow conditions and deflection angle at exit of two-dimensional cascade of turbine rotor blades at critical and supercritical pressure ratios. NACA Research Memo. No. E9K25 (Mar.).

J. C. Hubbartt, Comparison of outside-surface heat-transfer coefficients for cascades of turbine blades. NACA Research Memo. No. E50C28 (July).

J. Kestin, The reheat factor in turbines and turbocompressors; new formulae for calculating the factors for units with finite stages based on known methods used on the infinite stage assumption. Aircraft Eng. **22**, 361.

H. Kohlmann, The development of a hollow blade for exhaust gas turbines. NACA Tech. Memo. No. 1289 (Dec.).

L. H. Leedham, Some problems in the manufacture of experimental gas turbines. Inst. Mech. Engrs. (London), J. and Proc. **163**, 281.

J. N. B. Livingood and W. B. Brown, Analysis of spanwise temperature distribution in three types of air-cooled turbine blade. NACA Rept. No. 994.

R. Plunkett, Free and forced vibrations of rotating blades. J. Aeronaut. Sci. **18**, 278.

W. B. Schramm, A. J. Nachtigall and V. L. Arne, Preliminary analysis of effects of air cooling turbine blades on turbojet-engine performance. NACA Research Memo. No. E50E22 (August).

D. H. Silvern and W. R. Slivka, Analytical investigation of turbines with adjustable stator blades and effect of these turbines on jet-engine performance. NACA Research Memo. No. E50E05 (July).

A. G. Smith and R. D. Pearson, The cooled gas turbine. Inst. Mech. Engrs. (London), J. and Proc. **163**, 221.

1951

V. L. Arne and A. J. Nachtigall, Calculated effects of turbine rotor-blade cooling air flow, altitude and compressor bleed point on performance of a turbojet engine. NACA Research Memo. No. E51E24 (Aug.).

T. W. F. Brown, The effect of the radiation correction on cooling loss in high-temperature cooled gas turbines. Abstract: Aircraft Eng. **23**, 315.
A. J. Diaguila and J. C. Freche, Blade-to-coolant heat-transfer results and operating data from a natural-convection water-cooled single-stage turbine. NACA Research Memo. No. E51I17 (Nov.).
E. R. G. Eckert and J. B. Esgar, Survey of advantages and problems associated with transpiration cooling and film cooling of gas-turbine blades. NACA Research Memo. No. E50K15 (Feb.).
E. R. G. Eckert, T. W. Jackson, and A. C. Francisco, Investigations of slot configurations for film-cooled turbine blades by flow visualization methods. NACA Research Memo. No. E50K01 (Jan.).
E. R. G. Eckert and J. N. B. Livingood, Calculations of laminar heat transfer around cylinders of arbitrary cross section and transpiration-cooled walls with application to turbine blade cooling. NACA Research Memo. No. E51F22 (Sept.).
H. H. Ellerbrock, Jr., Some NACA investigations of heat transfer of cooled turbine blades. Inst. Mech. Engrs. (London), General discussion on heat transfer (Sept.).
J. B. Esgar and A. L. Lea, Determination and use of the local recovery factor for calculating the effective gas temperature for turbine blades. NACA Research Memo. No. E51G10 (Sept.).
J. C. Freche and E. F. Schum, Determination of blade-to-coolant heat-transfer coefficients on a forced-convection water-cooled single-stage turbine. NACA Research Memo. No. E51E18 (July).
J. C. Freche and E. F. Schum, Determination of gas-to-blade convection heat-transfer coefficients on a forced-convection, water-cooled single-stage almuinum turbine. NACA Research Memo. No. E50J23 (Jan.).
A. C. Hagg, B. Cametti, and G. O. Sankey, A high-speed, high temperature precision testing machine for gas turbine disk research. Proc. Soc. Exptl. Stress Anal. **8**, 17.
J. E. Hubbartt and E. F. Schum, Average outside-surface heat-transfer coefficients and velocity distributions for heated and cooled impulse turbine blades in static cascades. NACA Research Memo. No. E50L20 (Mar.).
T. W. Jackson and J. N. B. Livingood, Analytical investigation of two liquid cooling systems for turbine blades. NACA Research Memo. No. E51F04 (Aug.).
P. F. Martinuzzi, Theory of the radial inflow turbine. ASME M. P. No. 51-F-15.
A. McSurely, NACA shows cooler blades for hot jets. Aviation Week **55**, 16 (Oct. 22).
E. H. W. Schmidt, Heat transmission by natural convection at high centrifugal acceleration in water-colled gas-turbine blades. Abstract: Aircraft Eng. **23**, 315.
D. H. Silvern and W. R. Slivka, Experimental investigation of an 0.8 hub-tip radius-ratio nontwisted-rotor-blade turbine. NACA Research Memo. No. E51G14 (Dec.).
W. R. Slivka and D. H. Silvern, Analytical evaluation of aerodynamic characteristics of turbines with nontwisted rotor blades. NACA Tech. Note No. 2365 (May).
W. L. Stewart, Analytical investigation of flow through high-speed mixed-flow turbine. NACA Research Memo. No. E51H06 (Oct.).
H. Woodhouse, Turbine blade fastenings. Machine Design **23**, 148 (Feb.).
Cooling problems in gas turbines. Engineer **191**, 105.
Measuring blade strain. Aeroplane **81**, 55.

1952

S. Alpert, Some general considerations in the design of axial flow gas turbines. SAE Quart. Trans. **6**, 606.
K. Bammert, Der Wärmeübergang bei Umströmung von innergekühlten Überdruckschaufeln. Forsch. Gebiete Ingenieurw. **18**, 81.
E. R. Bartoo L. J. Schafer, Jr., and H. T. Richards, Experimental investigation of coolant-flow characteristics of a sintered porous turbine blade. NACA Research Memo. No. E51K02 (Feb.).
J. L. Bogdanoff, Whirling of a bladed disc. J. Aeronaut. Sci. **19**, 519.
W. B. Brown and H. O. Slone, Pressure drop in coolant passages of two air-cooled turbine-blade configurations. NACA Research Memo. No. E52D01 (June).
Chung-Hua Wu and C. A. Brown, A theory of the direct and inverse problems of compressible flow past cascades of arbitrary airfoils. J. Aeronaut. Sci. **19**, 183.

H. Cohen, Heat transfer in air-cooled gas-turbine blades. Engineering **173**, 21.
D. Desoutter, British standardize compressor blade dimensioning. Aviation Age **18**, 85 (July).
D. A. Drew, Turbine stresses in aero-engines. Aircraft Eng. **24**, 138.
H. H. Ellerbrock, Jr., F. S. Stepka, R. O. Hickel, et al., Experimental investigation of air-cooled turbine blades in turbojet engine. NACA Research Memos. No. E50I04 (Dec. 1950); E50I14 (Nov. 1950); E50J06 (Dec. 1950); E51A19 (Apr. 1951); E51A22 (Apr. 1951); E51C29 (May 1951); E51E23 (Sept. 1951); E51H14 (Oct. 1951); E51J10 (Dec. 1951); and E52B13 (May 1952).
C. R. Faulders, An interferometric investigation of the flow through a cascade of turbine nozzle blades. Abstract: Mech. Eng. **74**, 668.
M. Faury, Étude de rendement d'un etage de turbine. Technique et Science aéronaut. No. 5, 293.
H. Hausenblas Die radiale Verteilung der Strömung durch Axialturbinen. Motortech. Z. **13**, 160.
A. Johnsen and A. Ginsburg, Some NACA research on centrifugal compressors. ASME M. P., New York.
M. C. Kofskey, H. E. Rohlik, and D. E. Monroe, Experimental investigation of flow in an annular cascade of turbine nozzle blades of constant discharge angle. NACA Research Memo. No. E52A09 (Mar.).
J. N. B. Livingood and W. B. Brown, Analysis of temperature distribution in liquid-cooled turbine blades. NACA Rept. 1066.
C. A. MacGregor, Two-dimensional losses in turbine blades. J. Aeronaut. Sci. **19**, 404.
P. F. Martinuzzi, Multistage radial turbines. Trans. ASME **74**, 663.
C. Mortarino, Esperimenti su alette in schiera per funzionamento a turbina. Aerotecnica **32**, 192.
A. J. Nachtigall, C. F. Zalabak, and R. R. Ziemer, Investigations of air-cooled impeller performance and turbine rotor temperatures in modified J33 split-disk rotor up to speeds of 10,000 RPM. NACA Research Memo. No. E52C12 (May).
W. R. Petersen, Improving turbojet service life. Aero Dig. **64**, 50 (June).
L. J. Schafer, Jr., E. R. Bartoo, and H. T. Richards, Experimental investigation of the heat-transfer characteristics of an air-cooled sintered porous turbine blade. NACA Research Memo. No. E51K08 (Feb.).
E. H. W. Schmidt, Heat transmission by natural convection at high centrifugal acceleration in water cooled gas turbine blades. Inst. Mech. Engrs. (London), Proc. of general discussion heat transfer, p. 361.
W. B. Schramm, R. R. Ziemer, R. H. Kemp, and M. L. Moseson, Investigation of air-cooled turbine rotors for turbojet engines. NACA Research Memos. No. E51I11 and E51J03 (Jan.).
E. F. Schum, J. C. Freche, and W. J. Stelpflug, Comparison of calculated and experimental temperatures of water-cooled turbine blades. NACA Research Memo. No. E52D21 (July).
R. Staniforth, Contribution to theory of effusion cooling of gas turbine blades. Inst. Mech. Engrs. (London), Proc. of general discussion on heat transfer, p. 446.
W. T. von der Nuell, Single-stage radial-turbines for gaseous substances with high rotative and low specific speed. Trans. ASME **74**, 499.
G. F. Wislicenus, Three dimensional flow theory of axial-flow compressors. ASME M. P., New York.
Welded gas turbine blades. Engineer **194**, 22.

1953

J. S. Alford, Concepts of efficiency of weight and useful load relations in disk wheels of aircraft gas turbines. Abstract: Mech. Eng. **75**, 737.
H. W. Allen, M. G. Kofskey, and R. E. Chamness, Experimental investigation of loss in an annular cascade of turbine nozzle blades of free vortex design. NACA Tech. Note No. 2871 (Jan.).
R. Birmann, The elastic-fluid centripetal turbine for high specific outputs. Abstracts: Mech. Eng. **75**, 494.
E. A. Bridle, Some high speed tests on turbine cascades. Aeronaut. Research Council, Gt. Brit., Rept. and Mem. No. 2697.
C. C. Clark, Panel answers questions on manufacturing turbine engine blading. Abstract: SAE Journal **61**, 77 (Sept.).
J. A. Dunsby, Schlieren tests on some conventional turbine cascades. Aeronaut. Research Council, Gt. Brit., Rept. and Mem. No. 2728.

H. H. Ellerbrock, Jr., E. F. Schum, and A. J. Nachtigall, Use of electric analogs for calculation of temperature distribution of cooled turbine blades. NACA Tech. Note No. 3060 (Dec.).
C. R. Faulders, An interferometric study of the boundary layer on a turbine nozzle blade. Abstract: Mech. Eng. **75**, 495.
J. C. Freche, A summary of design information for water-cooled turbines. NACA Research Memo. No. E51A03 (Mar.).
T. J. Hargest, The theoretical pressure distributions around some conventional turbine blades in cascade. Aeronaut. Research Council, Gt. Brit., Rept. and Mem. No. 2765.
J. N. B. Livingood and E. R. G. Eckert, Calculation of transpiration-cooled gas-turbine blades. Trans. ASME **75**, 1271.
E. N. Petrick and D. W. Craft, The effect of rotor speed upon the effectiveness of cooling a radial flow turbine with air. Purdue University and Purdue Research Foundation, Gas Turbine Laboratory Rept No. I-53-1 (Nov.).
J. Reeman, R. W. A. Buswell, and D. G. Ainley, An experimental air-cooled turbine. Engineer **195**, 674, 712 and 731; Aircraft Eng. **25**, 227 and 269.
R. L. Robinson, Some theoretical aspects of centripetal turbines. Abstract: Mech. Eng. **75**, 584.
H. E. Rohlik, H. W. Allen, and H. Z. Herzig, Study of secondary-flow patterns in an annular cascade of turbine nozzle blades with vortex design. NACA Tech. Note No. 2909 (Feb.).
G. Sines, The dynamics and lubrication of a miniature turbine rotor. ASME M. P. 53-A-36, Los Angeles (July).
An experimental air-cooled turbine. Engineer **195**, 688.
High-temperature gas turbines. Engineer **195**, 702.
New technique in turbine design. Am. Aviation **17**, 36 (Aug. 17).
Shrouded turbine blading. Oil Engine **21**, 35.

208. COMPOUND ENGINES

1950

E. J. Manganiello, L. V. Humble, and D. S. Boman, Compound engine systems for aircraft. SAE Quart. Trans. **4**, 79.
P. H. Wilkinson, Compounding is here to stay. Aero Dig. **61**, 36 (Sept.).
A combination piston and turbine engine. Engineer **190**, 214.
Compound interest. Flight **58**, 122.
Power recovery turbines increase output 20 percent. Automotive Inds. **102**, 49 (June 15).
Wright Turbo-Cyclone 18. Aero Dig. **61**, 24 (July).
Wright's exhaust gas slave turbine. Am. Aviation **14**, 27 (June 15).

1951

Compounded power-units. Flight **60**, 26.
Miracle engine. Aero Dig. **62**, 17 (May).

1952

G. L. Christian, Turbo compound: transport fuel saver. Aviation Week **56**, 35 (Feb. 10).
F. S. Hunter, Comparative data on turbo-compound. Am. Aviation **16**, 34 (Dec. 22).
B. I. Sather, F. R. Schuricht, and A. E. Biermann, Summary of investigation of two-stroke cycle gas-generator aircraft engine. Trans. ASME **74**, 637.
P. H. Wilkinson, Napier Nomad. Aviation Age **17**, 40 (Jan.).
P. H. Wilkinson, New French compounded engine. Aviation Age **17**, 42 (Feb.).
How the R-3350 looks after 80,000 hours. Am. Aviation **15**, 25 (Feb. 18).

1953

R. R. Mock and N. B. Jamieson, The future of the turbo-compound engine. ASME M. P. No. 53-A 234.
Curtiss-Wright turbo-compound engine. Shell Aviation News No. 182, 20 (Aug).
Latest version. Am. Aviation **16**, 42 (March 30).
Napier Nomad diesel-gas turbine. Gas Oil Power **48**, 85.
New Nomad's fuel appetite is small. Aviation Week **58**, 30 (April 6).
The Napier "Nomad" compound diesel engine. Engineering **175**, 388; Engineer **195**, 422.
The new Nomad. Aeroplane **84**, 334.
Wright modifies turbo-compound for safety. Aviation Week **58**, 87 (May 18).

Wright turbo-compound engines built on automatic assembly lines. Automotive Inds. **109**, 52 (Dec. 1).

209. THRUST AUGMENTATION

1947

D. S. Gabriel, E. V. Martinson, and R. H. Essig, Experimental investigation of performance and operating characteristics of a tail-pipe burner for a turbojet engine. NACA Research Memo. No. E7G03 (Oct.).

B. T. Lundin, H. W. Dowman, and D. S. Gabriel, Experimental investigation of thrust augmentation of a turbojet engine at zero ram by means of tail-pipe burning. NACA Research Memo. No. E6J21 (Jan.).

1948

B. Barton, H. W. Dowman, and W. C. Dackis, Experimental investigation of thrust augmentation of axial-flow-type 4,000-pound thrust turbojet engine by water and alcohol injection at compressor inlet. NACA Research Memo. No. E7K14 (July).

W. A. Fleming, R. O. Dietz, Jr., R. L. Golladay, G. Wischnek, and J. K. Kuenzig, Altitude-wind-tunnel investigations of thrust augmentation of a turbojet engine. NACA Research Memos. No. E6I12 (Sept. 1946); E7C12 (May 1947); E7F10 (Aug. 1947); E7L16 (June 1948).

W. A. Fleming and L. E. Wallner, Altitude-wind-tunnel investigation of tail-pipe burning with a Westinghouse X24C–4B axial-flow turbojet engine. NACA Research Memo. No. E8J25e (Dec.).

E. W. Hall and E. C. Wilcox, Theoretical comparison of several methods of thrust augmentation for turbojet engines. NACA Research Memo. No. E8H11 (Oct.).

W. L. Jones and H. W. Engleman, Experimental investigation of thrust augmentation of 4,000-pound thrust centrifugal-flow-type turbojet engine by injection of water and alcohol at compressor inlets. NACA Research Memo. No. E7J19 (May).

1949

E. W. Conrad and W. R. Prince, Altitude performance and operational characteristics of 29-inch diameter tail-pipe burner with several fuel systems and flame holders on J35 turbojet engine. NACA Research Memo. No. E9G08 (Nov.).

1950

E. W. Hall, Comparison of various methods of thrust augmentation of turbojet engines. Aeronaut. Eng. Rev. **9**, 25 (Jan.).

E. W. Hall and E. C. Wilcox, Theoretical comparison of several methods of thrust augmentation for turbojet engines. NACA Rept. 992.

B. T. Lundin, Theoretical analysis of various thrust-augmentation cycles for turbojet engines. NACA Rept. 981.

H. E. Schmitt, Turbojet afterburning without an afterburner. Aeronaut. Eng. Rev. **9**, 18 (Dec.).

A. M. Trout, Theoretical turbojet thrust augmentation by evaporation of water during compression as determined by use of a Mollier diagram. NACA Tech. Note No. 2104 (June).

E. C. Wilcox, Turbojet thrust augmentation by evaporation of water prior to mechanical compression as determined by use of psychrometric chart. NACA Tech. Note No. 2105 (June).

1951

W. L. Beede, J. T. Hamrick, and J. R. Withee, Jr., Evaluation of centrifugal compressor performance with water injection. NACA Research Memo. No. E51E21 (July).

K. Kovach, W. L. Beede, and J. T. Hamrick, Experimental evaluation by thermodynamic methods of work input to a centrifugal compressor operating with water injection. NACA Research Memo. No. E50J31 (Jan.).

Z. Plaskowski, The use of auxiliary rockets in high-speed aircraft. Aircraft Eng. **23**, 72.

E. C. Wilcox and A. M. Trout, Analysis of thrust augmentation of turbojet engines by water injection at compressor inlet including charts for calculating compression processes with water injection. NACA Rept. 1006.

Advantages of afterburning held possible without using afterburner. CADO Tech. Data Dig. **16**, 5 (Jan.).

292892—54——5

1952

H. O. Adrion, Afterburners prove worth in Navy planes. Abstract: SAE Journal **60**, 111 (June).
S. G. Allerton, Thrust augmentation. J. Soc. Licensed Aircraft Engr. **1**, 14.
J. Blanc, Devellopement de la rechauffe pour le turboreacteur Nene Hispano Suiza. Technique et Science Aeronaut. No. 5, 320.
W. T. Gunston, Boosting gas turbines. Flight **61**, 36.
R. V. Hensley, Theoretical augmentation of turbine-propeller engine by compressor-inlet water injection, tail-pipe burning, and their combination. NACA Tech. Note No. 2672 (Mar.).
R. V. Hensley, Theoretical performance of an axial-flow compressor in a gas-turbine engine operating with inlet water injection. NACA Tech. Note No. 2673 (Mar.).
F. S. Hunter, Is turbojet answer to C-46 weight problem? Am. Aviation **16**, 24 (Oct. 13).
R. Kress and F. J. Hill, Afterburners with variable nozzles. SAE Pre. No. 824, Los Angeles (Oct. 3); Abstract: Aircraft Eng. **24**, 371.
G. W. Lawson and W. C. Alexander, Added kick for turbojet engines. Gen. Elec. Rev. **55**, 38 (July).
R. McLarren, Afterburner. Aero Dig. **64**, 60 (Feb.).
P. H. Wilkinson, French Nene afterburner. Aviation Age **17**, 34 (Mar.).
Afterburners and variable nozzles. Aeroplane **83**, 665.
Afterburning: a review of current American practice. Flight **62**, 648.
C-46 sports small turbojet engine. Western Aviation **32**, 19 (Nov.).
Details of DC-3's auxiliary jet. Aviation Week **56**, 32 (June 2).
Engineering the Cutlass afterburner. Aviation Week **56**, 23 (Jan. 28).
Engineers meet afterburner challenge. Aviation Week **57**, 21 (Nov. 3).
For the big push—the afterburner. Western Aviation **32**, 29 (Oct.).
Jet boost for transports: small turbojets as take-off aids. Flight **62**, 673.
Turbojet assist ups DC-3 performance. Am. Aviation **15**, 32 (Apr. 14).

1953

G. L. Christian, Jet units may raise C-46 profitability. Aviation Week **59**, 38 (Aug. 10).
C. Kämmerer, Wassereinspritzung in Gasturbinen-Brennkammern. Motortech. Z. **14**, 338.
R. Kress, Afterburners and variable nozzles. S. A. E. Trans. **61**, 165.
E. S. Moult, Water injection; what it is and what it does. De Havilland Gaz. 128 (Aug.).
F. C. Newton, Afterburners—are they worth while? Aeronaut. Eng. Rev. **12**, 42 (Oct.); Aeroplane **85**, 393.
E. Sänger, Air admixture to exhaust jets. NACA Tech. Memo. No. 1357 (July).
Foreign afterburners. Aviation Week **59**, 40 (Sept. 14).
Jet boost package for C-46. Aviation Age **20**, 6 (Aug.).
Small jets for performance boosting. Aeroplane **85**, 628.

210. ENGINE NOISE

1950

E. D. D. Dickson and D. L. Chadwick, Observations on disturbances of equilibrium and other symptoms by jet engine noise. RAF Flying Personnel Research Committee (Gt. Brit.) Rept. No. 746 (Nov.).
S. C. Ghose, A comparative study of the noise from turbojet and reciprocating engines in flight. J. Roy. Aeronaut. Soc. **54**, 697.
Jet noise studied. Aviation Week **53**, 32 (Dec. 4).

1951

H. O. Parrack and D. H. Eldredge, Noise problems associated with aircraft maintenance. CADO Tech. Data Dig. **16**, 22 (July).
J. Tonndorf, Auditory perception in noise. J. Aviation Med. **22**, 491.
Aircooled jet engine muffler. Aviation Age **16**, 36 (Aug.).
Jet rig cans noise, speeds tests. Aviation Week **55**, 49 (Nov. 26).
Silence is golden. Western Flying **31**, 22 (Mar.).
Tones down jets. Aviation Week **54**, 48 (Mar. 12).

1952

H. C. Hardy, Design characteristics for noise control of jet engine cells. J. Acoust. Soc. Amer. **24**, 185.

H. H. Hubbard, A survey of the aircraft noise problem with special reference to its physical aspects. NACA Tech. Note No. 2701 (May).
H. H. Hubbard and L. W. Lassiter, Some aspects of the aircraft noise problem. Aeronaut. Eng. Rev. **11**, 28 (July).
L. W. Lassiter, Noise from intermittent jet engines and steady-flow jet engines with rough burning. NACA Tech. Note No. 2756 (Aug.).
L. W. Lassiter and H. H. Hubbard, Experimental studies of noise from subsonic jets in still air. NACA Tech. Note No. 2757 (Aug.).
H. E. von Gierke, H. O. Parrack, W. J. Gannon, and R. G. Hansen, Noise field of a turbojet engine. J. Acoust. Soc. Amer. **24**, 169.
Jet test-bed silencing. Aeroplane **83**, 789.
Maxim silencer for installed jet engines. Shell Aviation News No. 169, 23 (July).
Silencing a jet engine test house. Interavia **7**, 504.
Why jet engines seem so noisy. Aviation Week **57**, 29 (Sept. 8).

1953

R. H. Bolt, Aircraft noise problem. J. Acoust. Soc. Amer. **25**, 363.
H. C. Hardy, Noise control measures for jet engine test installations. J. Acoust. Soc. Amer. **25**, 423.
D. M. Hazard, Aircraft engine noise control as viewed by the engine manufacturer. J. Acoust. Soc. Amer. **25**, 412.
H. H. Hubbard and L. W. Lassiter, Experimental studies of jet noise. J. Acoust. Soc. Amer. **25**, 381.
R. D. Lemmerman, Materials and structures problems in aircraft noise control. J. Acoust. Soc. Amer. **25**, 438.
J. E. Lett, Noise: a problem in air transport and in ground operations. Aeronaut. Eng. Rev. **12**, 65 (April).
G. M. Lilley, R. Westley, A. H. Yates, and J. R. Busing, Some aspects of noise from supersonic aircraft. J. Roy Aeronaut. Soc. **57**, 396.
O. K. Mawardi and I. Dyer, On noise of aerodynamic origin. J. Acoust. Soc. Amer. **25**, 389.
E. S. Mendelson, Reduction of aircraft engine noise hazards. J. Aviation Medicine **24**, 340.
J. S. Murphy, Wall helps solve jet noise problem. Am. Aviation **16**, 45 (March 2).
A. Powell, Noise of choked jets. J. Acoust. Soc. Amer. **25**, 385.
A. Powell, The noise of a pulsejet. J. Helicopter Assn. Gt. Brit. **7**, 32 (June).
E. J. Richards, Research on aerodynamic noise from jets and associated problems. J. Roy. Aeronaut, Soc. **57**, 318.
P. S. Veneklasen, Noise characteristics of pulsejet engines. J. Acoust. Soc. Amer. **25**, 378.
P. S. Veneklasen, Noise control for ground operation of the F-89 airplane. J. Acoust. Soc. Amer. **25**, 417.
H. E. von Gierke, Physical characteristics of aircraft noise sources. J. Acoust. Soc. Amer. **25**, 367.
R. J. Wells and B. E. Crocker, Sound radiation patterns of gas turbine exhaust stacks. J. Acoust. Soc. Amer. **25**, 433.
Aeronautical acoustics. Engineering **175**, 733.
Avro kills Orenda jet test noise. Aviation Week **58**, 40 (May 18).
Hawker theory explains sonic "bang." Aviation Week **58**, 21 (Feb. 23).
Jet-blast problem. Science News Letter **63**, 4.
Noise from supersonic aircraft. Engineering **175**, 439.
Noise is cut in new pulsejet engine. Aviation Week **59**, 41 (Sept. 28).
Tailpipe "teeth" cut jet engine noise. Aviation Week **59**, 28 (July 6).

211. METALLURGY AND FABRICATION

1950

A. T. Colwell, K. M. Bartlett, and R. E. Cummings, Seven ways to produce turbine blades. Abstract: SAE Journal **58**, 48 (June).
D. N. Frey, J. W. Freeman, and A. E. White, Fundamental effects of aging on creep properties of solution-treated low-carbon N-155 alloy. NACA Rept. 1001.
F. B. Garrett and C. Yaker, Turbojet-engine evaluation of AISI 321 and AISI 347 stainless steels as nozzle-blade materials. NACA Research Memo. No. E9K17 (Feb.).

J. Geschelin, Powdered iron blades for gas turbines. Automotive Inds. **103,** 40 (Nov. 15).
W. C. Heath, Stamped jet engine parts made by special techniques. Abstract: SAE Journal **58,** 29 (Aug.).
R. B. Johnson, Jets test designers' and metallurgists' ingenuity. Iron Age **166,** 73 (Aug. 10).
R. P. Kroon and F. D. Bergvall, Subassembly procedure aids production of Westinghouse turbojet engine. Abstract: SAE Journal **58,** 57 (July).
M. J. Manjoine, Effect of rate of strain on the flow stress of gas turbine alloys at 1,200° and 1,500° F. Proc. ASTM **50,** 931.
N. L. Mochel, Metals for gas turbines. Mech. Eng. **72,** 462.
E. Sänger, The construction problems of rocket motors. Weltraumfahrt **1950,** Nos. 1 and 2.
H. Scott, Gas turbine alloys, 10 years later. Metal Progress **58,** 503 (Oct.).
W. Siegfried, Materials used in the development of thermal engines. Schweiz. Bauztg. **68,** 591 and 606.
G. G. Smith, Gas turbines: high temperature and high strength steels. Iron and Steel (London) **23,** 85 (Mar.).
G. Stern and J. A. Gerzina, Making jet engine blades by powder metallurgy. Iron Age **165,** 74 (Feb. 23).
M. J. Whitman, R. W. Hall, and C. Yaker, Resistance of six cast high-temperature alloys to cracking caused by thermal shock. NACA Tech. Note No. 2037 (Feb.).
Heat shading of metals aids gas turbine research. Aviation Operations **14,** 26 (Aug.).
Machining aircraft turbine blades. Machinery (New York) **56,** 165 (Aug.).
Properties of Nimonic 90. Aeroplane **79,** 559.
Turbine-blade polishing. Aircraft Production **12,** 248 (Aug.).

1951

H. Albert, Unusual set-ups for machining Thunderjet parts. Machinery (New York) **57,** 187 (July).
A. H. Allen, Research pushed on gas turbine blade materials. Steel **129,** 72 (Aug. 27).
N. P. Allen, A survey of the development of creep-resisting alloys. Engineering **171,** 235.
N. P. Allen, Creep-resisting alloys for gas turbines. Nature **167,** 836.
A. Ashburn, How to work titanium and its alloys. Am. Machinist **95,** 145 (June 11).
W. O. Binder, The development of low-carbon N-155 alloy for gas-turbine construction. J. Iron Steel Inst. (London) **167,** 121.
T. Bishop, High-temperature steels and alloys for gas turbines. Metal Progr. **59,** 653 (May).
R. W. A. Buswell, I. Jenkins, and W. R. Pitkin, Sintered alloys for high-temperature service in gas turbines. G. E. C. Journal (Gt. Brit.) **18,** 139.
G. L. Christian, Sandwich metal stands up to heat. Aviation Week **55,** 34 (Sept. 17).
J. C. Cunningham, Three-dimensional machining of Allison jet-engine inducers. Machinery (New York) **57,** 203 (July).
G. H. De Groat, Producing Pratt and Whitney jet-engine compressor blades. Machinery (New York) **57,** 164 (July).
D. Desoutter, Nimonic. Aviation Age **16,** 44 (Nov.).
L. W. Eastwood, Magnesium rare earth alloys. Product Eng. **22,** 158 (Sept.).
G. Elwers, Prelocation simplifies turbine blade location. Iron Age **167,** 90 (May 24).
J. F. Erthal, Navy studies jet structural alloys—at intermediate temperatures. Iron Age **167,** 91 (May 10).
J. W. Freeman, G. F. Comstock, and A. E. White, Rupture and creep characteristics of titanium-stabilized stainless steel at 1,100° to 1,300° F. ASME M. P. No. 51-A-46.
J. W. Freeman, E. E. Reynolds, and A. E. White, Rupture properties of low-carbon N-155 type alloys made with a columbium-tantalum ferro-alloy. NACA Tech. Note No. 2469 (Oct.).
D. N. Frey, J. W. Freeman, and A. E. White, Fundamental aging effects influencing high-temperature properties of solution-treated Inconel-X. NACA Tech. Note No. 2385 (June).
J. Geschelin, Making jet engine inducers an exacting process. Automotive Inds. **105,** 54 (July 1).

K. Grube, R. Kaiser, L. W. Eastwood, C. M. Schwartz, and H. C. Cross, Development of magnesium-cerium forged alloys for elevated-temperature service. NACA Tech. Note No. 2325 (Mar.).
J. L. Ham, An introduction to arc-cast molybdenum and its alloys. Trans. ASME, **73**, 723.
H. Hanink, A realistic approach to the use of titanium. Product Eng. **22**, 164 (Nov.).
G. J. Heimerl and P. F. Barrett, A structural-efficiency evaluation of titanium at normal and elevated temperatures. NACA Tech. Note No. 2269 (Jan.).
C. A. Hoffman, C. F. Robards, and C. Yaker, Effects of some solution treatments followed by an aging treatment on the life of small cast gas-turbine blades of a cobalt-chromium base alloy. NACA Tech. Notes No. 2320 (Mar.) and 2513 (Oct.).
W. G. Hubbell, Metallurgical investigation of ceramics and special alloys at high temperature. Shell Aviation News No. 162, 14 (Dec.).
A. E. Johnson, Creep under complex stress systems at elevated temperatures. Inst. Mech. Engrs. (London), J. and Proc. **164**, 432.
J. B. Johnson and E. J. Hassell, Titanium in aircraft. Metal Progr. **60**, 51 (Sept.).
R. B. Johnson, High-temperature problems in aircraft jet engines and turbosuperchargers. Metal Progr. **59**, 503 (Apr.).
H. V. Kinsey, Metallurgical aspects of gas turbines. ASME M. P., Toronto.
H. E. Lardge, Welding on gas turbine engines for aircraft. Trans. Inst. Welding **14**, 85 (June).
R. Le Grand, Converted filer laps jet blades at Wright. Am. Machinist **95**, 13 (May 14).
R. A. Long, K. C. Dike, and H. R. Bear, Some properties of high-purity sintered wrought molybdenum metal at temperatures up to 2,400° F. NACA Tech. Note No. 2319 (Mar.).
R. A. Long, K. C. Dike, and H. R. Bear, Strength of pure molybdenum at 1,800° to 2,400° F. Metal Progr. **60**, 81 (Sept.).
E. F. Losco, Discalloy. Westinghouse Engr. **11**, 50 (Mar.).
C. W. MacGregor and F. J. Walcott, Jr., Investigation of torsion creep-to-rupture properties of N-155 alloy. NACA Research Memo. No. 51E04 (Aug.).
J. Marin, A survey of recent research on creep of engineering materials. Appl. Mech. Rev. **4**, 633.
A. A. Merry, New machine-tool types make axial-flow jets in quantity. Am. *Machinist* **95**, *99 (Aug. 6)*.
R. L. Noland, Strength of several steels for rocket chambers subjected to high rates of heating. J. Am. Rocket Soc. **21**, 154.
R. M. Parke, Molybdenum—a new high-temperature metal. Metal Progr. **60**, 81 (July).
J. M. Robertson, Metals for gas turbines. J. Birmingham Met. Soc. **31**, 122.
J. M. Robertson, Welding in relation to gas turbines for use on land. Trans. Inst. Welding **14**, 68 (June).
A. D. Schwope and L. R. Jackson, A survey of creep in metals. NACA Tech. Note No. 2516 (Nov.).
J. Taylor and D. H. Armitage, Centrifugal steel castings; foundry methods and process control in producing gas-turbine components. Aircraft Production **13**, 167.
N. Thurnauer, Developments in high-temperature metals and ceramics. Elec. Mfg. **47**, 82 (Mar.).
H. Trivedi, Gas turbines: some metallurgical considerations involved in their manufacture. Indian J. Phys. **25**, 35 (Jan.).
O. A. Wheelon, Douglas experience in working titanium. Machinery (New York) **58**, 137 (Dec.).
K. J. B. Wolfe and P. Spear, Gas-turbine steels. Aircraft Production **13**, 80 and 117.
K. J. B. Wolfe and P. Spear, Machining gas turbine alloys. Am. Machinist **95**, 125 (Apr. 30).
H. Woodhouse, Designing and machining high-speed mixed-flow compressor impellers. Machinery (New York) **57**, 152 (Feb.).
Advanced methods for machining jet engine parts. Automotive Inds. **105**, 38 (Aug. 15).
A new way of making turbine blades. Aeroplane **80**, 217.
Approximate strength of important jet engine alloys (round test bars). Metal Progr. **60**, 80B (Nov.).
Blade-machining. Aircraft Production **13**, 8.

Blade process speeds jet engine development. Metal-Working **7**, 2 (May).
Contour forming parts for jet engines. Automotive Inds. **104**, 45 (Apr. 15).
Duplicator traces 14 jet blades. Aviation Week **55**, 33 (Nov. 19).
Duplicator turns out turbine blades. Aviation Age **16**, 39 (Dec.).
Gas-turbine tooling. Aircraft Production **13**, 264.
High-temperature materials for gas turbines. Engineering **171**, 282, 312, 352 and 380.
High temperature steels and alloys for gas turbines. Aircraft Eng. **23**, 78; Engineer **191**, 313, 342, 373 and 404.
How critical metals problems are licked. Aviation Week **54**, 36 (May 27).
Jet blade miller. Aviation Week **55**, 37 (Sept. 3).
Machining compressor blades. Aircraft Production **13**, 328.
Mass-producing turbine blades. Aeroplane **80**, 417.
Materials engineering in the development of jet engines. Materials and Methods **34**, 85 (Oct.).
Powder metal boosts jet blade output. Aviation Week **55**, 30 (Sept. 17).
Production highlights in making turbine parts. Automotive Inds. **105**, 44 (Sept. 1).
Properties of Nimonic alloys. Metal Progr. **60**, 80B (Dec.).
Ten years progress in gas-turbine metals. Aeroplane **80**, 585.
Tool flexibility raises jet engine output. Aviation Week **55**, 21 (Aug. 13).
Turbine-blade inspection. Aircraft Production **13**, 249.
Turbine-blade inspection; application of the Sheffield Precisionaire pneumatic-unit gauging system. Aircraft Production **13**, 105.
Turbine starter; intricate heavy casting for the Rotax twin-cartridge starter. Aircraft Production **13**, 198.

1952

C. Andrade, The flow of metals. Engineering **173**, 601.
K. L. Buckle, High-temperature alloys in relation to gas-turbine design. Inst. Mech. Engrs. (London), J. and Proc. **166**, 123.
M. Bentele and C. S. Lowthian, Thermal shock tests on gas turbine materials. Aircraft Eng. **24**, 32.
W. M. Boam, Jet engines push welded molybdenum study. Iron Age **170**, 145 (July 10).
H. Brown Some problems in the fabrication of N-155 alloys. Metal Progr. **61**, 67 (May).
L. N. Cimini and D. C. Brown, Turbojet engine inspection seeks perfection. Machinery (New York) **58**, 198 (July).
W. S. Cockrell, Titanium. Aeronaut. Eng. Rev. **11**, 44 (Mar.).
M. Conklin, Machining components for the Orenda. Can. Machinery **63**, 108 (Sept.).
E. A. Davis and M. J. Manjoine, Effect of notch geometry on rupture strength at elevated temperatures. ASTM Pre. No. 78.
G. H. De Groat, Latest ideas in tool engineering applied to jet-engine production. Machinery (New York) **58**, 152 (Mar.).
G. H. De Groat, Welding turbine shafts and wheels for jet engines. Machinery (New York) **58**, 179 (Jan.).
P. G. De Huff and D. C. Goldberg, Jet alloys toss challenge to machine tools. Steel **130**, 76 (Apr. 28).
P. D. De Huff and D. C. Goldberg, Machining data on high temperature alloys. Automotive Inds. **106**, 46 (May 1); Aero Dig. **65**, 92 (Nov.).
P. G. De Huff and D. C. Goldberg, Tool requirements of tougher alloys. Aviation Age **17**, 6 (June).
P. G. De Huff and W. S. Hazelton, Titanium at work in jet engines. Westinghouse Engr. **12**, 118.
P. G. De Huff and W. S. Hazelton, What we know about titanium. Aviation Week **56**, 40 (June 2).
T. J. Dolan, How can we appraise metals for high-temperature service? Metal Progr. **61**, 55 (Mar.).
T. J. Dolan, Problems of metallic fatigue at high temperature. Metal Progr. **61**, 97 (Apr.).
G. Elwers, Abrasive belt machine grinds jet blade airfoils. Iron Age **169**, 126 (May 15).
J. L. Everhart, New titanium-boron alloy steel shows promise for jets and rockets. Materials and Methods **36**, 97 (Sept.).
J. L. Everhart, Titanium and its alloys. Materials and Methods **35**, 117 (May).

D. N. Frey, J. W. Freeman, and A. E. White, Fundamental effects of cold-work on some cobalt-chromium-nickel-iron base creep-resistant alloys. NACA Tech. Note No. 2586 (Jan.).
J. Geschelin, Ford amasses 5,000 machine tools to build P. and W. aircraft engines. Automotive Inds. **107,** 64 (Nov. 1).
J. Geschelin, Precision forging of turbine vanes, blades, and buckets. Automotive Inds. **106,** 34 (June 15).
J. Geschelin, Precision jet engine blades from rough forgings. Automotive Inds. **107,** 44 (Oct. 15).
P. G. Giles and P. F. Kiddle, High-strength light alloys. Aircraft Eng. **24,** 265.
D. C. Goldberg and W. S. Hazelton, How to machine titanium. Iron Age **169,** 107 (Apr. 17).
A. Graham, Phenomenological theories of creep. Engineer **193,** 198 and 234.
P. Granby, Application of electric upset forging; use in jet engine blade production. Steel Processing **38,** 228 (May).
H. W. Greenwood, Metals and alloys of today and tomorrow. Engineer **193,** 541.
H. W. Greenwood, Powder metallurgy's contribution to high-temperature materials. Metal Treatment **19,** 75.
H. C. Gresham and B. Hall, Fatigue tests at high temperature. Metal Progr. **62,** 152 (Sept.).
B. E. Haight, Coating metals with aluminum by the Mollerizing process. Automotive Inds. **107,** 39 (Nov. 15).
H. H. Hanink, Titanium aircraft engine parts. Iron Age **169,** 121 (May 15).
H. H. Hanink, Titanium: expensive weight saver. Abstract: SAE Journal **60,** 25 (Aug.).
H. H. Hanink, Titanium in aero-engine construction. Aeroplane **82,** 494.
H. H. Hanink, Use of titanium in turbojets. Abstract: Automotive Inds. **106,** 90 (May 15).
J. J. Harwood, Molybdenum—our promising refractory metal Product Eng. **23,** 121 (Jan.).
J. J. Harwood, Powder metallurgy parts in high temperature applications. Materials and Methods **36,** 87 (Aug.).
H. G. Herrington, Turbine and compressor blade manufacture. Metal Treatment **19,** 258.
A. G. Holms and A. J. Repko, Correlation of tensile strength, tensile ductility and notch tensile strength with the strength of rotating disks of several designs in the range of low and intermediate ductility. NACA Tech. Note No. 2791 (Sept.).
F. C. Hull, E. K. Hann, and H. Scott, Effect of a notch and of hardness on the rupture strength of "Discalloy." ASTM Pre. No. 75.
R. I. Jaffe and J. M. Blocher, Jr., The technology of titanium. Modern Metals **8,** 62 (Aug.).
A. E. Johnson, Creep under complex stress systems at high temperatures. Aircraft Eng. **24,** 7.
J. Joseph, Alloyed-titanium tooling. Aero Dig. **65,** 17 (Aug.).
D. J. Kaharl, Barrel finishing precision turbojet parts. Machinery (New York) **58,** 145 (Aug.).
E. L. Kamen and P. A. Beck, Survey of portions of the cobalt-chromium-iron-nickel quaternary system. NACA Tech. Note No. 2603 (Feb.).
H. V. Kinsey, High temperature alloys for gas turbines. Can. Metals **15,** No. 11, 28 and No. 13, 20.
E. Kirchner, Turbine blades forged in mid air. Aviation Age **18,** 6 (Dec.).
H. W. Kirkby. Manufacture of gas turbine blades. Metal Treatment **19,** 61.
H. W. Kirkby, Production and properties of discs for aircraft gas-turbine engines. Metal Treatment **19,** 3.
J. H. Lareau, Hydroforming facilitates drawing of an intricate jet-engine part. Machinery (New York) **59,** 206 (Oct.).
W. D. Manly and P. A. Beck, Survey of chromium-cobalt-nickel phase diagram at 1,200° C. NACA Tech. Note No. 2602 (Feb.).
W. A. Maxwell and P. F. Sikora, Stress-rupture and creep testing of brittle materials. Metal Progr. **62,** 97 (Nov.).
J. K. McLaughlin, Coated abrasives ease jet blade finishing problems. Steel **130,** 90 (June 9).
A. McSurely, Titanium demand outraces production. Aviation Week **57,** 13 (July 14).

I. A. Oehler, Flash butt welding of high-temperature alloys. Welding J. (New York) **31,** 230.
L. B. Pfeil, High-temperature materials: Tests used as criteria of service behavior. Schweiz. Arch. angew. Wiss. u. Tech. **18,** 88.
T. E. Piper, New materials forms required for high speed planes of the future. Automotive Inds. **107,** 42 (Sept. 15).
E. J. Pirner, Precision gages for jet-engine turbine buckets. Machinery (New York) **58,** 172 (Mar.).
B. P. Planner, Extremely high-temperature materials. Western Metals **10,** 43 (May).
L. A. Prchal, How jet-engine combustion chambers are fabricated. Machinery (New York) **59,** 189 (Dec.).
N. E. Promisel, Conservation of and/or substitution for critical jet engine materials. J. Metals **4,** 698.
J. M. Robertson, A survey of high-temperature materials. Metal Treatment **19,** 275 and 303.
J. M. Robertson, Metallurgical aspects of the industrial gas turbine. Power & Works Eng. **47,** 342.
A. S. Rose and M. A. Braun, Fusion welding techniques for jet aircraft components. Welding J. (New York) **31,** 1121.
K. Rose, Rocket parts effectively heat treated in mechanized salt bath furnace. Materials and Methods **35,** 90 (Jan.).
A. J. Rosenberg, Welding characteristics of materials for aircraft gas turbines. Welding J. (New York) **31,** 407.
A. J. Rosenberg and E. F. Hutchinson, How to weld titanium. Am. Machinist **96,** 93 (May 26).
M. J. Rowan, Special duplicators speed experimental jet engine blades. Am. Machinist **96,** 166 (Mar. 3).
A. D. Schwope, F. R. Shover, and L. R. Jackson, Creep in metals. NACA Tech. Note No. 2618 (Feb.).
H. J. Siegel, Survey of critical and strategic metals. CADO Tech. Data Dig. **17,** 16 (Jan.).
J. L. Solomon, Welding jet engine parts of heat resistant metals. Automotive Inds. **106,** 41 (Mar. 1).
R. E. Stockwell, Turbine blades in half the time. Aviation Age **17,** 40 (Apr.).
R. H. Thielemann, J. C. Mertz, and W. P. Eddy, Jr., Trends in gas turbine engine materials. Abstract: SAE Journal **60,** 58 (Apr.).
E. L. Watelet, Strain gages aid positioning of jet-engine blades. Machine Design **24,** 100 (Jan.).
O. A. Wheelon, Design and manufacturing techniques with titanium. SAE Quart. Trans. **6,** 373.
C. H. Wick, Modern tooling speeds output of Allison turbojets. Machinery (New York) **58,** 178 (July).
P. I. Wilterdink, A. G. Holms, and S. S. Manson, A theoretical and experimental investigation of the influence of temperature gradients on the deformation and burst speed of rotating disks. NACA Tech. Note No. 2803 (Oct.).
A new high temperature alloy—a new materials preview. Materials and Methods **36,** 98 (Aug.).
Boeing produces small turbojet engines. Machinery (New York) **59,** 149 (Nov.).
Compressor-blade inspection. Aircraft Production **14,** 381.
Creep-resisting alloy for gas turbines. Engineering **174,** 182.
Creep test on Nimonic alloys. Engineering **174,** 415.
High-priority production. Aeroplane **83,** 628.
High-temperature alloy for rotor blades. Metal Progr. **61,** 148 (Apr.).
High-temperature steels and alloys for gas turbines. Iron Steel Inst. (London) Spec. Rept. No. 43 (July).
Hydraulic piercing machine. Aircraft Production **14,** 168.
Jet engine combustion chambers made to close tolerances. Automotive Inds. **107,** 40 (Aug. 1).
Jet engine parts made on huge presses. Automotive Inds. **106,** 54 (May 15).
Low-cost jet blades for future. Aviation Week **56,** 42 (May 26).
New G. E. jet blade process aids production. Am. Aviation **15,** 37 (Mar. 3).
New high temperature alloy. Materials and Methods **36,** 98 (Aug.).
New turbojet alloy. Aviation Week **57,** 30 (Nov. 17).
Nickel alloys in gas turbines. Materials and Methods **35,** 95 (Jan.).
Nimonic 95. Engineer **194,** 184.
Roll and slice method cuts jet engine cost. Science News Letter **61,** 135.

Rolled sections replace forged jet blades. Iron Age **169,** 227 (Mar. 6).
Rosslyn metal undergoes high temperature tests. Automotive Inds. **106,** 102 (May 15).
Special lathe saves time in turning jet engine cones. Automotive Inds. **107,** 74 (Aug. 15).
Special machine punches slots in jet engine shroud rings. Automotive Inds. **106,** 54 (Jan. 15).
The cost of titanium-alloy advantages. Aviation Week **56,** 21 (June 30).
The rise of titanium. Westinghouse Engr. **12,** 114.
Titanium: headache with a future. Aviation Week **57,** 42 (Nov. 7).
Titanium—most modern metal of industry. Aviation Age **17,** 24 (Feb.).
Torture chambers for jet engines. Welding Eng. **37,** 38 (Aug.).
Turret lathes build turbojets. Am. Machinist **96,** 119 (Feb. 4).
Upset blades. Aircraft Production **14,** 227.
300-ton stretch press increasing Canberra production. Automotive Inds. **107,** 52 (Oct. 15).

1953

J. S. Alford, Dimensional stability and structural integrity of casings for aircraft gas turbines. ASME M. P. No. 53-A-231.
E. Altholz, Power recovery wheels for Curtiss-Wright "Turbo-compounds." Machinery (New York) **59,** 210 (July).
C. J. Bath, Jet-engine parts produced with minimum scrap loss. Machinery (New York) **59,** 180 (Mar.).
E. W. Bartle, Turbojet engines require modern machine tools. Machinery (New York) **59,** 154 (July).
T. Bishop, Notable advances in fabrication methods and metal applications. Metal Progr. **63,** 115 (Jan.).
E. W. Colbeck, J. R. Rait, and J. O. Ward, The design of creep-resisting steels. Engineering **176,** 505 and 537.
L. V. Colwell and W. C. Truckenmiller, Cutting characteristics of titanium and its alloys. Aircraft Production **15,** 209 (June).
G. D. Cremer, F. J. Filippe, and R. S. Mueller, High temperature brazing applications. SAE M. P., Los Angeles (Oct.).
N. S. Currey, Working with titanium. Aviation Age **20,** 134 (Oct.).
K. C. Dike and R. A. Long, Effect of prestraining on recrystallization temperature and mechanical properties of commercial, sintered, wrought molybdenum. NACA Tech. Note No. 2973 (July).
T. Dugle, Conjugate form grind jet blades with abrasive belt machine. Can. Machinery **64,** 188 (July).
J. L. Everhart, Which metal form for jet engine blades? Materials and Methods **37,** 92 (Feb.).
L. R. Frazier, Titanium alloys for aircraft engine forgings. SAE Pre. No. 45, Detroit (Jan. 16).
C. V. Garrett, Ultrasonic inspection insures dependable jet-engine parts. Machinery (New York) **59,** 194 (July).
M. Hansen and H. O. Kessler, Titanium-alloy development. SAE Trans. **61,** 640.
D. C. Herbert and D. J. Armstrong, Creep tests on Nimonic alloys under varying stress and temperature. Engineering **175,** 605.
C. A. Hoffman and C. A. Gyorgak, Investigation of effects of grain size upon engine life of cast AMS 5,385 gas turbine blades. NACA Research Memo. No. E53D06 (July).
W. G. Hubbell, Jet metals. Aeronaut. Eng. Rev. **12,** 31 (Sept.).
K. H. Koopman, Shielded arc welding processes for jet engine components. Can. Machinery **64,** 212 (Apr.) and 180 (May); Welding J. (New York) **32,** 103.
F. R. Kostoch and L. R. Frazier, Titanium in airframes and in aircraft-engine forgings. Aircraft Production **15,** 209 (June).
L. M. Limbach, Jet-engine aft frames by Ryan production methods. Machinery (New York) **59,** 173 (July 13).
D. R. Luster, W. W. Wents, and D. W. Kaufman, Creep properties of titanium. Materials and Methods **37,** 100 (June).
T. MacNew, Greater automaticity in tooling for J-47 turbojet engines. Automotive Inds. **108,** 68 (May 1).
T. S. McCrae, Production of turbojet engines in Canada. SAE Pre. No. 167, Toronto (Oct. 30).
A. Michel, Strong, heat resistant alloys and metallic combinations. Metal Progr. **63,** 120 (Jan.).

L. B. Pfeil, How to evaluate high temperature performance of materials. Materials and Methods **37**, 79 (Mar.).
P. L. Teed, Titanium—a survey. J. Roy. Aeronaut. Soc. **57**, 189; Engineering **176**, 603 and 635.
R. J. Thomas, Automatic controls for surface finishing jet engine parts. Automotive Inds. **109**, 48 (Sept. 1).
C. W. Weaver, Specification creep testing of Nimonic gas turbine alloys. Bull. Inst. Metals **1**, 168.
C. H. Wick, How Buick builds Sapphire jet engines. Machinery (New York) **59**, 155 (Dec.).
Yoh-han Pao and J. Marin, An analytical theory of the creep deformation of materials. J. Appl. Mechanics **20**, 245.
A new material for gas turbines. Aeroplane **85**, 187.
Cyclic jet stator soldering. Aviation Age **19**, 112 (Apr.).
Developing the Nimonic alloys. Aeroplane **84**, 122.
Easing turbine production. Aeroplane **84**, 197.
Experts bare MiG-15 welding techniques. Aviation Week **59**, 46 (Nov. 2).
Experts learn to live with titanium. Aviation Week **59**, 30 (Aug. 3).
Flexible fixtures speed jet blade tooling. Aviation Age **19**, 108 (Apr.).
Heat-treating jet-engine components. Machinery (New York) **59**, 169 (Feb.).
How to machine high-temperature alloys. Aviation Week **59**, 30 (Aug. 10).
Jet engine parts chilled for assembly. Automotive Inds. **109**, 63 (Aug. 1).
Making jet buckets and blades better. Aviation Week **59**, 29 (July 13).
Milling rotor blades. Machinery (New York) **59**, 200 (May).
Modern heat-resisting alloys compared. Oil Engine **21**, 73.
NAA reveals titanium experience. Aviation Week **58**, 21 (Feb. 2).
New materials for aircraft. Aircraft Eng. **25**, 25.
New materials for jet problems. Aviation Week **58**, 158 (Mar. 2).
Pattern-controlled shaping machine for turbine blades. Engineering **175**, 540.
Special machines fabricate jet-engine frames. Am. Machinist **97**, 133 (July 20).
Titanium—today and tomorrow. Abstract: SAE Journal **61**, 20 (May); 56 (June).
Turbine blades automatically. Aero Dig. **66**, 62 (Jan.).
Valuable series of gas turbine alloys. Oil Engine **21**, 109.
Welded jet engine parts cut weight, increase power. Iron Age **171**, 110 (Jan. 22).

212. CERAMICS AND METAL-CERAMICS

1948

D. G. Moore, L. H. Bolz, and W. N. Harrison, A study of ceramic coatings for high-temperature protection of molybdenum. NACA Tech. Note No. 1626 (July).
D. G. Moore, J. C. Richmond, and W. N. Harrison, High-temperature attack of various compounds on four heat-resisting alloys. NACA Tech. Note No. 1731 (Oct.).

1949

J. J. Gangler, C. F. Robards, and J. E. McNutt, Physical properties at elevated temperatures of seven hot-pressed ceramics. NACA Tech. Note No. 1911 (July).
H. J. Hamjian and W. G. Lidman, Investigation of bonding between metals and ceramics. NACA Tech. Note No. 1948 (Sept.).
C. A. Hoffman, G. M. Ault, and J. J. Gangler, Initial investigation of carbide-type ceramal of 80% titanium carbide plus 20% cobalt for use as gas turbine blade material. NACA Tech. Note No. 1836 (March).
W. G. Lidman and A. R. Bobrowsky, Correlation of physical properties of ceramic materials with resistance to fracture by thermal shock. NACA Tech. Note No. 1918 (July).
G. A. Meerson and Y. M. Lipkes, Investigation of conditions of titanium carbonization. NACA Tech. Memo. No. 1235 (July).
M. J. Whitman and A. J. Repko, Oxidation of titanium carbide base ceramals containing molybdenum, tungsten and cobalt. NACA Tech. Note No. 1914 (July).

1950

W. H. Duckworth and J. E. Campbell, Ceramics in gas turbines. Mech. Eng. **72**, 128.
W. J. Engel, Bonding investigation of titanium carbide with various elements. NACA Tech. Note No. 2187 (Sept.).

J. C. Freche, Further investigation of a gas turbine with National Bureau of Standards Body 4811C ceramic rotor blades. NACA Research Memo. No. E9L07 (Mar.).
J. J. Gangler, Some physical properties of eight refractory oxides and carbides. J. Am. Ceram. Soc. **33**, 367.
H. J. Hamjian and W. G. Lidman, Sintering mechanism between zirconium carbide and columbium. NACA Tech. Note No. 2198 (Oct.).
W. G. Lidman and J. H. Hamjian, Properties of a boron carbide-iron ceramal. NACA Tech. Note No. 2050 (Mar.).

1951

D. G. Bennett, Heat resistant ceramic coatings. Materials and Methods **33**, 65 (Mar.).
T. G. Carruthers and A. L. Roberts, Ceramics—a survey of their possibilities as gas-turbine blade materials. Aircraft Production **13**, 88.
C. M. Cheng, Resistance to thermal shock. J. Am. Rocket Soc. **21**, 147.
G. C. Close, Solar's ceramic coatings. Aviation Age **16**, 21 (Sept.).
A. L. Cooper and L. E. Colteryahn, Elevated temperature properties of titanium carbide base ceramals containing nickel or iron. NACA Research Memo. No. E51I10 (Dec.).
G. C. Deutsch, A. J. Repko, and W. G. Lidman, Elevated temperature properties of several titanium carbide base ceramals. NACA Tech. Note No. 1915 (July).
W. H. Duckworth and H. Z. Schofield, Rocket linings. Aviation Week **54**, 31 (June 25).
W. J. Engel, Bonding of titanium carbide with metal. Metal Progr. **59**, 664 (Nov.).
W. R. Eubank, Some recent advances in ceramics. Sci. Monthly **72**, 120.
J. L. Everhart, Silicon carbide refractories used as alternates for special service alloys. Materials and Methods **34**, 71 (Nov.).
W. G. Hubbell, Ceramic coatings can save critical alloys. Iron Age **168**, 81 (Nov. 22).
W. G. Hubbell, Ceramics and special alloys. Aeronaut. Eng. Rev. **10**, 24 (Nov.).
W. J. Koshuba and J. A. Stavrolakis, Cermets may answer jet designer's prayers. Iron Age **168**, 77 (Nov. 29); 154 (Dec. 6).
W. G. Lidman and H. J. Hamjian, Kinetics of sintering chromium carbide. NACA Tech. Note No. 2491 (Aug.).
W. G. Lidman and H. J. Hamjian, Metal-refractory alloys. Product Eng. **22**, 147 (Oct.).
H. B. Michaelson, High-temperature ceramic materials. Product Eng. **22** 120 (Aug.).
D. G. Moore, S. G. Benner, and W. N. Harrison, High-temperature protection of a titanium carbide ceramal with a ceramic-metal coating having a high chromium content. NACA Tech. Note No. 2329 (Mar.).
D. G. Moore, S. G. Benner, and W. N. Harrison, Studies of high-temperature protection of a titanium carbide ceramal by chromium-type ceramic-metal coatings. NACA Tech. Notes No. 2329 (Mar.) and 2386 (June).
D. G. Moore, L. W. Bolz, J. W. Pitts, and W. N. Harrison, Study of chromium-frit-type coatings for high-temperature protection of molybdenum. NACA Tech. Note No. 2422 (July).
D. G. Moore and M. W. Mason, Effectiveness of ceramic coatings in reducing corrosion of five heat-resistant alloys by lead-bromide vapors. NACA Tech. Note No. 2380 (June).
K. C. Nicholson, Silicon carbide linings for uncooled rocket motors. Am. Rocket Soc. Reprint 33T–51.
J. W. Pitts and D. G. Moore, Ceramic coatings for prevention of carbon absorption in four heat-resistant alloys. NACA Tech. Note No. 2572 (Dec.).
C. F. Robards and J. J. Gangler, Some properties of beryllium oxide and beryllium oxide-niobium ceramal. NACA Research Memo. E50G21 (Mar.).
H. Z. Schofield and W. H. Duckworth, Successful engineering of ceramic lined rocket motors. Am. Rocket Soc. Reprint 32T–51.
Ceramic coatings for metal protection at high temperatures. Product Eng. **22**, 177 (Nov.).
Ceramic liners. Aviation Week **55**, 34 (Aug. 16).
Coating for ceramals may give better turbine blades. Science News Letter **59**, 319.
Fused stabilized zirconia. Mech. Eng. **73**, 507.
How to cut wear on engine parts. Am. Aviation **15**, 33 (July 9).

New chromium carbides have high temperature and high corrosion resistance. Materials and Methods **34,** 69 (Dec.).
New zirconia refractory material useful at temperatures to 4,600° F. Materials and Methods **33,** 81 (Mar.).
Saving alloys with ceramic coatings. Modern Industry **22,** 101 (Sept. 15).

1952

F. K. Davey, E. R. Blaban, and G. E. Lorey, *Titanium nitride cerments.* U. S. Air Force Research and Development Command. Wright Air Development Center Tech. Rept. No. 52-155 (July).
G. Ficker, Use of ceramics for high-temperature engineering. Ber. deut. keram. Ges. **29,** 310.
G. R. Finlay, Refractories for 4,000° F. and higher. Chemistry in Can. **4,** 41 (Mar.).
E. G. Graff, Properties of some high titania dielectric ceramics. Am. Ceram. Soc. Bull. **31,** 279 (Aug.).
H. J. Hamjian and W. G. Lidman, Boron carbide as a base material for a cermet. J. Am. Ceram. Soc. **35,** 44 (Feb.).
H. J. Hamjian and W. G. Lidman, Influence of structure on properties of sintered chromium carbide. NACA Tech. Note No. 2731 (June).
W. N. Harrison, J. C. Richmond, J. W. Pitts, and S. G. Benner, Migration of cobalt during firing of ground-coat enamels on iron. NACA Tech. Note No. 2695 (June).
R. G. Hicks, Ceramics shield stainless for jets. Am. Machinist **96,** 99 (July 21).
C. A. Hoffman and A. L. Cooper, Investigation of titanium carbide base ceramals containing either nickel or cobalt for use as gas-turbine blades. NACA Research Memo. No. E52H05 (Aug.).
B. L. Hummel, Titanium carbide—a new heat-resistant lightweight material. Machine Design **24,** 142 (Sept.).
W. G. Lidman and H. J. Hamjian, The sintering mechanism between zirconium carbide and columbium. Proc. Metallurgy and Materials Information Meeting, Apr. 16-18, 1951, **1,** TID-5061, Jan. 31, 1952.
J. V. Long, Ceramic coatings. Machine Design **24,** 122 (May).
J. V. Long, Ceramics ease metal shortage. Automotive Inds. **107,** 40 (July 15).
J. V. Long, Ceramics shrug off turbine's tempest. Abstract: SAE Journal **60,** 38 (Sept.).
D. G. Moore, M. A. Mason, and W. N. Harrison, *Relative importance of various* sources of defect-producing hydrogen introduced into steel during application of vitreous coatings. NACA Tech. Note No. 2617 (Feb.).
P. O'Keefe, New developments in porcelain and ceramic coatings. Materials and Methods **35,** 87 (May).
N. E. Poulos, A method for studying the resistance of enamels to abrasion by rapidly moving particles suspended in high-temperature flames. Am. Ceram. Soc. Bull. **31,** 380.
R. E. Stark and B. H. Dilks, New lithium ceramics have high thermal shock resistance, controlled thermal expansion, chemical resistance at high temperatures. Materials and Methods **35,** 98 (Jan.).
R. L. Stedfeld, Vitreous coatings. Machine Design **24,** 165 (Dec.).
I. Stone, New ceramic fiber goes into jets. Aviation Week **57,** 30 (Aug. 25).
J. H. Westbrook, Metal-ceramic composites. Am. Ceram. Soc. Bull. **31,** 205, 240 and 248.
L. S. Williams, From ceramics to power units. Refractories J. **28,** 353.
F. Zwicky Ceramics in jet propulsion. Aviation Age **17,** 31 (Jan.).
Ceramic coatings. Aircraft Production **14,** 305.
Ceramic coatings for high temperature parts. Oil Engine **20,** 225.
Ceramics for jet use put into production. Aviation Week **56,** 30 (June 9).
Chrome-glass coating on molybdenum for jet engine parts. Am. Machinist **96,** 109 (Sept. 1).
Moly based metal ceramic designed for high temperature. Iron Age **170,** 114 (Oct. 16).
More about ceramic coatings. Product Eng. **23,** 135 (Oct.).
Summary of ceramic coating situation. Oil Engine **20,** 300.

1953

G. Economos, Behavior of refractory oxides in contact with metals at high temperatures. Ind. Eng. Chem. **45,** 458.

C. A. Hoffman, Investigation of a chromium plus aluminum oxide metal-ceramic body for possible gas turbine blade application. NACA Research Memo. No. E53G07 (Nov.).
C. A. Hoffman, Preliminary investigation of zirconium boride ceramals for gas-turbine blade applications. NACA Research Memo. No. E52L15a (Apr.).
R. A. Jones and L. T. Fuszara, Problems of utilizing ceramics in aircraft power plant construction. Am. Ceram. Soc. Bull. **32,** 107.
E. Kirchner, Ceramic coatings today and tomorrow. Aviation Age **20,** 112 (Dec.).
J. V. Long, Ceramic-coated low alloys for jet-engine hot parts. Abstract: Mech. Eng. **75,** 495.
W. A. Maxwell and R. W. Smith, Thermal shock resistance and high-temperature strength of a molybdenum disilicide-aluminum oxide ceramic. NACA Research Memo. No. E53F26 (Oct.).
A. Pechman, Ceramics: answer to jet's high temperature. Aviation Age **19,** 106 (Mar.).
M. A. Schwartz, Ceramic-metals for component design. Elec. Mfg. **51,** 144 (Oct.).
C. M. Yeomans and C. A. Hoffman, Thermal-shock resistance of a ceramic comprising 60 percent boron carbide and 40 percent titanium diboride. NACA Research Memo. No. E52L31 (Mar.).
A ceramic coating for low-alloy steel jet engine parts. Engineer **196,** 187.
Ceramic material research. Aeroplane **85,** 349.
Cermets may help jets operate hotter. Aviation Week **58,** 36 (Feb. 23).
Enamel for gas turbine blades. Engrs. Dig. **14,** 40.
Progress with metal-ceramic blade materials. Oil Engine **21,** 72.

213. AERODYNAMIC FACTORS

1949

R. V. Hess, Study of unsteady flow disturbances of large and small amplitudes moving through supersonic or subsonic steady flows. NACA Tech. Note No. 1879 (May).
P. W. Huber, C. E. Fitton, Jr., and F. Delpino, Experimental investigation of moving pressure disturbances and shock waves and correlation with one-dimensional unsteady-flow theory. NACA Tech. Note No. 1903 (July).
A. I. Neihouse, Spin-tunnel investigation to determine the effectiveness of a rocket for spin recovery. NACA Tech. Note No. 1866 (April).
J. D. Stanitz, Two-dimensional compressible flow in turbomachines with conic surfaces. NACA Rept. 935.

1950

M. V. Barton, The effect of variation of mass on the dynamic stability of jet-propelled missiles. J. Aeronaut. Sci. **17,** 197.
R. E. Boltz and J. D. Nicholaides, A method of determining some aerodynamic coefficients from supersonic free-flight tests of a rolling missile. J. Aeronaut. Sci. **17,** 609.
S. L. Bragg and W. R. Hawthorne, Some exact solutions of the flow through annular cascade actuator discs. J. Aeronaut. Sci. **17,** 243.
G. Bruner, High aspect ratio wings. Aeroplane **79,** 187.
J. L. d'Epinay, Aerodynamic methods applied to turbo-machine research. Brown Boveri Rev. **37,** 357.
M. A. Heaslet, H. Lomax, and J. R. Spreitler, Linearized compressible-flow theory for sonic flight speeds. NACA Rept. 956.
H. Klein, The thrust and drag penalties on a jet engine installation due to cooling flow. Douglas Aircraft Co. Rept. No. SM-13862 (Nov. 7).
P. A. Lagerstrom and M. E. Graham, Aerodynamic interference in supersonic missiles. Douglas Aircraft Co. Rept. No. SM-13743 (July).
G. H. Lee. The estimation of critical Mach number. Aeroplane **79,** 110 and 216.
V. Outman and G. S. Graff, Flight characteristics at high Mach numbers. SAE Journal **58,** 56 (Dec.).
H. B. Squire, Jet flow and its effects on aircraft. Aircraft Eng. **22,** 62.

1951

C. W. Besserer and A. J. Bell, Attitude stabilization for supersonic vehicles. ASME M. P., Atlantic City.
Chung-Hua Wu, A general theory of three-dimensional flow with subsonic and supersonic velocity in turbomachines having arbitrary hub and casing shapes. NACA Tech. Note No. 2302 (Mar.).

E. W. Graham, A limiting case for missile rolling moments. J. Aeronaut. Sci. **18**, 624.
H. Luskin and H. Klein, High-speed aerodynamic problems of turbojet installations. Trans. ASME **73**, 375.
V. D. Naylor, The critical flow of a gas through a convergent nozzle. Aircraft Eng. **23**, 160.
W. L. Stewart, Analytical investigation of flow through high-speed mixed-flow turbine. NACA Research Memo. No. E51H06 (Oct.).
Triangle seen as shape of the future. Aviation Week **55**, 20 (Sept. 17).

1952

R. E. Bolz, Dynamic stability of a missile in rolling flight. J. Aeronaut. Sci. **19**, 395.
F. P. Durham, Supersonic flow with variable specific heat. J. Appl. Mechanics **19**, 57.
J. Jonas, On the interaction between multiple jets and an adjacent surface. Aeronaut. Eng. Rev. **11**, 21 (Jan.).
P. W. Powers, The aerodynamics of guided missiles. USA Combat Forces J. **2**, 19 (June); Antiaircraft J. **95**, 12 (July/Aug.).
P. Rebuffet and Ph. Poisson-Quinton, Investigations of the boundary-layer control on a full scale swept wing with air bled off from the turbojet. NACA Tech. Memo. No. 1331 (Apr.).
H. F. Steinmetz, Wing-body interference effects on the tail contribution to the damping-in-roll of supersonic missiles. Inst. Aeronaut. Sci. Pre. No. 384 (July).
R. C. Weatherston, Thrust and drag. J. Am. Rocket Soc. **22**, 343.
Better way to "gulp" ramjet air. Aviation Week **57**, 39 (Sept. 1).
Revolution brewing in aviation design. Aviation Week **56**, 21 (Mar. 3).

1953

R. A. Gross and R. Esch, Low speed combustion aerodynamics. Am. Rocket Soc. Pre. No. 113-A-53.
W. F. Hilton, Temperature effects in aeronautics. Aeroplane **84**, 462.
J. D. Nicolaides and R. E. Bolz, On the pure rolling motion of winged and/or finned missiles in varying supersonic flight. J. Aeronaut. Sci. **20**, 160.
W. Traupel, Vortex systems in cascades and turbomachines. Z. angew. Math. Phys. **4**, 298.

214. THERMAL PROPERTIES OF WORKING MEDIA

1950

R. E. English and W. W. Wachtl, Charts of thermodynamic properties of air and combustion products from 300° to 3,500° R. NACA Tech. Note No. 2071 (Apr.).
J. A. Goff and S. Gratch, Zero-pressure thermodynamic properties of some monatomic gases, CO and N_2. Trans. ASME **72**, 725 and 741.
W. Griffith, Vibrational relaxation times in gases. J. Appl. Phys. **21**, 1319.
H. J. Hoge, Compilation of thermal properties of wind-tunnel and jet-engine gases at the National Bureau of Standards. Trans. ASME **72**, 779.
V. N. Huff and V. E. Morrell, General method for computation of equilibrium compositions and temperature of chemical reactions. NACA Tech. Note No. 2113 (June).
H. R. Ivey and C. W. Cline, Effect of heat-capacity lag on the flow through oblique shock waves. NACA Tech. Note No. 2196 (Oct.).
J. Kestin, Influence of variable specific heats on the high-speed flow of air. Ministry of Supply, Aeronaut. Research Council (Gt. Brit.) CP33 (June).
N. Manson and H. Guenoche, New Values of equilibrium constants of hydrocarbon combustion products. Rev. inst. franç. pétrole **5**, 17.
N. Pace, Specific heats of some gases at high temperatures. Termotecnica **4**, 345.
R. N. Schwartz, Vibrational relaxation times in polyatomic gases. Abstract: Phys. Rev. **77**, 572.
R. B. Spooner, Effect of heat capacity lag on a variety of turbine-nozzle flow processes. NACA Tech. Note No. 2193 (Oct.).
A. M. Trout, Theoretical turbojet thrust augmentation by evaporation of water during compression as determined by use of a Mollier diagram. NACA Tech. Note No. 2104 (June).

1951

M. Benedict, G. B. Webb, and H. C. Rubin, An empirical equation for thermodynamic properties of light hydrocarbons and their mixtures. Constants for twelve hydrocarbons. Chem. Eng. Progress **47**, 419.

A. S. Campbell, Thermodynamic properties of reactive gas mixtures. J. Franklin Inst. **251**, 437.

N. A. Hall and W. E. Ibele, Thermodynamic properties of air, nitrogen and oxygen as imperfect gases. Univ. Minn. Eng. Expt. Sta. Tech. Paper No. 85.

J. R. Henry and J. B. Bennett, Method for calculation of ramjet performance. NACA Tech. Note No. 2357 (June).

V. N. Huff, S. Gordon, and V. E. Morrell, General method and thermodynamic tables for computation of equilibrium composition and temperatures of chemical reactions. NACA Rept. 1037.

I. C. Hutcheon and S. W. Green, Calculated data for the combustion with liquid oxygen of water-diluted alcohols and paraffin in rocket motors. Ministry of Supply, Aeronaut. Research Council (Gt. Brit.) R and M 2572.

H. L. Johnson, R. W. Mattox, and R. W. Powers, Viscosities of air and nitrogen at low pressures. NACA Tech. Note No. 2546 (Nov.).

J. H. Keenan, Properties of the gases of combustion processes. Engineering **172**, 347 and 379.

F. G. Keyes, A summary of viscosity and heat-conduction data for He, A, H_2, O_2, N_2, CO, CO_2, H_2O and air. Trans. ASME **73**, 589.

G. Klobe, The adiabatic coefficient of dissociating combustion gases by adiabatic-isentropic expansion. Z. angew. Math. u. Phys. **2**, 394.

W. S. McEwan and S. Skolnik, Adiabatic flame temperature in jet motors. Ind. Eng. Chem. **43**, 2818.

R. V. Meghreblian, Approximate calculations of specific heats for polyatomic gas. J. Am. Rocket Soc. **21**, 127.

H. P. Meissner and R. Seferian, P–V–T relations of gas. Chem. Eng. Progress **47**, 579.

L. V. Ovsiannikov, Gas flow with straight transition line. NACA Tech. Memo. No. 1295 (May).

E. Sänger, P. Goercke, and I. Bredt, On ionization and luminescence in flames. NACA Tech. Memo. No. 1305 (Apr.).

R. Vichnievsky, Thermodynamic data on gas combustion at high temperature. Pubs. sci. et tech. ministere air No. 248; Actes colloque intern. mecan. Poitiers 1950, 169 (Pub. 1951).

C. J. Walker, Convenient gas properties and charts for gas-turbine calculations. Abstract: Mech. Eng. **73**, 425.

R. Walker, Heat capacity lag in gases. NACA Tech. Note No. 2537 (Nov.).

1952

A. B. P. Beaton, Part I. Tabulated thermal data for hydrocarbon oxidation products at high temperatures. Part II. The effect of dissociation on rocket performance calculations. Ministry of Supply, Aeronaut. Research Council (Gt. Brit.) R and M 2542.

U. T. Boedewadt and R. Engel, Remarks on combustion calculations. Recherche aéronaut. No. 26, 19 (Mar./Apr.).

S. R. Brinkley, Jr., and B. Lewis, Thermodynamics of combustion gases: general considerations. U. S. Bur. Mines Rept. Invest. No. 4806.

B. N. Cole, The thermodynamics of humid air. Engineering **173**, 609.

J. C. Gunn, Relaxation time effects in gas dynamics. Ministry of Supply, Aeronaut. Research Council (Gt. Brit.) R and M 2338.

F. G. Keyes, Additional measurements of heat conductivity of nitrogen, carbon dioxide and mixtures. Trans. ASME **74**, 1303.

E. L. Knuth, Note on the calculation of transport properties of gas mixtures. J. Aeronaut. Sci. **19**, 644.

A. R. Leye, Calculation of fuel, air and combustion products, especially for fuel mixtures. Brennstoff-Wärme-Kraft **4**, 294.

E. F. Osborne, High temperature thermodynamic processes. Aircraft Eng. **24**, 294.

J. H. Potter, Determination of combustion products. Automotive Inds. **107**, 50 (Oct. 15).

G. Ribaud, Thermodynamic properties of gas at high temperature. Publs. sci. et tech. ministere air (France) No. 266.

V. E. Schrock, Calorimetric determination of the constant-pressure specific heats of carbon dioxide at elevated pressures and temperatures. NACA Tech. Note No. 2838 (Dec.).
R. N. Schwartz, Z. I. Slawsky, and K. F. Herzfeld, Calculation of vibrational relaxation times in gases. J. Chem. Phys. **20,** 1591.
G. C. Williams, C. N. Satterfield, and H. S. Isbin, Calculation of adiabatic decomposition temperatures of aqueous hydrogen peroxide solutions. J. Am. Rocket Soc. **22,** 70.

1953

G. S. Bahn, Thermodynamic properties of combustion gas. Abstract: Mech. Eng. **75,** 581.
E. Carter, Thermodynamic charts for the decomposition products of 80% hydrogen peroxide. Roy. Aircraft Establishment (Gt. Brit.) Tech. Note No. RPD 88 (Oct.).
E. B. Cook, R. W. Smith, Jr., and S. R. Brinkley, Jr., Equilibrium composition of combustion products of leaded octanes with air. U. S. Bur. Mines, Rept. Invest. No. 4947.
H. E. Edwards, R. W. Smith, Jr., and S. R. Brinkley, Jr., Thermodynamics of combustion gases: temperatures and composition of the products of combustion of oxyacetylene flames. U. S. Bur. Mines, Rept. Invest. No. 4958.
R. S. Fein, H. I. Wilson, and J. Sherman, Net heat of combustion of petroleum hydrocarbons. Ind. Eng. Chem. **45,** 610.
E. Macioce, Diagrammi termodinamici dei gas di combustione. Aerotecnica **33,** 288.
H. Reichert, A Mollier chart for moisture-saturated air. Aircraft Eng. **25,** 321.
H. Reichert, High temperature combustion. Aircraft Eng. **25,** 198.
R. W. Smith, Jr., H. E. Edwards, and S. R. Brinkley, Jr., Thermodynamics of combustion gases: temperatures of methane-air and propane-air flames at atmospheric pressure. U. S. Bur. Mines, Rept. Invest. No. 4938.
R. W. Smith, Jr., J. Manton, and S. R. Brinkley, Jr., Thermodynamics of combustion gases: temperatures of methane-air, propane-air and ethylene-air flames. U. S. Bur. Mines, Rept. Invest. No. 4983.
J. Surugue, R. Kling, and R. Huchet, Relaxation time and the exchange of energy in combustion gases. Recherche aéronaut. No. 31, 25 (Jan./Feb.).
H. S. Tsien, The properties of pure liquids. J. Am. Rocket Soc. **23,** 17.

215. JET-, TURBINE-, AND ROCKET-PROPELLED AIRCRAFT

215.1 American Military Aircraft

1950

D. A. Anderton, Lockheed F-90 is transonic contender. Aviation Week **53,** 27 (Dec. 25).
D. A. Anderton, Preview of fighters: McDonnell XF-88. Aviation Week **53,** 27 (Sept. 4).
S. H. Evans, Douglas XA2D-1 Skyshark twin-engined turboprop naval attack bomber. Flight **58,** 424 and 454.
J. J. Haggerty, Jr., Big push from a small package. Am. Aviation **14,** 17 (July 1).
B. J. Hurren, A thousand eyes for one. Aircraft **28,** 26 (Sept.).
A. W. Jessup, Combat reports prove F-80 can take it. Aviation Week **53,** 12 (July 31).
B. S. Lee, Next step in bombers, B-36F or XB-52? Aviation Week **53,** 13 (Nov. 20).
F. H. Sharp, Current turboprop power plant installations. Aeronaut. Eng. Rev. **9,** 41 (Nov.).
A Boeing propjet project. Aeroplane **79,** 534.
Boeing B-47 Stratojet. Aero Dig. **61,** 22 (Nov.).
Evolution of the Skyshark. Aviation Week **53,** 22 (Oct. 23).
Gas turbines for Flying Fortress. Engineer **190,** 542.
Grumman F9F Panther. Aero Dig. **61,** 24 (Dec.).
New planes in the news. Aviation Week **53,** 9 (Oct. 9).
Rocket air tests. Aviation Week **53,** 34 (Dec. 8).
Turboprop attack plane. Mech. Eng. **72,** 817.

1951

H. L. Adams, Structural testing the Stratojet. Aero Dig. **62,** 20 (June).
D. A. Anderton, F-94: Variations on a Lockheed theme. Aviation Week **54,** 20 (June 25).

N. N. Davis and E. M. Beattie, Flying the B-45 jet bomber. Abstract: SAE Journal **59,** 19 (Oct.).
J. J. Haggerty, Jr., First flying triangle. Am. Aviation **14,** 19 (May 28).
J. J. Haggerty, Jr., How Navy's Skyrocket Hit 1,200 mph. Am. Aviation **15,** 15 (July 23).
R. Hawthorne, Fletcher's interchangeable trainer. Aviation Age **16,** 40 (Nov.).
B. S. Lee, AF decides to buy Boeing XB-52. Aviation Week **54,** 14 (Mar. 12).
B. S. Lee, Douglas building turboprop C-124. Aviation Week **54,** 13 (Jan. 22).
F. D. Mathes, F-89, an "open book" to the crew chief. Western Aviation **31,** 24 (July).
A. McSurely, AF pushes buildup of B-47 jet bomber. Aviation Week **54,** 13 (Apr. 16).
R. M. Robbins and W. H. Cook, Flight characteristics of the Boeing B-47 Stratojet. Abstract: Automotive Inds. **104,** 105 (May 15); Abstract: SAE Journal **59,** 69 (Sept.).
I. Stone, Martin speeds plans for B-57 production. Aviation Week **55,** 19 (July 23).
E. G. Stout, Research that produced world's first turboprop seaplane. Automotive Inds. **105,** 48, (Nov. 15).
J. von Lonkhuyzen, Problems faced in designing the famed X-1. Aviation Week **54,** 22 (Jan. 1).
R. G. Worcester, X-2, X-3 to continue supersonic research-target: 2,000 mph: 300,000 feet. Am. Aviation **14,** 21 (Feb. 5).
AF gives nod to McDonnell "Voodoo". Aviation Week **55,** 16 (Oct. 29).
AF studies Douglas design for B-36 role. Aviation Week **54,** 13 (Jan. 29).
A Martin star. Aeroplane **81,** 64.
A new American delta. Aeroplane **80,** 162.
Among U. S. military planes. Aviation Week **54,** 18 (Feb. 26).
Bell X-5 single-engined turbojet variable-wing sweepback aircraft. Am. Helicopter **23,** 11 (June).
B-50 takes on research "bomb load". Aviation Week **55,** 18 (Sept. 10).
Cargo run slated for jet bomber. Aviation Week **54,** 51 (Jan. 29).
Carrier-borne jet plane. Mech. Eng. **73,** 327.
Convair flying boat may have big role. Aviation Week **55,** 18 (Aug. 13).
Convair's turboprop flight experience. Aviation Week **54,** 21 (Apr. 23).
Details of Douglas Skyrocket's new record flight. Aviation Week **55,** 14 (Sept. 10).
Directory of American military aircraft. Western Flying **31,** 13 (Apr.).
Douglas D-558-2 sets world speed-height marks. Western Aviation **31,** 9 (Aug.).
Douglas Skyrocket—highest and fastest. Aviation Week **55,** 14 (July 16).
Douglas XF4D powered by Westinghouse J-40. Am. Aviation **15,** 27 (Nov. 12).
Eight-jet B-36. Aviation Week **54,** 15 (Mar. 26).
Experimental airplane changes angle of wing sweepback while in flight. CADO Tech. Data Dig. **16,** 5 (Aug.).
First movable wing set for X-5 tests. Am. Aviation **15,** 13 (June 25).
First view of Bell's X-1A. Aviation Week **55,** 15 (July 9).
Flying boat designs meet high speed goal. Aviation Week **55,** 20 (Oct. 1).
F-89 Scorpion's deadly sting. Aviation Week **54,** 14 (Feb. 19).
High-flying Bell. Aviation Week **54,** 17 (May 21).
Highest and fastest yet. Aeroplane **81,** 46.
Interceptor jet plane resembles delta-wing. Science News Letter **59,** 121.
Jet bombers across the Atlantic. Aeroplane **80,** 130.
Latest jet fighter aircraft of the United States Air Force. Ordnance **35,** 408.
Latest warplane designs. Automotive Inds. **105,** 40 (July 1).
Lockheed F-94C. Aero Dig. **63,** 21 (Aug.).
Lockheed wins. Aviation Week **55,** 16 (July 9).
Long-range F-84F strikes with guns, bombs, rockets. Aviation Week **54,** 14 (Jan. 15).
More Skyrocket details revealed. Aviation Week **55,** 37 (Aug. 6).
More U. S. A. F. prop-jets. Aeroplane **81,** 573.
NATO jets. Aviation Week **54,** 17 (Mar. 12).
Navy boosts F3H-1 Demon production. Aviation Week **55,** 200 (Sept. 24).
Navy orders new jet fighter from NAA. Aviation Week **54,** 17 (Jan. 29).
Navy reveals fast-climbing XF4D. Aviation Week **54,** 16 (Feb. 5).
Navy studies radical new fighter. Aviation Week **54,** 15 (May 21).
New big boy. Aviation Week **55,** 16 (July 30).

292892—54——6

New Cutlass. Aviation Week **54**, 16 (Mar. 12).
New developments in military aviation. Aviation Week **55**, 9 (Sept. 3).
New for the U. S. Navy. Aeroplane **81**, 514.
New McDonnell F3H in first flight test. Aviation Week **55**, 16 (Aug. 13).
Night bird. Aviation Week **55**, 17 (July 2).
North American F-86E. Can. Aviation **24**, 22 (Apr.).
Plane whose wings change sweep in air: new Bell X-5. Aviation Week **54**, 17 (June 18).
Power in the air. Aero Dig. **62**, 46 (Feb.).
Republic F-84F. Aero Dig. **63**, 25 (Sept.).
Research on sweepback. Aeroplane **80**, 811.
Sabre-rattling rumours. Aeroplane **80**, 64.
Sabres in England. Aeroplane **81**, 268.
Scorpion designed for easy maintenance. Aviation Week **55**, 21 (Aug. 20).
Skyrocket record. Shell Aviation News No. 159, 14 (Sept.).
Speed-altitude record. Mech. Eng. **73**, 826.
Static tests of Boeing's Stratojet. Aviation Week **54**, 31 (Feb. 19).
Stratojet becomes long-range threat. Aviation Week **54**, 18 (Apr. 2).
The Sabre and the MiG-15. Aeroplane **81**, 267.
The Scorpions and their lair at Ontario. Western Aviation **31**, 10 (Dec.).
U. S. high speed research aircraft. Aviation Week **54**, 51 (Feb. 26).
U. S. military aircraft. Aviation Week **54**, 22 (Feb. 26).
USAF orders new F-86 Sabre models. Aviation Week **55**, 14 (Oct. 29).
Variable sweepback. Western Aviation **31**, 9 (July).
Wings in the air. Aero Dig. **62**, 36 (Feb.); **63**, 86 (July).
XC-123A: First U. S. jet transport. Aviation Week **54**, 16 (Apr. 30).
12th annual directory of U. S. aircraft. Aero Dig. **62**, 17 (Mar.).
1951 jet fighters. Interavia **6**, 79.

1952

W. T. Bonney, Flying laboratories. Ordnance **37**, 419.
W. T. Bonney, The research airplane. Pegasus **18**, 1 (June).
G. L. Christian, Far East pilots praise F-94's durability. Aviation Week **57**, 61 (July 7).
G. L. Christian, Tactical jets prove ruggedness in battle. Aviation Week **57**, 62 (July 14).
G. L. Christian, USAF pilots in Korea "love that F-86". Aviation Week **56**, 52 (June 30).
W. W. Fox, The turboprop airplane. Aeronaut. Eng. Rev. **11**, 22 (June).
B. T. Guyton, Chance Vought F7U Cutlass. Skyways **11**, 10 (Sept.).
J. J. Haggerty, Jr., First details of the X-3. Am. Aviation **16**, 10 (Oct. 27).
J. J. Haggerty, Jr., Skyrocket speed record only the beginning. Am. Aviation **16**, 16 (Aug. 18).
J. J. Haggerty, Jr., The XF2Y-1: revolution afloat? Am. Aviation **16**, 13 (Nov. 24).
R. Hawthorne, Skyrocket legacy. Aviation Age **17**, 31 (Mar.).
A. W. Jessup, Marine jets. Aviation Week **56**, 16 (Feb. 11).
R. P. Martin, Sabres still rule skies over MiG Alley. Aviation Week **57**, 13 (Nov. 13).
A. McSurely, Veil lifted on Boeing B-52 details. Aviation Week **57**, 12 (Aug. 18).
I. Stone, Convair set to turn out B-60 on B-36 line. Aviation Week **56**, 48 (Jan. 14).
I. Stone, Production details on Republic F-84F. Aviation Week **57**, 31 (Dec. 15).
R. S. Williams, Canberra conversion. Aero Dig. **65**, 22 (Nov.).
AF ordered C-130 into production. Aviation Week **57**, 13 (Oct. 6).
AF takes wraps off Boeing XB-52. Aviation Week **56**, 14 (Jan. 14).
A new American defender. Aeroplane **83**, 37.
A new Martin seaplane. Aeroplane **83**, 535.
A significant light plane. Western Aviation **32**, 20 (Dec.).
A supersonic fighter. Aeroplane **83**, 827.
American research craft. Aeroplane **83**, 212.
Bell X-5 tries its wings. Aviation Week **56**, 17 (Jan. 21).
Better Cutlass. Aeroplane **82**, 265.
Boeing YB-52. Flight **62**, 702.
Boeing YB-52 Stratofortress and Convair YB-60 swept-wing eight-engined turbojet bomber. Interavia **7**, 308.
Breaking down the biggest bomber. Aeroplane **82**, 270.

Building Boeing's Stratojet. Aviation Week **56,** 46 (May 26).
Building the Canberra in the U. S. A. Aeroplane **83,** 362.
Convair YB-60 spreads its wings. Aviation Week **57,** 15 (Sept. 1).
Convertible jet aircraft. Mech. Eng. **74,** 496.
Directory of American military aircraft. Western Aviation **32,** 15 (Apr.).
Directory of U. S. military aircraft. Aero Dig. **64,** 18 (Mar.).
Douglas Skyknight. Aero Dig. **64,** 25 (Apr.).
Douglas to build RB-66 at Chicago. Aviation Week **56,** 16 (Mar. 10).
Fastest and highest. Flight **61,** 556.
Flying above the speed of sound. Aeroplane **82,** 482.
Four planes from two YF-93As. Aviation Week **57,** 18 (Nov. 3).
F3D-3 out. Aviation Week **56,** 274 (Feb. 25).
F-94C nearly all-automatic interceptor. Aviation Week **57,** 16 (July 7).
F-101 Voodoo into production. Aviation Week **57,** 17 (Sept. 22).
Group portrait of America's research team. Aviation Week **56,** 17 (June 23).
Here are USAF's sluggers: Convair YB-60 and Boeing YB-52. Aviation Week **56,** 14 (May 19).
Know your bombers. Interavia **7,** 132.
Lockheed F-94C Starfire. Can. Aviation **25,** 19 (Aug.).
Lockheed F-94C Starfire in production. Western Aviation **32,** 11 (July).
McDonnell Banshee. Aero Dig. **65,** 22 (Sept.).
Navy getting bigger McDonnell Banshee. Aviation Week **56,** 17 (Feb. 4).
Navy shows new 700-Mph-plus F7U-3. Aviation Week **56,** 9 (Mar. 3).
Navy's latest jet planes begin tests. Aviation Week **57,** 9 (Dec. 29).
Navy's new turboprop XA2J-1 tested. Aviation Week **56,** 16 (Jan. 14).
New A-bomber. Aviation Week **56,** 15 (Feb. 4).
New jets seen during AWA convention. Aviation Week **57,** 9 (July 28).
New jets try their sea wings. Aviation Week **57,** 9 (Sept. 22).
New Navy carrier plane models shown. Aviation Week **56,** 9 (Feb. 14).
New views of military jets. Aviation Week **56,** 9 (May 26).
North American Sabre. Aero Dig. **64,** 23 (June).
North American Savage. Aero Dig. **64,** 20 (Feb.).
Northrop F-89D Scorpion details. Aviation Week **56,** 18 (Mar. 17).
Public gets first look at 8-jet YB-60. Aviation Week **56,** 14 (Apr. 14).
Rockets push XF-91 past Mach 1. Aviation Week **57,** 17 (Dec. 15).
Sabres under the crown. Aeroplane **82,** 211.
Second B-52 bomber nears completion. Aviation Week **56,** 18 (Feb. 18).
Skyrocket study yields highspeed data. Aviation Week **56,** 25 (May 19).
Specifications of aircraft and engines—U. S. military aircraft. Aviation Week **56,** 135 (Feb. 25).
Specifications of U. S. and foreign military aircraft. Automotive Inds. **106,** 242 (Mar. 15).
The air is full of giants. Aviation Week **56,** 9 (Apr. 28).
The Douglas B-66. Aeroplane **82,** 149.
The Naval combat airplane. Aero Dig. **65,** 62 (Oct.).
The old and the new in Navy fighter styles. Aviation Week **56,** 18 (Mar. 10).
The U. S. Air Force combat airplane. Aero Dig. **65,** 26 (Oct.).
USAF orders F-100 into production. Aviation Week **57,** 17 (Nov. 3).
U. S. A. F. rocket-firing fighters. Aeroplane **83,** 476.
U. S. A.'s leading military aircraft. Aviation Week **56,** 161 (Feb. 25).
Vought F7U Cutlass. Aero Dig. **64,** 26 (Jan.).
With USAF's "big boys" in the air. Western Aviation **32,** 9 (June).
X-2 rocket plane groomed for tests. Aviation Week **57,** 70 (Aug. 4).
X-5 shows how it does it. Aviation Week **56,** 15 (Apr. 21).
YB-52 makes first flight at Seattle. Aviation Week **56,** 14 (Apr. 21).
2 new F-84Fs. Aviation Week **56,** 16 (Apr. 7).

1953

H. S. Baer, Jr., 100 series: first U. S. supersonic fighters. Am. Aviation **17,** 24 (Aug. 3).
W. J. Coughlin, F-100 passes Mach 1 in transonic dives. Aviation Week **59,** 12 (Oct. 26).
M. L. Everhart, Convair Sea Dart flies. Aero Dig. **67,** 20 (Sept.).
J. Fricker, Flying the Lockheed T-33. Aeroplane **85,** 225.
R. B. Hotz, Douglas Skyrocket reaches Mach 2.01. Aviation Week **59,** 13 (Nov. 30).
R. B. Hotz, Mach 2 problem: violent controls. Aviation Week **59,** 15 (Dec. 28).

A. W. Jessup, F-86F is "top" fighter-bomber. Aviation Week **59,** 21 (Oct. 19).
C. L. Johnson, Airplane configurations for high speed flight. SAE M. P., Los Angeles (Oct.).
H. F. King, North American F-86. Flight **63,** 136.
G. F. McLaughlin, F-100 Super Sabre. Aero Dig. **67,** 17 (Nov.).
A. McSurely, Cessna jet. Aviation Week **58,** 15 (Jan. 12).
A. McSurely, Jets, copters have field day at Air Show. Aviation Week **59,** 11 (Sept. 14).
J. A. O'Malley and R. J. Woods, Design analysis: Bell X-5. Aero Dig. **67,** 28 (Aug.)
T. C. Pitts, Building the Stratojet. Aviation Age **19,** 24 (Feb.).
R. Rice, Evolution of the F-86 Sabre jet fighter. Automotive Inds. **108,** 45 (Apr. 15).
R. M. Robbins and W. H. Cook, Boeing B-47 Stratojet. Interavia **8,** 32.
E. G. Stout, High-speed water-based aircraft. Abstract: SAE Journal **61,** 17 (Mar.).
B-47 workout. Aviation Week **58,** 17 (Apr. 27).
B-47B tanker. Aviation Week **59,** 102 (Sept. 14).
B-57 shows off. Aviation Week **59,** 17 (Aug. 31).
Cessna twin-jet trainer design wins competition. Aviation Age **19,** 73 (Feb.).
Cessna wins USAF trainer competition. Am. Aviation **16,** 41 (Jan. 19).
Convair F-102 makes first flight. Am. Aviation **17,** 17 (Nov. 9).
Convair launches delta seaplane fighter at San Diego. Western Aviation **33,** 9 (Jan.).
Convair Sea-Dart. Aeroplane **85,** 190; Am. Aviation **16,** 19 (Jan. 5).
Cougar closeup. Aviation Week **58,** 17 (Feb. 16).
Details of new turboprop C-130. Aviation Week **58,** 14 (Feb. 23).
Douglas jet bomber tries its wings. Aviation Week **58,** 9 (Jan. 5).
Douglas Skyray viewed close up. Aviation Week **59,** 17 (Oct. 26).
Douglas X-3. Aero Dig. **67,** 20 (Dec.).
First turboprop light aircraft. Shell Aviation News No. 175, 17 (Jan.).
F-100 supersonic in level flight. Am. Aviation **17,** 19 (June 22).
F-100, F4D battle for top speed laurels. Aviation Week **59,** 14 (Nov. 9).
Inside details of Lockheed F-94C interceptor. Aviation Week **59,** 19 (Nov. 23).
Lockheed XF-104 fighter. Aeroplane **25,** 494.
Loss of the Bell X-2. Aeroplane **84,** 650.
More about the super Sabre. Aeroplane **85,** 624.
NACA takes over X-3 testing program. Aviation Week **59,** 13 (Nov. 23).
New B-47s. Aviation Week **59,** 21 (Aug. 31).
New F86-H Sabre. Aviation Week **58,** 9 (May 18).
North American XF-100. Aeroplane **84,** 821.
Research and development progress. Development of a jet bomber. Aviation Age **19,** 151 (June).
Ryan reveals jet trainer design. Aviation Week **58,** 19 (May 25).
Sabre successor. Aeroplane **85,** 592.
Stratojets in the United Kingdom. Aeroplane **85,** 49.
Supersonic X-1A begins tests. Aviation Week **58,** 18 (Apr. 6).
The Douglas X-3. Aeroplane **84,** 594.
The North American Sabre. Aeroplane **85,** 20.
Turboprop C-130: the wraps come off. Am. Aviation **16,** 17 (Mar. 2).
U. S. military aircraft. Aviation Week **58,** 220 (Mar. 2).
YF-100 records. Aviation Week **59,** 16 (Nov. 2).
14th annual directory of military planes. Aero Dig. **66,** 18 (Mar.).

215.2 British Military Aircraft

1950

D. A. Anderton, Avro shows second delta research craft. Aviation Week **53,** 20 (Oct. 9).
D. A. Anderton, Boulton Paul's transonic triangle. Aviation Week **53,** 19 (Nov. 27).
D. A. Anderton, Meteor PV armed for infantry support. Aviation Week **53,** 27 (Oct. 16).
W. F. Bradley, New engines and planes at British aero display. Automotive Inds. **103,** 49 (Oct. 1).
F. R. Brewster, SBAC show stars turbine craft. Aviation Week **53,** 42 (Nov. 20).
A Vampire for two. Aeroplane **79,** 485.
Ashton reports for altitude duty. Aviation Week **53,** 42 (Nov. 20).

Australia builds British designs. Aviation Week **53,** 14 (Aug. 28).
Australia's first homegrown jet. Aviation Week **53,** 31 (Dec. 4).
Beauty on the wing. Aeroplane **81,** 244.
Britain puts new planes on view. Aviation Week **53,** 9 (Oct. 2).
British unveil new night fighter. Aviation Week **53,** 15 (July 10).
Canadian jet fighter. Mech. Eng. **72,** 781.
Canberra 2, by English Electric. Aviation Week **53,** 32 (Oct. 30).
de Havilland D. H. 115 turbojet trainer. Flight **58,** 462.
Equipment of the Royal Air Force. Aeroplane **79,** 13.
For high-speed research. Aeroplane **79,** 302.
"Meteor" night fighter. Aero Dig. **61,** 65 (Aug.).
Military aircraft at the show. Aeroplane **79,** 302.
Research aircraft. Engineering **170,** 468.
The Avro Ashton. Aeroplane **79,** 422.
Vickers Supermarine 535 fighter bows in. Aviation Week **53,** 18 (Sept. 8).

1951

D. A. Anderton, New developments seen at SBAC display. Aviation Week **55,** 14 (Sept. 17).
W. F. Bradley, Latest British aircraft and engines at Farnborough show. Automotive Inds. **105,** 42 (Oct. 15).
D. D. Dempster, Flying the Meteor 8. Aeroplane **80,** 565.
D. Desoutter, Prototype air power. Aviation Age **16,** 25 (Oct.).
J. Isaacs, From Spitfire to Swift. Aeroplane **81,** 188.
H. F. King, Fighting breed; forty years of Sopwith and Hawker aircraft. Flight **60,** 677.
R. McLarren, The Canberra. Aero Dig. **62,** 17 (Apr.).
"Polygon," Jet trainers for the R. A. F. Aeroplane **81,** 521.
R. G. Worcester, Nine new designs to show at Farnborough. Am. Aviation **15,** 22 (Sept. 3).
A Boulton Paul project. Aeroplane **81,** 241.
A Delta at Dunsfold. Aeroplane **81,** 145.
A new jet for the R. A. F. Aeroplane **81,** 117.
A new Vampire. Aeroplane **80,** 65.
AF studies Canberra first hand. Aviation Week **54,** 14 (Mar. 5).
Age of the triangle. Aviation Age **16,** 15 (Sept.).
All-weather fighter aircraft. Engineering **172,** 512.
Aviation Week design study: Canberra Mk 2. Aviation Week **55,** 44 (Aug. 27).
Aviation Week design study: Hawker P. 1052. Aviation Week **54,** 34 (June 11).
Aviation Week design study: Supermarine 535. Aviation Week **54,** 32 (May 7).
Avro 707A. Aviation Week **55,** 27 (Sept. 3).
Avro's new delta. Aeroplane **81,** 125.
Britain's first four-jet bomber in production. Aviation Week **54,** 15 (June 4).
Britain's triple-threat jet. Aviation Week **55,** 33 (Nov. 12).
Britain's turbine aircraft: their development and present status. Flight **59,** 553.
British jet-propelled flying-boat tested. Science News Letter **59,** 27.
British launch new delta-wing fighter. Aviation Week **55,** 15 (Dec. 10).
Canberra across the Atlantic. Aeroplane **80,** 223.
CF-100 readied for trans-Atlantic test. Aviation Week **54,** 14 (Apr. 9).
Concerning the Canberra. Aeroplane **81,** 246.
Delta-wing progress. Aeroplane **81,** 178.
English Electric Canberra. Aeronautics **24,** 40 (Apr.).
Fairey delta-wing aircraft. Engineering **171,** 474.
Fairey's delta research F. D. 1 makes first flight. Aviation Week **54,** 16 (Mar. 26).
First flight for the Swift. Aeroplane **81,** 175.
Flying at Farnborough. Shell Aviation News No. 160, 4 (Oct.).
Flying display of British aircraft. Engineering **172,** 342, 353 and 391.
Four-engine jet-propelled heavy bomber. Engineering **171,** 625.
Four-jet British bomber now in production. Aviation Age **16,** 29 (July)
Future of the Short S. A. 4. Aeroplane **81,** 658.
Gloster G. A. 5 delta-wing. Flight **60,** 712.
Gloster Meteor 8. Flight **59,** 358.
Gloster's delta fighter. Aeroplane **81,** 718.
Jet arrival. Aeroplane **80,** 761.
Meteor 8—its genesis and structure. Aeroplane **80,** 685.
Meteor 8 performance. Aeroplane **80,** 368.

292892—54——7

Meteorific versatility. Aeroplane **81**, 242.
Naming our first jet bomber. Aeroplane **80**, 96.
Naval aircraft design. Aeroplane **80**, 407.
New aircraft at Farnborough. Aeroplane **81**, 384.
New twin-engine delta-wing fighter aircraft. Engineering **172**, 766.
Polar fighter. Aeroplane **80**, 41.
Royal Navy drafts the Fairey 17. Aviation Week **54**, 28 (Mar. 5).
SBAC display flying. Aeroplane **81**, 381.
Short's new bomber. Aeroplane **81**, 202.
Showing their paces. Aeroplane **81**, 394.
Side-by-side high-speed trainer. Aeroplane **81**, 16.
The Fairey F. D. 1. Aeroplane **80**, 340 and 343.
The Fairey F. D. 1 research aircraft. Engineer **191**, 382.
The SBAC flying display and exhibition. Engineer **192**, 341 and 372.
The Supermarine Swift. Aeroplane **80**, 590.
The Vickers "660" four-jet bomber. Engineer **191**, 687.
Third British delta wing makes first flight. Aviation Age **15**, 10 (May).

1952

D. A. Anderton, SBAC design details. Aviation Week **57**, 32 (Oct. 13).
D. A. Anderton, Why British push the delta wing design. Aviation Week **57**, 22 (Sept. 22).
D. A. Anderton, Why Gloster gave Javelin a delta wing. Aviation Week **57**, 21 (Oct. 20).
W. F. Bradley, Britain's new military and civilian planes. Automotive Inds. **107**, 34 (Oct. 15).
D. Desoutter, Farnborough sets the pace. Aviation Age **18**, 33 (Nov.).
D. L. Ellis, Concerning the Canberra. Shell Aviation News No. 173, 9 (Nov.).
W. Green, Avro delta. Can. Aviation **25**, 38 (Nov.),
W. Green, New British aircraft: combat planes. Ordnance **36**, 761.
R. B. Hotz, RAF transonic deltas star at SBAC show. Aviation Week **57**, 12 (Sept. 8).
N. McKitterick, RAF vs. MiG. Aviation Week **56**, 16 (Apr. 14).
R. G. Worcester, Farnborough: the wraps come off the newest. Am. Aviation **16**, 22 (Aug. 18).
A Delta for the R. A. F. Aeroplane **82**, 712.
A double for Britain. Aeroplane **83**, 350.
A new research aircraft. Aeroplane **83**, 769.
All-weather jet aircraft in service. Aeroplane **82**, 235.
British military aircraft. Aeroplane **83**, 358.
Camera reveals British design details at SBAC display. Aviation Week **57**, 30 (Oct. 13).
de Havilland D.H.113 Vampire night fighter. de Havilland Gazette No. 68, 43 (Apr.).
Delta for bombing. Aeroplane **83**, 420.
Delta with a tail. Aeroplane **82**, 60.
Details of Australia's first jet plane. Aviation Week **56**, 34 (Jan. 7).
D.H.110: study of a fighter's evolution. Aviation Week **57**, 21 (Sept. 15).
English Electric Canberra. Flight **62**, 642.
English Electric Canberra B-2 twin-engined turbojet bomber. Flight **61**, 71.
English Electric Canberra twin-engined turbojet bomber. Am. Helicopter **26**, 13 (May).
Farnborough review. Flight **62**, 306 and 353.
First report from Farnborough. Aeroplane **83**, 342.
First thoughts on Farnborough. Interavia **7**, 579.
Flying display of British aircraft. Engineering **174**, 309 and 346.
Leading foreign aircraft. Aviation Week **56**, 172 (Feb. 25).
Loss of the Valiant. Aeroplane **82**, 58.
Military newcomers surveyed. Aeroplane **83**, 389.
Military types aloft. Aeroplane **83**, 384.
New data released on Fairey Gannet. Aviation Week **56**, 25 (Apr. 7).
New jets make their bow at Farnborough. Am. Aviation **16**, 17 (Sept. 15).
News from Hatfield. Aeroplane **83**, 233.
News from Kingston. Aeroplane **83**, 795.
Performance of "Vampire" night fighter aircraft. Engineering **173**, 635.
SBAC stars. Aviation Week **57**, 18 (Aug. 18).
Short SA-4 four-engined turbojet bomber. Aeronautics **26**, 33 (Mar.).

Some aspects of the Gannet. Aeroplane **82**, 45.
Specifications of aircraft and engines—foreign military and civil aircraft. Aviation Week **56**, 152 (Feb. 25).
Super priority lightning strikes. Aviation Week **56**, 17 (June 16).
The first Canberra squadron. Aeroplane **82**, 65.
The night-fighting Vampire. Aeroplane **82**, 156.
The SBAC flying display and static exhibition. Engineer **194**, 325, 355 and 376.
The Vampire 10 night fighter. Automotive Inds. **106**, 50 (June 1).
Two new British all-weather fighters. Aviation Age **17**, 24 (Jan.).
Valiant No. 2. Aeroplane **82**, 446.
Vickers-Supermarine Swift. Interavia **7**, 92.
Vickers-Supermarine Swift single-engined turbojet fighter. Aeronautics **25**, 26 (Jan.).

1953

D. A. Anderton, Avro Vulcan: evolution of a delta bomber. Aviation Week **58**, 28 (May 4).
D. A. Anderton, Crescent-wing A-bomber analyzed. Aviation Week **59**, 28 (Nov. 9).
W. F. Bradley, New British planes reach production stage. Automotive Inds. **109**, 60 (Oct. 1).
D. M. Desoutter, British fly a crescent wing. Aviation Age **19**, 21 (Feb.).
D. M. Desoutter, The bombers of England. Aeronautics **28**, 32 (Feb.).
N. McKitterick, RAF picks new Swift F.4 over Hunter. Aviation Week **58**, 18 (June 29).
J. Quill, Sires of the Swift. Flight **64**, 461 (Oct.).
P. Scott, Design analysis of the Avro Vulcan. Aviation Age **20**, 24 (Oct.).
R. S. Stafford, Our latest four jet bomber. Aeroplane **84**, 6.
Avro Canada's Omega. Aeroplane **84**, 568.
Background to the Australian Sabre. Aeroplane **85**, 286.
"Crescent" wing bomber aircraft. Engineering **175**, 21.
Developing a naval jet fighter. Aeroplane **84**, 767.
Farnborough preview. Aeroplane **85**, 287.
Featherweight fighter. Aviation Age **20**, 26 (July).
First delta-wing trainer flies. Aviation Week **59**, 14 (July 20).
First flight for crescent-wing bomber. Am. Aviation **16**, 58 (Jan. 19).
First impressions from the show. Aeroplane **85**, 363.
Foreign military and civil aircraft. Aviation Week **58**, 236 (Mar. 2).
Gloster Javelin. Flight **63**, 529.
Military and naval aircraft at Farnborough. Aeroplane **85**, 407.
Newest Swift fighter makes debut. Aviation Week **59**, 16 (July 20).
New Handley Page crescent-wing jet bomber. Aviation Week **58**, 13 (Jan. 5).
New Swift tested. Aviation Week **58**, 17 (June 8).
New version. Am. Aviation **16**, 60 (Jan. 5).
Olympus engines for the Vulcan. Aeroplane **84**, 165.
Sweeping research. Aeroplane **84**, 223.
The aircraft industry's display at Farnborough. Engineering **176**, 330, 374, and 405.
The latest Vampire trainer. Flight **63**, 578.
The SBAC flying display and static exhibition. Engineer **196**, 307, 339, and 373.
The Short "S. B. 15" adjustable swept wing research aircraft. Engineer **195**, 281.
Three-way guide to British aircraft. Aeronautics **29**, 54 (Sept.).
Views of the Victor. Aeroplane **85**, 69.

215.3 Russian Military Aircraft

1950

W. Green, Swept wing jets spearhead Russian aviation. Can. Aviation **23**, 14 (Aug.).
A. W. Jessup, Report from Korea on the MiG. Aviation Week **53**, 15 (Dec. 11).
Commies in profile. Air Trails **35**, 19 (Oct.).
MG–9 turbojet fighter, USSR. Interservices Aircraft Recognition Journal **4**, 207 (July).
Russian jets in Korea. Aeroplane **79**, 443.
Soviet air power. Am. Helicopter **20**, 8 (Nov.).

1951

D. Desoutter, New jets of the Soviets. Aviation Age **15**, 8 (Feb.).
C. H. Goodlin, Evolution of Russia's fighters. Aviation Age **16**, 15 (Aug.).

C. H. Goodlin, The La-17. Aviation Age **15**, 21 (May).
C. H. Goodlin, The MiG-15. Aviation Age **15**, 21 (Feb.).
W. Green and R. Cross, Russia's jet aircraft. Ordnance **35**, 287.
M. I. Gurevich, I designed the MiG-15. Aero Dig. **63**, 17 (July).
A. W. Jessup, New MiG threat. Aviation Week **55**, 15 (Dec. 24).
A. W. Jessup, Red pilots sharpen skill in Korea. Aviation Week **55**, 11 (Dec. 17).
A. W. Jessup, Russians can make good planes. Aviation Week **54**, 15 (Feb. 19).
F. G. Swanborough, Aviation in Russia. Aeroplane **80**, 295.
F. G. Swanborough, Russian aircraft review. Aeroplane **80**, 349.
R. G. Worcester, How Russia's MiG-15 compares with F-86. Am. Aviation **14**, 24 (Feb. 19).
Design detail: Russia's MiG-15. Aviation Week **54**, 32 (Apr. 2).
Designing a Russian jet fighter. Aeroplane **81**, 266.
Gaspodin Zhigarev's TU-10 attack bomber. Air Trails **37**, 26 (Nov.).
It's that MiG again. Aeroplane **80**, 37.
Jet fighters. Mech. Eng. **73**, 505.
Jets of the Soviets. Aeronautics **24**, 41 (Feb.).
More about the MiG-15. Aeroplane **80**, 4.
Red air inventory. Aviation Age **16**, 40 and 44 (July).
Red fighters. Aeroplane **80**, 34.
Russian jets in action. Aeroplane **80**, 65.
Russian planes. Aviation Week **54**, 16 (Jan. 15).
Russia's A-bomber (TuG-75). Flying **49**, 11 (Dec.).
Russia's designers. Aviation Age **16**, 6 (July).
The derivation of the MiGs. Aeroplane **81**, 687.
The Russian twin-jet bomber. Aeroplane **81**, 458.
The Sabre and the MiG. Aeroplane **81**, 267.
The terrible twins. Aeroplane **80**, 65.
The Tu-10. Aviation Age **16**, 38 (July).
Tu-10. Aviation Age **16**, 3 (Dec.).
USSR military aircraft. Aviation Week **54**, 176 (Feb. 26).

1952

W. Green, The Soviet aircraft industry. Ordnance **37**, 429.
B. S. Lee, Secrets of Russia's MiG revealed. Aviation Week **57**, 10 (July 7).
N. McKitterick, RAF vs. MiG. Aviation Week **56**, 16 (Apr. 14).
I. Morton, Russia's jet warplanes. Automotive Inds. **106**, 53 (Apr. 1).
A new Russian fighter. Aeroplane **82**, 347.
Il-26 twin-engined turbojet bomber aircraft. Can. Aviation **25**, 29 (May).
Investigating the structure of the MiG-15. Aeroplane **83**, 160.
MiG-15. Product Eng. **23**, 194 (Aug.).
Russia's jet progress. Mech. Eng. **74**, 398.
Russia's new medium jet bomber. Aviation Age **18**, 33 (Oct.).
Russian or German? Aeroplane **83**, 679.
Russians push rocket fighter program. Am. Aviation **16**, 2 (Nov. 10).
Russians test new medium jet bomber. Am. Aviation **16**, 17 (Sept. 29).
Tu 75 six-engined turboprop swept-wing bomber aircraft. Interavia **7**, 138.
Type 150 twin-engined turbojet swept-wing bomber. Interavia **7**, 280.

1953

D. A. Anderton, Red MiG-15: AF test pilots analyze captive fighter. Aviation Week **59**, 16 (Nov. 30).
A. Vandyk, Technical data on MiG-15 revealed. Am. Aviation **17** (Oct. 12).
A. Vandyk, Turboprops power long range Red bombers. Am. Aviation **17**, 27 (Aug. 31).
A. Vandyk, What's in the air behind the Iron Curtain? Am. Aviation **16**, 24 (Feb. 16).
Analysis shows MiG limitations. Aviation Week **58**, 38 (June 15).
Curtain is raised on Red Ilyushin jets. Aviation Week **58**, 30 (Mar. 30).
Close-ups of a captured MiG 15 fighter. Aeroplane **85**, 656.
Fugitive MiG close-up shows new details. Aviation Week **58**, 17 (Apr. 13).
Fugitive MiG heads for U. S. test center. Aviation Week **59**, 13 (Sept. 28).
Red air strength vs. U. S. A. F. Aviation Age **20**, 6 (Sept.).
Russian light bomber, delta fighter. Am. Aviation **17**, 55 (Dec. 21).

215.4 Military Aircraft of Other Nations

1950

D. A. Anderton, Pulqui II: Newest Argentine jet plane. Aviation Week **53,** 21 (Aug. 21).
L. Bresing, SAAB-29 turbojet fighter. SAAB Sonics No. 10, 2 (Apr./June).
Fiat G.80: First Italian turbojet plane. Aviation Week **53,** 28 (July 31).
Junkers Ju.287 turbojet swept-forward-wing bomber. Interavia **5,** 380.
Saab 29 turbojet fighter, Sweden. Aviation Age **14,** 24 (Sept.).

1951

W. Green, Novel French aircraft. Ordnance **36,** 394.
R. Hazeltine, French show: Many designs, few planes. Aviation Week **55,** 17 (July 9).
B. R. Olow, Flight-testing the Saab J29. Interavia **6,** 376.
I. Stone, Fokker S.14 jet trainer takes to the air. Aviation Week **55,** 29 (July 30).
J. H. Winchester, Swedish Hornet. Aviation Age **16,** 23 (Aug.).
D. H. Wood, Two new aircraft for French navy. Aviation Week **55,** 30 (Aug. 27).
A new French fighter. Aeroplane **80,** 164 and 178.
Breguet 960 Vultur turboprop/turbojet fighter. Les Ailes **31,** 8 (July 21).
Developments across the Channel. Aeroplane **81,** 457.
Fokker S.14 single-engined turbojet transition trainer. Interavia **6,** 510.
Holland's newest trainer. Aeroplane **81,** 69.
Italy's new trainer. Aeroplane **81,** 814.
Latest French aircraft designs. Am. Aviation **15,** 24 (Nov. 26).
Round the aircraft stands in the Paris aero show. Aeroplane **80,** 764.
Saab J29 single-engined turbojet fighter. Interavia **6,** 372.
Strange design, French SE2410 Grognard. Aviation Week **54,** 36 (Apr. 16).
Sweden's swept-wing fighter. Aeroplane **81,** 581.
The first Italian jet aircraft. Aeroplane **81,** 782.
Two French first flights. Aeroplane **80,** 372.

1952

D. A. Anderton, Exclusive report on M. D. 452 Mystere. Aviation Week **57,** 21 (Nov. 10).
W. Green, Leduc-021 single-seat ramjet interceptor. Can. Aviation **25,** 58 (July).
R. Hawthorne, Fiat G.80 design development. Aviation Age **18,** 30 (Sept.).
E. Heinkel, Heinkel HE162 turbojet fighter. Interavia **7,** 372.
H. E. Quenzer, Family resemblance in jet fighters. Interavia **7,** 388.
P. Silferberg, Saab J29 single engine turbojet fighter aircraft. Saab Sonics No. 16, 14 (1951/1952).
A. Vandyk, New Fokkers may hit U. S. trainer market. Am. Aviation **16,** 18 (Oct. 13).
Aircraft production in Italy. Aeroplane **82,** 628.
Anglo-Swedish delta combination. Aeroplane **83,** 349.
A. S. cooperation. Aeroplane **82,** 232.
Fiat discloses details of turbojet G80. Aviation Week **56,** 21 (Jan. 14).
Fiat G80-1. Aeroplane **82,** 11.
Fiat G80 follows conventional lines. Aviation Week **56,** 28 (Mar. 17).
Fiat G80 single-engined turbojet trainer-fighter aircraft. Interavia **7,** 275.
Fiat jet plane has top speed of 550 mph. Automotive Inds. **106,** 32 (Jan. 15).
First flights and prototypes. Aeroplane **83,** 651.
French fighter. Aeroplane **82,** 122.
French fly Sipa 200 jet prototype. Am. Aviation **16,** 75 (Dec. 8).
French jet trainer awaits test. Aviation Week **57,** 28 (Aug. 25).
How good is France's Mystere? Aviation Week **56,** 14 (Mar. 17).
How Saab builds the J-29 Flying Barrel. Aviation Week **57,** 32 (Aug. 11).
Italian jet plane aims at economy. Aviation Week **57,** 25 (Dec. 8).
Italian jet-propelled training aircraft. Engineering **173,** 225.
Leduc-021 ramjet interceptor. Aircraft **30,** 20 (Aug.).
Leduc-021 single-engined ramjet interceptor fighter. Air Pictorial **14,** 165 (June).
New Swedish fighter makes first flight. Am. Aviation **16,** 59 (Nov. 24); Aviation Week **57,** 19 (Nov. 24).
Saab-32 Lansen. Interavia **7,** 691.
SO 6025 jet/rocket fighter tested. Aviation Week **57,** 18 (Aug. 25).
Sweden runs tests on baby research craft. Am. Aviation **16,** 75 (Sept. 15).

Sweden's first delta. Aviation Age **17**, 3 (Feb.).
Sweden's Saab 210 Draken jet delta takes off. Aviation Week **56**, 33 (Feb. 4).
The Fiat G80 turbojet fighter-trainer. Aircraft Eng. **24**, 72.
The Pulqui II crashes. Aeroplane **83**, 535.

1953

W. F. Bradley, Latest European aviation developments. Automotive Inds. **109**, 60 (Aug. 1).
R. Hazeltine, French air buildup hangs on U. S. aid. Aviation Week **58**, 264 (Mar. 2).
R. Hazeltine, French announce Mach 1.5 interceptor. Aviation Week **58**, 15 (Mar. 16).
R. Hazeltine, Latest allied jets vie at Paris show. Aviation Week **59**, 16 (July 13).
J. M. Riche, France's Leduc ramjet completing tests. Am. Aviation **17**, 32 (Dec. 7).
J. H. Stevens, Towards greater flexibility—Le Baradour. Aeroplane **86**, 11.
A light twin-jet trainer. Aeroplane **84**, 198.
First design details of Grognard. Aviation Week **59**, 28 (Nov. 2).
French delta shown at Paris. Aviation Week **59**, 39 (Aug. 3).
French fighter takes off from dolly. Aviation Week **59**, 29 (July 27).
French jet fighter. Aviation Week **58**, 9 (Jan. 26).
French show new planes at Paris. Aviation Week **59**, 9 (July 6).
From idea to attack aircraft; How the Saab-32 Lansen was created. SAAB Sonics No. 19, 2.
Hors d'oeuvres at LeBourget. Aeroplane **85**, 73.
Italians test new jet fighter prototype. Aviation Week **58**, 9 (April 27).
Latest styles in French aircraft. Aviation Week **58**, 9 (June 29).
Mach 2 forecast for Leduc 022. Aviation Week **59**, 15 (Dec. 7).
Marcel Dassault activities. Aeroplane **85**, 540.
Morane-Saulnier M. S. 755. Flight **63**, 44.
New French jet. Aviation Week **59**, 7 (July 6).
New look at Swedish attack jet. Aviation Week **58**, 13 (June 29).
New types in the air at LeBourget. Aeroplane **85**, 37.
The Paris international air salon. Engineering **176**, 42 and 73.
The SO 4050 Vautour. Aeroplane **85**, 795.
USAF evaluates two French jet trainers. Am. Aviation **17**, 75 (July 6).

215.5 Civilian or Transport Aircraft

1950

T. Ashley, Turboprop Luscombe. Southern Flight **34**, 16 (Oct.).
M. G. Beard, Delay in commercial jet transport. Air Affairs **3**, 569.
F. R. Brewster, Comet coming. Aviation Week **53**, 41 (Dec. 25).
J. C. Floyd, Development of the Avro C102 jetliner. Aircraft Eng. **22**, 228.
J. C. Floyd, Features of the jetliner. Abstract: SAE Journal **58**, 35 (June).
H. Hertel, Long-range commercial transport aircraft with high subsonic speeds. Interavia **5**, 463.
A. McSurely, Boeing offers new turboprop feederliner. Aviation Week **53**, 15 (Nov. 20).
A new version of the Comet. Aeroplane **79**, 473.
Burnelli CB–8 turboprop "Lifting Body" transport. Aviation Operations **14**, 22 (Aug.).
Cockpit of the Comet. Aero Dig. **61**, 88 (Aug.).
de Havilland Comet turbojet transport. Eng. J. (Can.) **33**, 873.
Jetliner test progress. Mech. Eng. **72**, 652.
Six-jet flying boat projected. Aviation Week **53**, 20 (July 10).
Turbo liners. Aviation Week **53**, 15 (July 24).
Vickers Viscount 700 turboprop transport. Flight **58**, 281.
Viscount to enter BEA service in 1953. Aviation Week **53**, 21 (Nov. 6).

1951

E. H. Atkin, Turbojet aircraft with special reference to the jetliner. Mech. Eng. **73**, 791.
W. F. Bradley, Largest flying boat nearly completed in England. Automotive Inds. **105**, 40 (Oct. 1).
J. C. Floyd, The Avro C–102 Jetliner. SAE Quart. Trans. **5**, 217.
J. A. Herlihy, United's evaluation of turbine transport. Am. Aviation **14**, 25 (Jan. 8).

H. L. Hibbard, Lockheed's views on jet transports. Am. Aviation **15,** 20 (Oct. 1).
R. T. Holland and E. L. Auyer, Practical aspects of turbojets in transport aircraft. Aeronaut. Eng. Rev. **10,** 32 (Mar.).
H. Knowler, The flying boat with special reference to the "Princess." Mech. Eng. **73,** 799.
R. C. Loomis and E. D. Shannon, Flying turboprops in the Turboliner and XP5Y-1. Abstract: SAE Journal **59,** 35 (Oct.).
A. McSurely, We can catch British jets, group says. Aviation Week **55,** 51 (July 30).
E. W. Pelnes, The development of transport aircraft. Z. Ver. deut. Ing. **93,** 973 and 1063.
W. D. Perreault, Turbine transport tests coming soon. Am. Aviation **14,** 35 (Apr. 16).
H. Povey, Constructing the de Havilland "Comet." Engineering **171,** 605 and 639.
H. Povey, de Havilland D.H.106 Comet four-engined turbojet transport. Aeroplane **80,** 510; Flight **59,** 500; and Aircraft Production **13,** 134 and 178.
H. Povey, Planning and production methods used in the construction of the de Havilland Comet. J. Roy. Aeronaut. Soc. **55,** 459.
T. M. Self, First U. S. turboprop transport flies. Aviation Week **54,** 15 (Jan. 8).
R. D. Speas, Air transport 1949–1950, with a view to the future. Abstract: SAE Journal **59,** 41 (May).
I. Stone, Super Connie re-engineered for cargo. Aviation Week **55,** 20 (Dec. 24).
W. G. Townley, Turbojet transports with special reference to the Comet. Mech. Eng. **73,** 787.
M. D. Warshaw, Plan for jet age travel uses 3 types of craft. Abstract: SAE Journal **59,** 69 (Mar.).
H. R. Watson, Propeller-turbine aircraft with special reference to the Apollo. Mech. Eng. **73,** 795.
R. G. Worcester, Boeing C-97 Stratofreighter turboprop transport. Am. Aviation **14,** 21 (Jan. 8).
A long-range version of the DH Comet. Shell Aviation News No. 151, 5 (Jan.).
A Nene-powered Bretagne. Aeroplane **80,** 98.
About the jetliner. Aeroplane **80,** 35.
Ad hoc: an account of some of the research and development testing which preceded the first flight of the Comet. de Havilland Gazette No. 61, 16 (Feb.).
American views on commercial jets. Aeroplane **81,** 591.
America's only turboprop transport holds high interest of the industry. Western Flying **31,** 24 (May).
Another step nearer the sea. Aeroplane **81,** 605 and 615.
BOAC Comet progress. Aeroplane **81,** 634.
BOAC may fly first jet carriers in U. S. Aviation Week **55,** 56 (Dec. 24).
Britain's turboprop flying boat revealed. Aviation Week **55,** 22 (Dec. 10).
Civil turbine transport riddle. Aero Dig. **63,** 17 (Dec.).
Comet performances. Aeroplane **81,** 61.
Comet proving flights. Shell Aviation News No. 159, 15 (Sept.).
Comet readied for R-R Avon engines. Aviation Week **54,** 33 (June 4).
Comets for Brazil. Aeroplane **80,** 312.
Comets in quantity. Aeroplane **80,** 476.
Comet's overseas trials. Aeroplane **80,** 591.
Convair Triplets: 240, Turboliner, 340. Aviation Week **54,** 21 (Mar. 12).
Convair turbo-liner. Shell Aviation News No. 153, 22 (Mar.).
de Havilland Comet development flight. Shell Aviation News No. 156, 4 (June).
Douglas plans turboprop transport. Aviation Age **15,** 19 (Mar.).
First details on U. S. jet transport plans. Aviation Week **54,** 19 (June 18).
First turboprop freight service. Aviation Week **55,** 17 (Sept. 3).
Fouga flights and prospects. Aeroplane **81,** 575.
France starts jet transport study. Aviation Week **54,** 33 (Feb. 12).
Gas-turbine airliner. Mech. Eng. **73,** 231.
Gas turbine-powered aircraft. Engineer **191,** 236.
Initial flight. Aeronaut. Eng. Rev. **10,** 25 (Mar.)
Jet aircraft in operation. Aeroplane **81,** 644.
Jet airliner fleet. Mech. Eng. **73,** 661.
Jet transports that have flown. Am. Aviation **15,** 39 (Aug. 20).
Jetliner purchase by AF seen possible. Aviation Week **54,** 16 (Mar. 19).
Lack of research limits foreign jet design. Am. Aviation **15,** 17 (Nov. 12).
Long-range jet airliner. Mech. Eng. **73,** 140.
Navy gives push to turboprop transports. Aviation Week **55,** 47 (Sept. 17).

Novel production processes. Aeroplane **80,** 510.
Pre-flight testing the Comet. Aviation Age **15,** 23 (Apr.).
Some news of the Viscount. Aeroplane **80,** 313.
The Comet's first flight to India. Aeroplane **81,** 473.
The Convair turboliner. Aero Dig. **62,** 15 (Feb.).
The de Havilland Comet. Engineering **171,** 64.
The "Princess" flying-boat. Engineer **192,** 589.
The Saro Princess flying-boat. Shell Aviation News No. 162, 12 (Dec.).
The third Comet flies. Aeroplane **80,** 68.
The turboliner flies. Aeroplane **80,** 35.
The United States and the Comet. Aeroplane **81,** 722.
Trolley ride speeds Comet production. Aviation Week **55,** 41 (Aug. 6).
Turboprop Connie. Aviation Week **55,** 16 (Dec. 24).
U. S. airline pilots to fly jetliner trials. Aviation Week **54,** 45 (Feb. 5).
U. S. checks up on jet airlines. Aviation Week **55,** 14 (Nov. 5).
Winged Darts. Aeroplane **80,** 788.
500 hours flown by BOAC Comets. Shell Aviation News No. 162, 18 (Dec.).

1952

D. A. Anderton, Bristol Britannia nears final assembly. Aviation Week **56,** 21 (Mar. 24).
D. A. Anderton, Lessons taught by turboprop Viscount. Aviation Week **56,** 25 (May 12).
R. E. Bishop, Considerations in designing the Comet. Aeroplane **82,** 514.
R. E. Bishop, De Havilland D.H.106 Comet. De Havilland Gazette No. 69, 67 (June).
M. J. Brennan, Design and development aspects of the Princess. Aircraft Eng. **24,** 326.
M. J. Brennan, The Saunders-Roe Princess flying boat. Aircraft Eng. **24,** 300.
G. L. Christian, First report on Comet hydraulics. Aviation Week **57,** 56 (Dec. 1).
D. Desoutter, Aloft in a Comet. Aviation Age **17,** 33 (Apr.).
G. R. Edwards, Flight experience with Vickers Viscount turbopropeller airliner. SAE Quart. Trans. **6,** 274.
V. Evans, Jet transports, a British-eye view. Pegasus **19,** 11 (Nov.).
W. W. Fox, The turboprop airplane. Skyways **11,** 18 (Oct.).
J. J. Haggerty, Jr., A low cost Comet is coming, figures reveal. Am. Aviation **16,** 15 (June 9).
J. J. Haggerty, Jr., Senate hears jet transport issues aired. Am. Aviation **15,** 15 (May 26).
R. B. Hotz, BOAC says Comets now pay own way. Aviation Week **57,** 83 (Nov. 3).
R. B. Hotz, New jet liners. Aviation Week **57,** 14 (Sept. 29).
R. B. Hotz and N. McKitterick, De Havilland reveals Comet 3 details. Aviation Week **57,** 12 (Oct. 6).
F. S. Hunter, Another super Constellation coming up. Am. Aviation **16,** 18 (Aug. 4).
F. S. Hunter, Arresting gear seen key to jet landings. Am. Aviation **15,** 62 (Apr. 14).
R. R. Kay, Waterbased jet airliners. Automotive Inds. **107,** 48 (Nov. 1).
W. Kroger, New patterns. Aviation Week **56,** 17 (May 12).
D. J. Nolan, Debugging the Turboliner. Abstract: SAE Journal **60,** 28 (Sept.).
W. W. Parrish, Far east by Comet: Smooth, quiet, exciting. Am. Aviation **16,** 26 (Oct. 13).
W. D. Perreault, Boeing buckles down to build U. S. a jet. Am. Aviation **16,** 15 (Oct. 13).
W. D. Perreault, Pan Am wants to talk business on jets. Am. Aviation **15,** 17 (Apr. 14).
W. D. Perreault, Year of decision for U. S. jet transports. Am. Aviation **15,** 15 (Feb. 4).
M. Smith, Flying in the Comet. Aviation Week **56,** 16 (May 5).
J. H. Stevens, Ad hoc air freighter. Aeroplane **83,** 777.
J. H. Stevens, An Italian light jet aircraft. Aeroplane **83,** 256.
R. E. Stockwell, Jet transports—year of decision. Aviation Age **17,** 31 (May).
R. J. Templin, The future of turbine powered transport aircraft. Nat. Research Council (Canada) Aeronat. Lab., Quart. Bull., Rept. No. NAE 1952 (1) (Jan./Mar.).

M. Thomas, Inaugurating the first Comet service. Aeroplane **82,** 512.
A. Vandyk, Turboprop transport progress surges ahead. Am. Aviation **16,** 17 (Sept. 1).
C. T. Wilkins, The "Comet." Engineer **194,** 767.
AA predicts U. S. jet liners in 1958. Aviation Week **56,** 47 (Feb. 18).
ATA issues basic spec. for U. S. jet transport. Am. Aviation **16,** 124 (Oct. 27).
A trinity of turbine transports. Aeronautics **26,** 59 (May).
Allison reports new turboliner progress. Aviation Week **56,** 89 (May 19).
Avon engine Comet makes first flight. Aviation Week **56,** 61 (Mar. 3).
Background to the Britannia. Aeroplane **82,** 698.
BOAC and the Comet. Aeroplane **82,** 542.
BOAC's Bristol 175's. Aeroplane **82,** 89.
Boeing jet liner. Aviation Week **57,** 18 (Dec. 1).
Boeing plans jet transport in 1954. Aviation Week **57,** 7 (Sept. 8).
Bristol "Britannia" air-liner. Engineering **173,** 343.
Bristol "Britannia" propeller turbine air-liner. Engineering **174,** 245 and 257; Engineer **193,** 367.
Bristol Britannia turboprop transport. Flight **62,** 209.
Bristol reveals new data on Britannia. Am. Aviation **15,** 20 (Mar. 31).
Bristol 175 Britannia four-engined turboprop transport aircraft. Flight **61,** 86.
Bristol 175 prospects. Aeroplane **82,** 249.
Britain's first light weight jet. Aeroplane **83,** 232.
Britannia races SBAC deadline. Aviation Week **57,** 30 (Sept. 1).
Britannia turboprop nears completion. Aviation Age **17,** 30 (Apr.).
Canada lab analyzes jet transports. Aviation Week **56,** 30 (June 23).
Civil jet aircraft performance. Aeroplane **82,** 433.
"Comet" air liner, series 2. Engineering **173,** 288.
Comet engineering gamble nears pay off. Aviation Week **56,** 30 (Mar. 10).
Comets for the United States. Aeroplane **83,** 560.
de Havilland "Comet" series 2. Am. Aviation **16,** 36 (Dec. 22).
de Havilland D.H.106 Comet. Interavia **7,** 310.
de Havilland D.H.106 Comet four-engined turbojet transport. Flight **61,** 495.
de Havilland D.H.106 (series 3) Comet. de Havilland Gazette No. 72, 164 (Dec.).
Designer tells of toil behind the Comet. Aviation Week **57,** 20 (Sept. 29).
Douglas ready to build jet transport. Aviation Week **57,** 13 (Aug. 11).
Down the slipway. Aeroplane **83,** 272.
Engineering features of the D.H.106. Aeroplane **82,** 524.
France "cuts tin" for commercial jet. Am. Aviation **16,** 42 (Mar. 30).
French jet transports. Aeroplane **82,** 448.
Funds asked for jet liner tests. Aviation Week **56,** 16 (Jan. 28).
Future plans for the Comet. Aeroplane **83,** 539.
Handley Page jetliner. Am. Aviation **16,** 17 (Oct. 27).
How much U. S. Comet interest? Aviation Week **56,** 16 (May 26).
Hurel Dubois transports. Flight **62,** 676.
Jet airliner service. Mech. Eng. **74,** 231.
Jet forecast. Aviation Week **56,** 45 (June 16).
Jet pleasure plane. Automotive Inds. **106,** 76 (Mar. 15).
Miles Sparrowjet. Aeronautics **27,** 39 (Oct.).
More facts about the Comet 3. Aeroplane **83,** 506.
More on Comet costs. Am. Aviation **16,** 11 (Aug. 18).
New French jet liner studies. Aviation Week **56,** 39 (May 12).
New tanker fleet to service jets. Aviation Week **56,** 58 (Mar. 31).
New turboprop airliners shown. Aviation Week **57,** 9 (Sept. 1).
Our biggest flying-boat. Aeroplane **83,** 354.
Our latest turbine transport. Aeroplane **83,** 243.
PAA signs firm contract for Comet 3. Aviation Week **57,** 13 (Oct. 27).
Passenger impressions in the Comet. Aeroplane **82,** 209.
Progress of the Bristol "Britannia" air-liner. Engineering **174,** 166.
Progress with the Britannia. Shell Aviation News No. 165, 12 (Mar.).
Prototype jet testing pushed by CAA. Am. Aviation **15,** 24 (Feb. 18).
The Canadian order for Viscounts. Aeroplane **83,** 724.
The first Comet service. Aeroplane **82,** 558.
The "Princess" flying boat. Engineering **174,** 289, 371, 429, 495 and 591.
Transport projects and possibilities. Flight **61,** 576.
Turboliner. Flight **62,** 157.
Turboliner nears service test. Aviation Week **57,** 48 (Aug. 11).
Turbo-compound super Connie debut. Aviation Week **57,** 85 (Nov. 3).

U. S. shop-window for the Comet. Aeroplane **82**, 290.
Viscount fast turn-around. Aviation Age **18**, 13 (Aug.).
Viscounts for Australia. Aeroplane **82**, 606.
Where are America's jet transports? Interavia **7**, 312, 446 and 492.
Why not a jet transport seaplane? Western Aviation **32**, 11 (Nov.).

1953

D. A. Anderton, Transport trend hinges on BOAC choice. Aviation Week **59**, 32 (Dec. 14).
M. W. Arnold, Airline point of view on status of the turbine-powered transport in the United States. Aeronaut. Eng. Rev. **12**, 37 (Aug.); Western Aviation **33**, 30 (March).
W. E. Beall, The story behind Project X. Western Aviation **33**, 17 (Feb.).
L. Bréguet, Turbine-powered commercial aircraft. Interavia **8**, 68.
G. L. Christian, RCAF shows off its first Comet. Aviation Week **58**, 18 (June 22).
D. Desoutter, British plan new jet transports. Aviation Age **19**, 6 (March).
D. Desoutter, Europe builds jet light planes. Aviation Age **19**, 114 (May).
D. Desoutter, Three for DC-3. Aviation Age **20**, 50 (Dec.).
G. R. Edwards, The story of the Viscount: The designer's approach. Aeroplane **84**, 369.
R. E. Gillman, The Vickers Viscount 700: Transport pilot's viewpoint. Aeroplane **84**, 405.
R. B. Hotz, AA favors turboprop airliners. Aviation Week **58**, 102 (May 11).
F. S. Hunter, United "flies" jets in planning project. Am. Aviation **16**, 13 (March 30).
C. H. Jackson, Comet I fits smoothly into BOAC operations. Abstract: SAE Journal **61**, 31 (Nov.).
F. B. Lee, Status of the turbine-powered transport in the United States. Aeronaut. Eng. Rev. **12**, 29 (Aug.).
W. Littlewood, Technical trends in air transport. J. Aeronaut. Sci. **20**, 225.
D. O. MacDougall, The Viscount. Shell Aviation News No. 178, 9 (April).
P. C. Masefield, The Vickers Viscount 700: The airline operator's part. Aeroplane **84**, 371.
N. McKitterick, BOAC shops for successor to Comet 3. Aviation Week **58**, 90 (June 22).
N. McKitterick, Britain announces new jetliner. Aviation Week **58**, 16 (Feb. 9).
N. McKitterick, British airlines bid for the Princess. Aviation Week **59**, 92 (Nov. 23).
N. McKitterick, Comet crash. Aviation Week **58**, 17 (May 11).
N. McKitterick, Newer Comets. Aviation Week **58**, 17 (March 30).
N. McKitterick, New wing boosts Comet 2 lift. Aviation Week **59**, 13 (Dec. 7).
N. McKitterick, PanAm reopens Comet contract. Aviation Week **58**, 22 (April 13).
G. F. McLaughlin, Fairchild jet transport design. Aero Dig. **67**, 17 (Dec.).
A. McSurely, Trainer points up paper-to-metal hurdles. Aviation Week **58**, 22 (June 22).
W. D. Perreault, First details of Boeing 707 jet transport. Am. Aviation **17**, 13 (Nov. 23).
W. D. Perreault, U. S. jets: Out of committee, into the shop. Am. Aviation **16**, 13 (March 2).
D. C. Ramsey, Turbine-powered commercial aircraft. Aeronaut. Eng. Rev. **12**, 34 (Aug.).
R. W. Rummel, Jet transport outlook. Skyways **12**, 11 (Sept.).
B. T. Salmon, High speed transport turbojet installation considerations. SAE Pre. No. 85, New York (April 23).
J. Smith, MATS and the gas-turbine transport. Aeronaut. Eng. Rev. **12**, 40 (Aug.).
J. E. Steiner, Design changes affect airplane operating costs. Abstract: SAE Journal **61**, 36 (Oct.).
J. H. Stevens, What's different about a turboprop? Aviation Week **58**, 28 (May 11).
O. Stewart, Evolution and revolution; the Vickers Viscount. Can. Aviation **26**, 36 (April).
H. A. Taylor, The Vickers Viscount. Aeroplane **84**, 400.
R. Willmot, Why TCA bought the Viscount. Aviation Age **19**, 27 (March).
A bigger Viscount. Aeroplane **84**, 190.

ALPA sets jetliner standards. Aviation Week **58**, 20 (April 13).
Avro's delta transport. Aviation Age **20**, 27 (Aug.)
BOAC reveals details of Comet year. Am. Aviation **17**, 74 (June 8).
Boeing jet transport to cost $4 million. Aviation Week **58**, 14 (May 4).
Bristol offers bigger, faster Britannias. Aviation Week **58**, 40 (May 18).
Britannia and Proteus progress. Aeroplane **84**, 180.
Britannia fitted with new Proteus engines. Am. Aviation **17**, 75 (July 20).
Britannia progress report. Aviation Age **19**, 62 (April).
British raising jet transport production. Aviation Week **58**, 46 (April 27).
Comet crashes. Aviation Week **59**, 16 (July 27).
Comet engineering. Flight **63**, 551.
Comet gains. Aviation Week **58**, 88 (June 8).
Comet problems. Aviation Week **58**, 15 (Feb. 9).
De Havilland publishes Comet III costs. Am. Aviation **17**, 80 (Oct. 12).
Delta-wing air-liner project. Engineering **175**, 819.
Details of Fairchild jet transport. Aviation Week **59**, 37 (Dec. 21).
Details of the H. D. 45 jet transport. Aviation Week **58**, 34 (Jan. 12).
First details of Avro Atlantic jetliner. Am. Aviation **17**, 78 (June 22).
First flight of the Comet 2. Aeroplane **85**, 271.
First U. S. jetliner to be world's fastest. Aviation Week **58**, 12 (June 29).
Fokker medium range turboprop. Aviation Age **19**, 30 (April).
Fokker's play for DC-3 market. Aviation Week **58**, 38 (Jan. 5).
Ghost jets in the sky. Aviation Age **19**, 6 (May).
Jet transports. Am. Aviation **16**, 45 (April 27).
New French transports tested. Aviation Week **58**, 83 (Feb. 16).
Radical Fairchild jet design revealed. Am. Aviation **17**, 20 (Nov. 23).
Record making in the Viscount. Aeroplane **84**, 139.
Short's aero-isoclinic Sherpa. Aeroplane **85**, 843.
The Avro Atlantic. Aeroplane **84**, 754.
The Avro "Atlantic" delta transport project. Engineer **195**, 859.
The Boeing jet transport. Aeroplane **85**, 35.
The future of the S-R Princess. Aeroplane **85**, 677.
The new Britannias. Aeroplane **84**, 538.
The "Sherpa" research aircraft. Engineering **176**, 749.
The U. S. jet transport scene. Aeroplane **85**, 769.
The Vickers Viscount 700: development background. Aeroplane **84**, 396.
The Vickers Viscount 700; power plant and ancillary gear. Aeroplane **84**, 385.
The Vickers Viscount 700; technical features. Aeroplane **84**, 373.
The new Viscount 800. Aeroplane **84**, 226.
Towards the Comet 3. Aeroplane **85**, 785.
U. K. revives interest in turboprop liners. Aviation Week **59**, 47 (Aug. 24).
U. S. proposals for turbine transports. Aeroplane **84**, 581.
Vickers announces Super Viscount. Aviation Week **58**, 82 (Feb. 16).
Vickers long-range transport. Aeroplane **84**, 163.
Vickers pushes Viscount sales. Aviation Week **58**, 81 (Feb. 16).
Vickers VC-7 may replace BOAC Comets. Am. Aviation **16**, 75 (Feb. 16).
Viscount service. Aviation Week **58**, 76 (May 4).
Viscount trials in Canada. Aeroplane **84**, 218.

215.6 Tactical, Operational, and Navigational Problems

1950

R. R. B. Hoodspith, Jet traffic control. Can. Aviation **23**, 21 (Oct.).
R. D. Kelly, Operating problems of turbine-powered aircraft. Aeronaut. Eng. Rev. **9**, 28 (Oct.).
J. Longhurst, Jets and air traffic control. Aeroplane **79**, 168, 195 and 222.
R. McLarren, CAA and turbine airliners. Aero Dig. **61**, 50 (Aug.).
P. C. Schauer, C. R. Greening, and L. A. Bloom, Jet navigation made easier. Navigation **2**, 246.
Close air support with jets. Naval Aviation News **3** (Aug.).

1951

J. B. Borger and R. W. Blake, Turbine problems in transport operations. Abstract: SAE Journal **59**, 100 (Oct.).
A. J. K. Carline, Still-air range in the stratosphere. Aircraft Eng. **23**, 292.
A. N. Clifton, Transonic problems. Abstract: Flight **60**, 721.
D. A. Davis, Jets and met. Flight **60**, 784.
N. N. Davis and E. M. Beattie, Operational experiences with multi-engine jet aircraft. Shell Aviation News No. 158, 18 (Aug.).

R. E. Hage, Variation in airplane range with wind velocity. Aeronaut. Eng. Rev. **10,** 19 (July).
H. T. Harrison, Some meteorological problems indicated for jet transport operation at 40,000 ft. Aeronaut. Eng. Rev. **10,** 52 (Apr.).
A. M. Jackes, Best climb speed for jet aircraft. Aero Dig. **62,** 24 (Apr.).
E. Järvineva, The steepest angle of climb of jet aeroplanes in unaccelerated flight. Aircraft Eng. **23,** 76.
J. Langston, Practical aspects of high speed navigation. Navigation **2,** 305.
R. B. Maloy, Advent of turbine and Jato affect CAR. Abstract: SAE Journal **59,** 96 (Jan.).
V. Outman and G. V. Graff, Flight characteristics at high Mach numbers. Aircraft Eng. **23,** 139.
W. D. Perreault, Exclusive details of BOAC Comet operations. Am. Aviation **15,** 15 (Dec. 10).
R. D. Speas, Operational aspects of turbojet transports. Aeronaut. Eng. Rev. **10,** 48 (Nov.).
J. M. Venable, Cost analysis of the jetliner. Aviation Age **15,** 24 (Mar.).
K. G. Wilkinson, Some problems of turbine transport operation in Europe. Abstract: Aeroplane **81,** 360; Abstract: J. Roy Aeronaut. Soc. **55,** 678.
CAA delay blocks U. S. test of Comet. Aviation Week **55,** 14 (Nov. 26).
GE tests with B-45 tell what to expect in jet transport operations. Am. Aviation **14,** 9 (Apr. 30).
Global jet service. Aviation Week **55,** 14 (Sept. 3).
How the jetliner would do it. Aviation Week **54,** 47 (Jan. 22).
ICAO study lists civil jet problems. Aviation Week **54,** 62 (Jan. 15).

1952

A. C. Campell-Orde, Economic factors in Comet operation. Aeroplane **82,** 537.
A. N. Clifton, Problems in transonic flight. J. Roy. Aeronaut. Soc. **56,** 155.
W. V. Davis, Jr., Total energy concept applied to climb. Abstract: SAE Journal **60,** 55 (Aug.).
D. Desoutter, Airline Comet operation. Aviation Age **17,** 44 (May).
D. Desoutter, The air transport transformation: a study of the world's first turbojet airline. Aeronautics **26,** 49 (June).
E. A. Driessen, The impact of turbines on air lines. Esso Air World **5,** 34 (Sept./Oct.).
C. S. Durst, G. S. Roberts, C. G. Lott, and G. J. W. Oddie, Meteorology and the operation of jet aircraft. Quart. J. Roy. Meteorol. Soc. **78,** 427 (July).
C. Dykes, Some operating problems of future transport aircraft. J. Roy. Aeronaut. Soc. **56,** 189.
D. O. Fraser, Air traffic control and the jet aeroplane. J. Inst. Navigation **5,** 55 (Jan.).
R. E. Hage and R. D. Fitzsimmons, Economic aspects of the supersonic jet transport. Aeronaut. Eng. Rev. **11,** 42 (Sept.).
A. R. Hibbs, Optimum burning program for horizonal flight. J. Am. Rocket Soc. **22,** 204.
D. O. MacDougall, Operating the Comet. Shell Aviation News No. 167, 4 (May).
P. G. Masefield, Civil aircraft and the future. Shell Aviation News No. 164, 4 (Feb.).
A. Miele, Traiettorie ottime di volo degli aeroplani azionati da turboreattore. Aerotecnica **32,** 206.
F. L. Moore, CAB proposes pet transport subsidy plane. Aviation Week **56,** 12 (May 19).
F. L. Moore, U. S. sets jet liner sights high. Aviation Week **57,** 15 (Oct. 13).
L. E. Neville, Problems of turboprop-turbojet air transport operations. Skyways **11,** 26 and 51 (Nov.).
D. R. Newman, Civil jet aircraft performance. Aeroplane **82,** 433; Aeronautics **26,** 75 (June).
A. C. C. Orde, Some practical experience with civil jet transport operation and associated meteorological problems. Aeronaut. Eng. Rev. **11,** 47 (Mar.).
M. A. Sulkin, Aerodynamic heating in high speed flight. Aviation Age **18,** 28 (Sept.).
N. A. Taylor, Thoughts on Comet operation. Aeroplane **82,** 42.
R. R. Templeton, Flight testing and operational problems of an afterburner-equipped turbojet installation. Aeronaut. Eng. Rev. **11,** 32 (Dec.).
H. S. Tsien, T. C. Adamson, and E. L. Knuth, Automatic navigation of a long range rocket vehicle. J. Am. Rocket Soc. **22,** 192.

A. Vandyk, Manufacturers told CAA jet requirements. Am. Aviation **16**, 23 (Apr. 13).
A. Vandyk, Who's uneconomic? Not jets, say builders. Am. Aviation **16**, 22 (Nov. 24).
D. C. Whittley, The rate of climb of turbojet aircraft. Aircraft Eng. **24**, 45.
Are airports ready for jet aircraft? Am. Aviation **15**, 57 (Feb. 18).
"C. of A." for the Comet. Aeroplane **82**, 118.
Comet flight planning. Flight **61**, 490.
Jet liner ground problems discussed. Aviation Week **57**, 83 (Dec. 15).
Meteorology and jet aircraft. Aeroplane **82**, 234 and 285.
Notes on airport problems. Aviation Age **17**, 6 (May).
Optimum cruising conditions for jet-propelled air liners. Engineering **173**, 428.
Our civil transport future. Aeroplane **83**, 278.

1953

R. W. Allen, Range comparison of rocket-powered aircraft. Aero Dig. **67**, 30 (Dec.).
D. A. Anderton, How Air France Comet training works. Aviation Week **59**, 28 (Nov. 16).
H. B. Archer, Operational experiences with flying test bed airplanes. Abstract: SAE Journal **61**, 63 (March).
B. Baer, Three years of air war in Korea. Am. Aviation **17**, 21 (July 6).
D. A. Brice, The jet transport and the North Atlantic. Aeronautics **29**, 32 (Aug.).
G. L. Christian, Flying the Comet demands light touch. Aviation Week **59**, 71 (July 20).
L. Davis, Jet fighter bombers—how good were they? Aviation Age **20**, 24 (Nov.).
C. E. Dixon, Jet operating costs. Abstract: SAE Journal **61**, 36 (July).
E. A. Driessen, Turbine-powered transports will alter airlines operation. Abstract: SAE Journal **61**, 40 (Jan.).
C. H. Jackson, A review of Comet experience. Abstract: Aircraft Eng. **25**, 197.
L. C. Kappel, Jet transport transition—what are the problems? Aviation Age **20**, 32 (July).
R. L. Loesch and J. B. Fornasaro, Jet aircraft operation. Aero Dig. **67**, 84 (Aug.).
A. M. A. Majendie, Civil jet operations. J. Roy. Aeronaut. Soc. **57**, 539; Flight **63**, 556.
N. McKitterick, Viscounts lure opposition traffic. Aviation Week **59**, 16 (Dec. 14).
C. R. Smith, Turboprop transport future. Aero Dig. **66**, 17 (June).
H. N. Taylor and W. W. Davies, Jet engines from the operator's viewpoint. SAE Pre. 86, New York (April).
A. Vandyk, Jets reshape airline completition abroad. Am. Aviation **16**, 61 (April 27).
E. C. Wells, Operational aspects of jet transport design. Aero Dig. **66**, 17 (May).
D. West, Viscount, and Dart; putting the first turboprop airliners to work. Aeronautics **28**, 40 (May).
Comet din. Aviation Week **59**, 14 (July 20).
Crash barriers. Aviation Week **59**, 23 (Aug. 10).
Crash barriers save AF jets. Aviation Week **59**, 21 (July 13).
Engineers explore jet engine economics. Am. Aviation **16**, 17 (Feb. 2).
Flight-testing the Boeing B-47B. Aeroplane **85**, 790.
F4D trials. Aviation Week **59**, 18 (Nov. 30).
Jet aircraft navigation. Aeroplane **84**, 309.
Jet transport operational methods. Aeroplane **84**, 503.
Pan American details jet transport needs. Aviation Week **58**, 59 (March 16).
Serviceability of the Comet airliner. Engineering **175**, 745.
The Comet accident report. Aeroplane **84**, 857.
The economics of the Comet Series 3. De Havilland Gaz., 126 (Aug.).
The Viscount in service. Aeroplane **85**, 207.
U. S. plans jetliner ceiling. Aviation Week **58**, 36 (March 2).

215.7 Helicopters Powered by Turbines and Jets

1950

A. Charrion, The development of jet helicopters in France. Aircraft Eng. **22**, 292.
F. L. B. Doblhoff, The helicopter pressure jet. Mech. Eng. **72**, 658; Aeronaut. Eng. Rev. **9**, 36 (Sept.).
J. M. Elliot, Advantages of pulsejets for helicopters. Am. Helicopter **18**, 9 (Apr.).

A. Gessow, An analysis of the autorotative performance of a helicopter powered by rotor-tip jet units. NACA Tech. Note No. 2154 (July).
P. Lefort, French reaction-type helicopters. Génie civil **127**, 52 (Feb.).
W. Stewart and M. F. Burle, The application of jet propulsion to helicopters. Brit. Ministry of Supply, C. P. No. 8.
A French jet-driven helicopter (S. O. 1100 Ariel II). Esso Air World **3**, 28 (July/Aug.).
Proving pulsejets for helicopters. Aeroplane **79**, 136.

1951

A. Bruel, La réaction utilisée comme source auxiliaire de puissance lors du décollage des hélicoptères. Technique et Science Aéronaut, No. 5, 265.
G. F. Champlin, Pulse-jet powered XA-6 "Buck Private." Am. Helicopter **22**, 8 (Apr.).
C. C. Cooper, A new ramjet helicopter. Aeroplane **80**, 236.
R. Dorand, Geravions à rotors thermopropulsés par fluide moteur à basse pression. Technique et Science Aéronaut. No. 3, 158.
O. L. L. Fitzwilliams, A giant race of helicopters. Aeroplane **81**, 692.
J. A. Johnson and R. H. Eustis, An analysis of helicopter propulsion systems. Trans. ASME **73**, 519.
P. Morain, Étude comparative d'hélicoptères thermopropulsés. Technique et Science Aéronaut. No. 3, 139.
P. Morain, The adaptation of gas turbines to helicopters. Interavia **6**, 331.
W. D. Perreault, Hiller-Hornet—low cost, back yard 'copter. Am. Aviation **14**, 23 (Mar. 5).
W. D. Perreault, Technical meetings review helicopters, turbine advances. Am. Aviation **14**, 27 (Feb. 19).
R. Pouit, Thermopropulsion appliquées aux giravion. Techinque et Science Aéronaut. No. 5, 268.
J. S. Shapiro, A rotary-wing symposium. Aeroplane **81**, 131.
H. Waldorf, Hiller's $5,000 helicopter. Flying **48**, 17 (Mar.).
C. L. Washburn, A ramjet helicopter. Ordnance **36**, 235.
C. R. Wood, Jr., Little Henry proves ramjet 'copter practical. Abstract: SAE Journal **59**, 69 (Aug.).
American helicopter developments. Aeroplane **80**, 469.
American helicopter flight-tests "Buck Private." Aviation Age **15**, 11 (May).
American helicopter wins jet award. Aviation Week **54**, 17 (June 4).
First flight of the Ariel III. Aeroplane **80**, 593.
Gas turbine powers Navy copter. Aviation Week **55**, 14 (Dec. 24).
Hiller Hornet. Aero Dig. **62**, 62 (Mar.).
Hiller "Hornet" ramjet. Western Flying **31**, 28 (Mar.).
How GE tested ramjet for helicopters. Aviation Week **55**, 32 (Sept.).
Jet copter. Aviation Week **55**, 25 (July 2); 221 (Sept. 24).
Jet-propelled helicopter. Shell Aviation News No. 156, 4 (June).
Little Henry XH-20. Aero Dig. **62**, 70 (Mar.).
Militarizing the Hiller helicopter. Aeroplane **81**, 700.
New helicopter powered by twin ramjet engines. Automotive Inds. **104**, 36 (Mar. 1).
Rocketcopter. Aviation Week **55**, 17 (Nov. 5).
Something new in helicopters. Aeroplane **80**, 807.
The giant helicopter. Flight **60**, 728.
The pulsejet helicopter. Ordnance **35**, 419.
The Rotodyne. Aeroplane **80**, 311.
The S. N. C. A. S. O. SO-1120 helicopter. Aircraft Eng. **23**, 377.
Two new copters offered military. Aviation Week **54**, 18 (Apr. 23).

1952

I. G. Bensen, The pressure-jet helicopter. Aeronaut. Eng. Rev. **11**, 41 (June).
M. Berry, American Helicopter Co's. XH-26 pulse-jet-powered single-place collapsible helicopter. Am. Helicopter **28**, 8 (Sept.).
W. B. Bunker, Design proposal for a military helicopter. Mech. Eng. **74**, 709.
G. F. Champlin, Design for a jet-powered helicopter. Am. Helicopter **27**, 6 (July).
W. J. Coughlin, Can pulsejets simplify army logistics? Aviation Week **57**, 21 (Oct. 13).
R. W. Falconer, The application of jet propulsion to helicopters. Aeronaut. Eng. Rev. **11**, 46 (Sept.).

O. L. L. Fitzwilliams, The giant helicopter. J. Helicopter Assoc. **5**, 391.
H. Harvey, The torqueless helicopter. Shell Aviation News No. 163, 10 (Jan.).
L. H. Hayward, A review of helicopter patents. Aircraft Eng. **24**, 92.
"Rotor," A survey of the helicopter scene. Aeroplane **82**, 12.
I. Sikorsky, Trends in helicopters. Abstract: SAE Journal **60**, 17 (May).
J. Stuart, III, Helicopter powerplant analysis. Automotive Inds. **106**, 36 (June 15).
A gas turbine powered helicopter. Engineer **193**, 323.
American Helicopter's "jet jeep" for Army. Western Aviation **32**, 53 (Oct.).
Collapsible helicopter. Mech. Eng. **74**, 496.
Helicopter powerplant analysis. Abstract: Automotive Inds. **106**, 36 (June 15).
Hughes you-name-it "whirly-bird." Western Aviation **32**, 30 (Dec.).
Hughes XH-17 cargo copter goes aloft. Aviation Week **57**, 9 (Nov. 3).
Large helicopters with turbojet rotor propulsion. Aeronautics **25**, 38 (Jan.).
New Army pulsejet copter tested. Aviation Week **57**, 14 (Sept. 29).
Ramjets power Hornet helicopter. Aviation Week **54**, 25 (Feb. 19).
Rotodyne meets BEA specs. Aviation Week **57**, 17 (Oct. 6).
S. N. C. A. S. O. SO-1120 Ariel III turbojet helicopter. Am. Helicopter **26**, 10 (Apr.).
The XH26 jet jeep. Aeroplane **83**, 606.
Turbine-powered helicopter. Aeroplane **82**, 242.
Turbines look good for copter power. Aviation Week **57**, 35 (Aug. 18).

1953

W. B. Anderson, Two-shaft gas turbine in helicopters. Abstract: Automotive Inds. **108**, 92 (Feb. 15).
I. B. Bensen, Theory and practice of gas turbine power plants for helicopters. Am. Helicopter **30**, 6 (May); **31**, 10 (June).
P. J. Carpenter and E. J. Radin, Investigation of a ramjet-powered helicopter rotor on the Langley helicopter test tower. NACA Research Memo. No. L53D02 (June).
R. Hawthorne, Gas turbines for helicopters. Aviation Age **19**, 96 (April); 96 (May).
H. Holm, Design of the Hiller HJ-1, YH-32 helicopter. Aeronaut. Eng. Rev. **12**, 48 (Oct.).
E. F. Katzenberger, The selection and evaluation of power plants for helicopters. SAE Pre. No. 21, Detroit (Jan.).
S. Katzoff and S. L. Smith, A theoretical analysis of the distortion of fuel-spray-particle paths in a helicopter ramjet engine due to centrifugal effects. NACA Research Memo. No. L53A02 (Apr.).
J. L. Koetting and L. R. Wosika, Design considerations for helicopter gas turbine power plant. Abstract: Automotive Inds. **108**, 48 (Feb. 15).
D. M. Meyers and Z. M. Ciolkosz, Matching the characteristics of helicopters and shaft turbines. SAE Pre. No. 19, Detroit (Jan.).
E. J. Radin and P. J. Carpenter, Comparison of the performance of a helicopter-type ramjet engine under various centrifugal loadings. NACA Research Memo. No. L53H18a (Oct.).
H. E. Roberts, Design features of the XH-26 "Jet Jeep" helicopter. Inst. Aeronaut. Sci. Pre. No. 425, Los Angeles (July).
Big copters may replace DC-3s by '59. Aviation Week **59**, 13 (Aug. 24).
Pulsejet engines for helicopters. Engineering **176**, 319.
Pulsejet para-copter. Aeroplane **85**, 481.
Pulsejets for rotation. Aeroplane **85**, 242.
Turbine boosts 'copter performance. Am. Aviation **16**, 39 (May 25).
Turbine engines for helicopters. Aeroplane **84**, 171.
Turbines seek to dethrone piston engines from 'copter realm. Abstract: SAE Journal **61**, 28 (June).

215.8 General

1950

W. Boyd, The case for the turbojet. Abstract: SAE Journal **58**, 49 (Nov.).
W. Boyd, Transport's best bet: axial flow jets. Aviation Week **52**, 23 (May 15).
C. Dykes, Getting the best from turbine transports. Aviation Week **53**, 21 (Sept. 11).
A. D. Edwards, Performance estimation of civil jet aircraft. Aircraft Eng. **22**, 70, 94 and 143.

R. L. Gompertz, Rocket-engine flight testing. J. Am. Rocket Soc. No. 83, 169 (Dec.).
C. H. Grant, Taming jets for transport. Aero Dig. **61**, 38 (July).
G. W. Haldeman, Problems related to the airworthiness requirements for commercial turbine-engined airplanes. Aeronaut. Eng. Rev. **9**, 33 (Nov.).
R. M. Hazen, Turboprops recommended for 1955 turbine transports. Abstract: SAE Journal **58**, 27 (Sept.).
A. Kartvelli, Propulsion analysis for long range transport airplanes. Aeronaut. Eng. Rev. **9**, 14 (Aug.).
R. D. Kelley and F. Davis, Turbine-powered transport development. Inst. Aeronaut. Sci. Pre. No. 281.
J. R. Kitlo and A. W. Millson, The economics of turbine transport. Shell Aviation News, 18 (Apr.).
D. O. Moeller, A jet bleed aircraft cabin conditioner. Aviation Age **15**, 28 (Oct.).
A. E. Russell, Some factors affecting large transport aeroplanes with turboprop engines. J. Aeronaut. Sci. **17**, 67.
R. G. Worcester, Fuel consumption of de Havilland's Comet. Am. Aviation **14**, 23 (Aug. 1).
R. G. Worcester, World trends in jet aircraft design. Am. Aviation **14**, 31 (Nov. 13).
Gas turbine powered aircraft. Shell Aviation News, 18 (July).
The value of speed. Flight **57**, 452.
Turbine transport airworthiness. Aviation Week **53**, 37 (Aug. 14).

1951

D. A. Anderton, Weak production handcuffs British air. Aviation Week **55**, 12 (Oct. 7).
F. A. Coss, Installation of rocket engines in airplanes. ASME M. P., Atlantic City.
J. J. Haggerty, Jr., A look at U. S. airpower. 1. Air Force bombers. Am. Aviation **14**, 13 (Feb. 19).
R. R. Kay, The booming west coast aircraft industry. Automotive Inds. **105**, 40 (Nov. 15).
B. S. Lee, Navy readies highspeed jet fleet. Aviation Week **55**, 13 (Dec. 17).
H. E. Linsley, Canada builds the Sabre jet. Am. Machinist **95**, 126 (Nov. 26).
H. R. Moles, Application of rocket power to aircraft. Aeronaut. Eng. Rev. **10**, 24 (Apr.).
C. A. H. Pollitt, Air conditioning in an American fighter. Aeroplane **81**, 15.
N. F. Silsbee, The planes for tactical air power. Aviation Age **15**, 23 (Mar.).
K. R. Stehling, Rocket propelled aircraft. Eng. J. (Can.) **34**, 975.
E. G. Stout, A review of high-speed hydrodynamic development. Abstract: Aeroplane **81**, 369.
R. Westbury, Power-operated flying controls. Flight **60**, 570 and 597.
A vast U. S. bomber project. Aeroplane **81**, 72.
Autopilot guides jets in loops and rolls. Science News Letter **59**, 131.
Canberra twin-jet bomber to be built by three nations. Automotive Inds. **104**, 44 (Apr. 1).
C. W. rocket engine first with throttle. Am. Aviation **15**, 18 (July 9); Aviation Week **55**, 27 (July 9).
F-89 system mockup aids A. F. Aviation Week **54**, 50 (Mar. 19).
F-89D Scorpion carries wingtip stings. Aviation Week **55**, 15 (Dec. 3).
Fastest across the Atlantic. Aeroplane **80**, 257.
First MDAP F-84Es en route to Europe. Aviation Week **54**, 15 (Feb. 12).
How Thunderjets fare under fire. Aviation Week **54**, 9 (June 18).
Korean combat report on F-84E. Aviation Week **54**, 15 (Jan. 22).
Modern Montgolfier. Flight **60**, 560.
New F-84 fitted for air refueling. Aviation Week **54**, 15 (Jan. 18).
RAF pilot to fly Canberra to U. S. Aviation Week **54**, 17 (Feb. 19).
Rocket throttle. Aero Dig. **63**, 108 (Dec.).
The rocket-powered interceptor. Flight **59**, 645.
What has been learned flying the B-47. Aviation Week **54**, 25 (Apr. 30).

1952

R. W. Allen, Range formulas for powered aircraft. Abstract: Aviation Week **56**, 44 (Mar. 10).
S. Allen, Propulsion by rocket. Can. Aviation **25**, 27 (Mar.).

D. A. Anderton, Britain gets set to produce its aces. Aviation Week **57**, 20 (Oct. 27).
J. S. Bailey, Design problems for interceptor fighters. J. Roy. Aeronaut. Soc. **56**, 438.
W. P. Bridgeman, Supersonic flight from the pilot's view. Aeronaut. Eng. Rev. **11**, 24 (Feb.).
W. W. Fox, The turboprop airplane. Abstract: Aviation Week **56**, 46 (Mar. 10).
J. Gray, Temperature control for jet aircraft. Aero Dig. **65**, 48 (July).
R. B. Hotz, Britain bids for world jet plane business. Aviation Week **57**, 12 (Sept. 15).
P. Klass, Faster reacting autopilot for speedy B-47. Aviation Week **56**, 43 (Feb. 4).
P. Klass, New autopilot going on Navy jets. Aviation Week **56**, 38 (Mar. 3).
B. S. Lee, USAF reveals role in new NATO plan. Aviation Week **56**, 13 (Mar. 10).
N. McKitterick, Eagle gets first Royal Navy jets. Aviation Week **56**, 18 (Apr. 7).
A. F. Newell, Post-war trends and developments in British aircraft. Aircraft Eng. **24**, 246.
B. Richardson, Deceleron—a feature of the F-89 Scorpion control system. Aeronaut. Eng. Rev. **11**, 34 (Mar.).
H. E. Wells, Design of the X-1 pneumatic system. Appl. Hydraulics **5**, 78 (July).
D. H. Wood, NATO's air arsenal. Aero Dig. **64**, 17 (Apr.).
F-89D displays new firepower. Aviation Week **57**, 18 (Sept. 1).
French fly jets from "Armchair". Aviation Week **56**, 33 (Jan. 14).
New jets to get rocket armament. Aviation Week **56**, 18 (Mar. 31).
Scorpion may get M-H type autopilot. Aviation Week **56**, 18 (Feb. 18).
Speed record. Aviation Week **57**, 17 (Dec. 1).
Subcontractors have big part in Martin aircraft production. Automotive Inds. **106**, 33 (June 1).
Supersonic plane to use hydro-skid gear. Aviation Week **57**, 13 (Dec. 1).

1953

D. A. Anderton, Rockets breathe new life into autogyro. Aviation Week **58**, 28 (June 22).
D. A. Anderton, The interim interceptor: an analysis. Aviation Week **58**, 28 (Mar. 23).
W. G. Bain, Jet planes cost too much! Abstract: SAE Journal **61**, 47 (Aug.).
W. J. Coughlin, 753.4 Mph. Aviation Week **59**, 16 (Oct. 12).
I. H. Driggs and J. E. Forry, An airplane designer's view of combat airplane reliability. SAE Pre. No. 38, Detroit (Jan. 15).
S. H. Evans, High speed Machs. Aeroplane **85**, 575.
T. R. Farrington, Tanker aircraft refuelling systems. SAE M. P., Los Angeles (Oct.).
J. J. Haggerty, Jr., Ryan may still be in jet trainer race. Am. Aviation **16**, 34 (Mar. 30).
R. B. Hotz, F3Ds outfly Red night fighters in Korea. Aviation Week **58**, 13 (Feb. 9).
R. B. Hotz, USAF climbs toward 143-wing level. Aviation Week **58**, 43 (Mar. 2).
K. Iserland, Braking the landing run of jet aircraft by thrust deviation. Interavia **8**, 151.
N. McKitterick, Britain stakes its future on air lead. Aviation Week **58**, 249 (Mar. 2).
R. M. Lobelson, New planes spark latest speed attempts. Am. Aviation **17**, 13 (Oct. 12).
"Polygon," The light fighter. Aeroplane **84**, 731.
E. W. Still, Temperature control of jet-engined aircraft. J. Roy. Aeronaut. Soc. **57**, 89.
W. A. Waterton, Some aspects of high performance jet aircraft. Engineer **195**, 507; J. Roy. Aeronaut. Soc. **57**, 375.
A new record for Britain. Aeroplane **84**, 625.
CF-100 displays rocket firepower. Aviation Week **58**, 37 (Mar. 2).
F-86D sets record of 715.7 Mph. Aviation Week **59**, 16 (July 27).
83,235 ft up. Aviation Week **59**, 17 (Sept. 7).

216. GUIDED MISSILES AND DRONES

1950

N. M. Bengston, Tactical use of guided missiles. Ordnance **35,** 184.
R. E. Gibson, Supersonic guided missil s. J. Am. Rocket Soc. No. 78, 129; No. 79, 155.
H. M. Mott-Smith, Aerodynamics research for guided missiles. Naval Ordnance Laboratory Rept. No. 113 (Mar. 1).
Air bearing gyro for missile guidance. Aviation Week **53,** 28 (Dec. 4).
Ram air, steam drive turbines. Aviation Week **53,** 34 (Aug. 14).
Supersonic test missiles. Mech. Eng. **72,** 736.
The Navy's Bat. Naval Aviation News, 1 (June).

1951

D. A. Anderton, Missiles streak toward future role. Aviation Week **54,** 66 (Feb. 26).
N. S. Currey, Rocket realities. Can. Aviation **24,** 20 (Nov.).
K. W. Gatland, Evolution of the guided missile. Flight **59,** 534, 598 and 768; **60,** 45, 113 and 140.
J. J. Haggerty, Jr., Too soon for guided missiles. Am. Aviation **15,** 25 (Sept. 3).
H. K. Kaiser, Antiaircraft rockets. Rocketscience **5,** 16.
R. McLarren, Guided missile friction heating. Aero Dig. **63,** 27 (Aug.).
R. McLarren, Supersonic rocket missiles tested at secret station. Automotive Inds. **105,** 34 (Sept. 1).
N. A. Parson, Jr., Guided missiles in modern warfare. Ordnance **35,** 403.
L. G. Pooler, Hypervelocity missiles. Ordnance **35,** 295.
J. R. Randolph, Rockets today—the military potentialities of jet propulsion. Ordnance **35,** 300.
R. H. Reichel, The "Wasserfall" remote-controlled A/A missile. Interavia **6,** 569.
D. Reuyl and L. G. de Bey, Stalking the guided missile. Ordnance **36,** 237.
J. G. Strong, Star-tracking missiles. Aeroplane **81,** 212.
Aeroballistics progress. Ordnance **35,** 406.
Convair Terrier. Am. Aviation **15,** 26 (Aug. 20).
Firing the AF's first missile in service use. Aviation Week **55,** 38 (Oct. 15).
Guided anti-aircraft missiles. Interavia **6,** 554.
Guided missiles in sea warfare. Engineer **192,** 343.
Jet propulsion and guided missiles. Antiaircraft J. **94,** 46 (Mar./Apr.).
Latest missile work revealed. Aviation Week **54,** 19 (May 28).
Lethal robot. Aeroplane **81,** 375.
Matador opens era of missile warfare. Aviation Week **55,** 219 (Sept. 24).
NACA designs for super-speed missiles. Aviation Week **55,** 18 (Oct. 22).
Navy missiles production ordered. Aviation Week **54,** 14 (June 11).
Nitrogen fuel storage vessel for missiles. Aviation Age **15,** 29 (Apr.).
Principles of missile guidance systems. Aero Dig. **63,** 88 (Nov.).
Step toward pilotless war. Science News Letter **60,** 179.
"Sun follower" makes first guided-missile flight. CADO Tech. Data Dig. **16,** 11 (Feb.).
Swiss show anti-aircraft guided missile system. Aviation Week **55,** 18 (Sept. 17).
"Terrier" project under way. Western Aviation **31,** 9 (Sept.).
The Martin Matador. Aeronaut. Eng. Rev. **10,** 62 (Dec.).

1952

D. A. Anderton, Push-button era is approaching. Aviation Week **56,** 53 (Feb. 25).
D. A. Anderton, Red rockets. Aviation Week **56,** 37 (Jan. 14).
H. K. Cheney and C. P. Ballard, Over-all system testing of production guided missiles. SAE Pre. No. 732, Detroit (Jan. 17).
A. V. Cleaver, Thoughts on rockets and guided missiles. Aircraft **30,** 16 (Aug.).
H. M. Cobb, Current problems in guided missile instrumentation. Phot. Eng. **3,** 119.
R. Goldin, Pilotless aircraft; the establishment of structural design criteria. Aeronaut. Eng. Rev. **11,** 22 (Nov.).
J. J. Green, Bolts from the blue! Canadian progress on guided missile research. Avro Canada Jet Age **1,** 4 (Summer).
R. L. Kelly, Circuit stability in guided missiles. Electronics **25,** 133 (Mar.).
J. B. Kendrick, A visit to Project Snort. Aviation Age **18,** 47 (Aug.).
A. M. Low, The first guided missile. Flight **62,** 436.

C. B. Millikan, The guided missile—precocious problem child of the military art. Aeronaut. Eng. Rev. **11**, 52 (Apr.).
W. C. Moore, Simultaneous A-M and F-M in rocket telemetering. Electronics **25**, 102 (Mar.).
M. M. Munk, Reliability analysis of modern weapons. Aero Dig. **65**, 101 (Nov.).
D. R. Ritchie, Rockets that see and think. Rocketscience **6**, 14.
C. H. Schlesman, Cathode ray recorders for missile application. Phot. Eng. **3**, 78.
G. Schweissinger, Optical attitude recorder for the Aerobee rocket. Phot. Eng. **2**, 167.
J. G. Strong, Celestial guidance for missiles. Aero Dig. **64**, 20 (Jan.).
S. E. Weaver, Airplane type guided missiles. SAE Pre. No. 731, Detroit (Jan. 17).
A French target on test. Aeroplane **83**, 3.
Boosted take off. Aeroplane **83**, 147.
British guided missiles. Engineering **174**, 137.
Deadly Sparrow missile revealed. Am. Aviation **15**, 61 (March 31).
General Electric's winged messenger. Aviation Week **56**, 30 (May 12).
Guided missiles blast off new Oerlikon arms program. Aviation Age **18**, 25 (Dec.).
Guided missiles can overcome own errors. Science News Letter **63**, 25.
Pilotless jet-powered target aircraft. Aircraft **30**, 14 (March).
Research for guided missiles. Aeroplane **82**, 725.

1953

A. Aepli, Guided missiles, Flugwehr u. Tech. **15**, 136 (Jan.).
N. J. Bowman, Recent developments in foreign rockets and guided missiles. J. Space Flight **5**, 1 (June).
N. J. Bowman, Recent developments in rockets and guided missiles in the United States. J. Space Flight **5**, 1 (May).
E. J. Bulban, New Fairchild Petrel missile hunts subs. Aviation Week **59**, 15 (Sept. 21).
R. R. Carhart, Reliability in guided missile systems. Aeronaut. Eng. Rev. **12**, 22 (Feb.).
J. M. Carrol, How electronics controls guided missiles. Electronics **26**, 13 (July).
P. M. Gallois et al., Flying robots. Interavia **8**, 231 and 263.
K. W. Gatland, Weapons of air defense. Flight **63**, 219.
A. A. Gerlach, F. M. recording in guided missiles. Electronics **26**, 108 (Jan.).
R. M. Loebelson, U. S. renews emphasis on interim missiles. Am. Aviation **17**, 13 (Aug. 17).
J. W. Luecht, Some factors pertaining to the use of air-breathing propulsion for the acceleration of high-altitude and other long-range ballistic missiles. SAE M. P., Los Angeles (Oct.).
C. B. Millikan, Design trends—guided missiles. Aeronaut. Eng. Rev. **12**, 82 (Dec.).
H. H. Porter, Guided missiles: comments on surface-based antiaircraft missiles. Aeronaut. Eng. Rev. **12**, 24 (July).
I. Stone, Matador prompts fresh look at design. Aviation Week **59**, 28 (Oct. 5).
J. C. Wise, Control system requirements for ramjet missiles. Aviation Age **20**, 64 (Nov.).
Boeing fires a missile. Am. Aviation **16**, 29 (Feb. 2).
Boeing's Bomarc. Am. Aviation **16**, 15 (March 30).
British missile work expands. Aviation Week **59**, 34 (Aug. 10).
Chance Vought Regulus. Am. Aviation **17**, 17 (July 20); Aero Dig. **67**, 48 (Dec.).
First closeups of Fairchild Lark. Aviation Week **59**, 39 (July 20).
First details of Boeing GAPA project. Aviation Week **58**, 32 (Feb. 2).
First photographs of Ryan XQ-2 Firebee. Aviation Week **58**, 38 (March 2).
French missile. Aviation Week **58**, 18 (April 20); 18 (May 18).
Guided missile for subs. Science News Letter **63**, 229.
Guided-weapons telemetering. Flight **64**, 556.
Jet target test. Aviation Week **59**, 15 (July 13).
Magnesium missiles. Aviation Week **58**, 42 (May 11).
Military takes wraps off three missiles. Aviation Week **58**, 15 (April 6).
More about the Jindivik. Aeroplane **84**, 790.
More American guided missiles. Aeroplane **84**, 449.
Nose rockets boost new British missile. Aviation Week **59**, 48 (Sept. 14).
Pilotless aircraft. Mech. Eng. **75**, 398.

Regulus shoots skyward. Aviation Week **58**, 9 (April 6).
Telemetry for guided missiles. Engineering **176**, 518.
U. S. unveils defensive missile system. Aviation Week **59**, 13 (Dec. 28).
Vast missile program pushed by Soviets. Aviation Age **20**, 24 (Aug.).

217. ANTI-ICING

1948

L. W. Acker, Preliminary results of natural icing of an axial-flow turbojet engine. NACA Research Memo. No. E8C18 (Aug.).

L. W. Acker, Natural icing of an axial-flow turbojet engine in flight for a single icing condition. NACA Research Memo. No. E8F01a (Aug.).

W. A. Fleming and M. J. Saari, Inlet icing and effectiveness of hot-gas bleed-back for ice protection of turbojet engines. NACA Research Memo. No. E8J25c (Nov.).

U. von Glahn, Ice protection of turbojet engines by inertia separation of water. NACA Research Memos. No. E8A27 (May); E8A28 (June); and E8A29 (June).

1949

E. E. Callaghan and R. S. Ruggeri, Experimental investigation of hot-gas bleed-back for ice protection of turbojet engines. NACA Research Memos. No. E8D13 (July 1948); E9C16 (May 1949) and E9E12 (Aug. 1949).

T. Dallas and C. Ellisman, Analysis and preliminary investigation of eddy-current heating for ice protection of axial-flow-compressor blades. NACA Research Memo. No. E9E06 (Aug.).

R. O. Dietz, Jr., and R. P. Krebs, Effect of hot-gas bleedback ice prevention on performance of a turbojet engine with fixed-area tail-pipe nozzle. NACA Research Memo. No. E9B23 (May).

1950

L. W. Acker and K. S. Kleinknecht, Effects of inlet icing on performance of axial-flow turbojet engine in natural icing conditions. NACA Research Memo. No. E50C15 (May).

R. Hawthorne, Thermal anti-icing systems for jet aircraft. Aviation Operations, 20 (June).

U. von Glahn and R. E. Blatz, Investigation of aerodynamic and icing characteristics of water-inertia-separation inlets for turbojet engines. NACA Research Memo. No. E50E03 (July).

1951

D. M. Bartlett and T. A. Dickey, Turbine-engine anti-icing tested atop Mt. Washington. Abstract: SAE Journal **59**, 50 (Jan.).

B. F. Morrell and N. F. Frischhertz, Ice-proofing the J-47 turbojet. Abstract: SAE Journal **59**, 43 (Feb.).

M. Tribus and F. Weiner, Intermittent heating for aircraft ice protection with application to propeller and jet engines. Trans. ASME **73**, 1117 and 1131.

Anti-icing of compressor blades. Aeroplane **80**, 527.

Blade anti-icing. Aviation Week **54**, 32 (May 14).

Combating ice in gas turbines. Flight **59**, 414.

Hot-nose turbojet engine safe from icing problems. Science News Letter **60**, 105.

Mass F-84 crashes traced to inlet icing. Aviation Week **54**, 15 (June 18).

New thermal de-icer for thin-wing jets. Am. Aviation **15**, 26 (Nov. 12).

1952

P. T. Hacker, R. G. Dorsch, T. F. Gelder, J. P. Lewis, H. C. Chandler, Jr., and S. L. Koutz, Ice protection for the turbojet transport airplane. Special Inst. Aeronaut. Sci. publication No. FF-1.

L. H. Hayward, De-icing of gas-turbine engines. Aeroplane **82**, 243.

1953

A. A. Brown, How present-day turbine and piston engines combat ice. Abstract: SAE Journal **61**, 44 (June).

T. F. Gelder, J. P. Lewis, and S. L. Koutz, Icing protection for a turbojet transport airplane. NACA Tech. Note No. 2866 (Jan.).

Jet engines tested on icy peak. Aviation Week **58**, 32 (Mar. 9).

Thermal anti-icing shields F-89. Aviation Week **59**, 29 (Aug.).

218. INTERPLANETARY CONSIDERATIONS

1950

H. Bartenbach, Celestial mechanics and rockets. J. Space Flight **2**, 1 (Nov.).
J. C. Bellamy, Instruments for upper atmosphere and interplanetary navigation. Navigation **2**, 272 (Dec.).
A. C. Clarke, Space travel in fact and fiction. J. Brit. Interplanet. Soc. **9**, 213.
A. C. Clarke and R. d'E. Atkinson, Interplanetary travel. J. Inst. Navigation **3**, 357.
A. V. Cleaver, Interplanetary flight. Aircraft **28**, 12 (July).
M. Conley, An earth-moon orbit. J. Space Flight **2**, 1 (June).
M. Conley, The men who can make space flight possible today. J. Space Flight **2**, 1 (Dec.).
M. Conley, A method of engine placement. J. Space Flight **2**, 5 (Dec.).
R. Engel, Earth satellite vehicles. Interavia **5**, 500.
K. W. Gatland, A. E. Dixon, and A. M. Kunesch, Initial objectives in astronautics. J. Brit. Interplanet Soc. **9**, 155.
L. J. Grant, Jr., Further studies in the economics of a space station. J. Space Flight **2**, 1 (May).
S. Herrick, Rocket navigation. Navigation **2**, 259 (Dec.).
S. Herrick, Space rocket trajectories. J. Brit. Interplanet. Soc. **9**, 235 (Sept.).
D. F. Lawden, Minimal trajectories. J. Brit. Interplanet. Soc. **9**, 179.
W. Ley, The shape of ships to come. Interavia **5**, 496.
W. Proell, The significance of monatomic gases in planetary space operations. J. Space Flight **2**, 1 (Oct.).
R. H. Reichel, Limitations of rocket propulsion and their significance for the idea of space travel. Z. Ver. deut. Ing. **92**, 873.
W. Schaub, The interplanetary ocean. Interavia **5**, 533.

1951

H. Bartenbach, Dirigibility of rockets. J. Space Flight **3**, 1 (Dec.).
L. S. Black, Preview of space flight. Aero Dig. **63**, 17 (Oct.).
E. Burgess, The artificial satellite. Engineer **192**, 456.
D. J. Cashmore, Some problems of interplanetary navigation. J. Brit. Interplanet. Soc. **10**, 71.
E. G. Ewing, Landing of spacecraft. Bull. Pacific Rocket Soc. **4**, Sec. B, 1 (Oct. 10).
F. R. Fears, Interplanetary bases—the moon and the orbital space station. J. Space Flight **3**, 4 (Sept.).
V. A. Firsoff, Artificial satellites explained. Flight **60**, 504.
G. F. Forbes, Application of the general trajectory equations. J. Brit. Interplanet. Soc. **10**, 194.
K. W. Gatland, A. E. Dixon, and A. M. Kunesch, Orbital rockets. J. Brit. Interplanet. Soc. **10**, 97, 107, 115 and 287.
L. J. Grant, Jr., A suggested design project on an orbit rocket. J. Space Flight **3**, 1 (Jan.).
L. J. Grant, Jr., Power sources for orbital rockets. J. Space Flight **3**, 1 (Nov.).
S. W. Greenwood, A note on the use of dimensionless parameters in astronautics. J. Brit. Interplanet. Soc. **10**, 210.
J. B. Haldane, Biological problems of space flight. J. Brit. Interplanet. Soc. **10**, 154.
R. Hawthorne, Flight in the "aeropause." Aviation Age **16**, 29 (Dec.).
S. Herrick, Interplanetary navigation. J. Inst. Navigation **3**, 57 (Sept./Dec.).
J. Humphries, Space flight talk gets down to earth. Aviation Week **55**, 21 (Oct. 22).
J. Humphries, Toward the conquest of space. Aircraft **30**, 28 (Dec.).
R. McLarren, The brain work is done. Aero Dig. **63**, 34 (Oct.).
T. Nonweiler, Descent from satellite orbits using aerodynamic braking. J. Brit. Interplanet. Soc. **10**, 258.
H. Oberth, The station in space. Rocketscience **5**, 2.
M. W. Ovenden, Meteor hazards to space stations. J. Brit. Interplanet. Soc. **10**, 275.
W. Proell, The evasion of hazardous objects in space. J. Space Flight **3**, 1 (Apr.); **3**, 1 (May).
E. Sänger, What will space flight require? Rocketscience **5**, 27.
A. E. Slater, Steps toward space travel. Aeroplane **81**, 421.
R. A. Smith, Establishing contact between orbiting vehicles. J. Brit. Interplanet. Soc. **10**, 295.

A. V. St. Germain, Physiological aspects of interplanetary travel. Am. Helicopter **21**, 10 (Jan.).
H. Strughold, H. Haber, K. Buettner, and F. Haber, Where does space begin? J. Aviation Med. **22**, 342.
G. V. E. Thompson, The lunar base. J. Brit. Interplanet. Soc. **10**, 49.
L. N. Thompson, Fundamental dynamics of reaction-powered space vehicles. Inst. Mech. Engrs. (London), J. and Proc. **164**, 264; Aircraft Eng. **23**, 228.
W. von Braun, The importance of satellite vehicles in interplanetary flight. J. Brit. Interplanet. Soc. **10**, 237.
Interplanetary symposium. Aeroplane **81**, 336.
Meteoric collision factor in space ship design. Aviation Age **16**, 25 (Dec.).
Orbital rockets. Aeroplane **80**, 69.
Orbital space vehicles for interplanetary flight. Aircraft Eng. **23**, 334.
The earth satellite vehicle. Flight **60**, 449; Aeroplane **81**, 421.

1952

C. T. Aubrey, Droppable stages may boost rockets to earth-circling orbits. Abstract: SAE Journal **60**, 18 (Sept.).
N. J. Bowman, The cost of interplanetary cargo transportation. J. Space Flight **4**, 1 (Mar.); **4**, 1 Apr.).
M. Conley, A method of landing a space ship under adverse conditions. J. Space Flight **4**, 6 (May).
M. Conley, A method of supporting the human body during space flight. J. Space Flight **4**, 3 (Nov.).
M. Conley, An instrument for determining the deceleration firing point. J. Space Flight **4**, 4 (Feb.)
C. A. Cross, The fundamental basis of power generation in a satellite vehicle. J. Brit. Interplanet. Soc. **11**, 117.
F. C. Durant, How far are we from space flight? Aviation Week **56**, 25 (May 26).
K. A. Ehricke, A method for using small orbital carriers for establishing satellites. Abstract: Aviation Week **58**, 41 (Jan. 5).
J. P. Elliott, Interplanetary communications and navigation. J. Space Flight **4**, 1 (May).
G. F. Forbes, The thrust available from electronic accelerators. J. Space Flight **4**, 1 (Dec.).
K. Gatland, A man-carrying rocket for physiological research in near space. Flight **61**, 774.
H. H. Goode, An analysis of the space station. Rocketscience **6**, 55.
L. J. Grant, Jr., Ascent from earth. J. Space Flight **4**, 1 (Sept.).
F. Haber, Escape and survival in space travel. Abstract: Aviation Week **57**, 32 (Dec. 22).
H. Haber, Flight at the borders of space. Sci. American **186**, 20 (Feb.).
H. Haber, Manned flight at the borders of space. J. Am. Rocket Soc. **22**, 269.
J. Humphries, Artificial satellites. Aeronautics **25**, 62 (Apr.).
J. Humphries, The practical approach to astronautics. Flight **62**, 528.
H. B. Ketchum, A preliminary survey of the constructional features of space stations. J. Space Flight **4**, 1 (Oct.).
H. B. Ketchum, Flights to the major planetary systems. J. Space Flight **4**, 1 (Nov.).
H. H. Koelle, Determination of the minimum take-off weight of large rockets. Rocketscience **6**, 31.
J. M. J. Kooy, Some problems of interplanetary travel. Ingenieur (Utrecht) **64**, 46 (Nov. 14).
H. Krause, Motion of a space station around the earth in an elliptic path tilted with respect to the earth's equator. Weltraumfahrt **3**, 74 (July).
H. Kühme, The aerodynamics of the take-off and landing of rocket-powered satellite vehicles. Weltraumfahrt **3**, 53 (April).
D. F. Lawden, The determination of minimal orbits. J. Brit. Interplanet. Soc. **11**, 216.
J. G. Porter, Interplanetary orbits. J. Brit. Interplanet. Soc. **11**, 205.
H. Preston-Thomas, Generalized interplanetary orbits. J. Brit. Interplanet. Soc. **11**, 76.
H. Preston-Thomas, Interorbital transport techniques. J. Brit. Interplanet. Soc. **11**, 173.
W. Proell, A punched card system for space flight research. J. Space Flight **4**, 1 (Jan.).

W. Proell, Some effects of interplanetary hydrogen upon space ships. J. Space Flight **4,** 1 (June).
H. E. Salzer, The problem of annulling or counteracting gravity. Rocketscience **6,** 8.
E. Sänger, Problems of astronautical research. J. Brit. Interplanet. Soc. **11,** 57.
O. Schachter, Legal aspects of space travel. J. Brit. Interplanet. Soc. **11,** 14.
H. J. Schaefer, Exposure hazard from cosmic radiation at extreme altitude and in free space. J. Am. Rocket Soc. **22,** 283.
W. Schaub, Possibilities of the transition from an elliptical orbit to a circular orbit and vice versa. Weltraumfahrt **3,** 81 (July).
L. R. Shepherd, Interstellar flight. J. Brit. Interplanet. Soc. **11,** 149.
A. E. Slater, Astronautics at Stuttgart. Aeroplane **83,** 456.
L. Spitzer, Jr., Interplanetary travel between satellite orbits. J. Brit. Interplanet. Soc. **10,** 249; J. Am. Rocket Soc. **22,** 92.
H. Strughold, Principles of planetary ecology. ASME M. P., New York.
H. Strughold, The atmospheres of Earth and Mars in the light of recent physiological concepts. Abstract: Aviation Week **57,** 32 (Dec. 22).
L. N. Thompson, Artificial satellites—key to space travel? Interavia **7,** 148.
L. N. Thompson, Man without gravity; the physiological and psychological problems of space flight. Flight **61,** 298.
W. von Braun, The satellite vehicle. ASME M. P., Chicago.
W. von Braun, Von Braun offers plan for station in space. Aviation Age **18,** 61 (Dec.).
P. F. Winternitz, The role of research in rocket development. Abstract: Aviation Week **56,** 46 (Mar. 10).
Escape velocity. Aero Dig. **64,** 47 (Jan.).
Problems of space travel. Science News Letter **62,** 180.
Research problems in space flight. Z. Ver. deut. Ing. **94,** 1042.
Saucer shape seen best for spaceship. Aviation Week **57,** 34 (Nov. 3).
Space meeting. Aviation Week **57,** 39 (Nov. 10).
Space talk. Aviation Week **57,** 44 (Sept. 29).
Space travel. Mech. Eng. **74,** 816.
The third international congress on astronautics. Aircraft Eng. **24,** 373.

1953

R. C. Abel, A consideration of space-ship shape. Aeronautics **29,** 164.
W. A. Allen, Two ballistics problems of future transportation. Am. J. Phys. **21,** 83.
N. J. Bowman, The food and atmosphere control problem on space vessels. J. Brit. Interplanet. Soc. **12,** 118 (May).
G. A. Crocco, I. fondamenti dell'astronautica. Aerotecnica **33,** 135.
K. A. Ehricke, Take off from satellite orbits. J. Am. Rocket Soc. **23,** 372.
A. Eula, L'astronautica. Aerotecnica **33,** 231.
K. W. Gatland and A. M. Kunesch, The fabrication of the orbital vehicle. Abstract: Aircraft Eng. **25,** 313.
M. J. E. Golay, The application of radio interferometry to the interplanetary guidance of rocket ships. Abstract: Aircraft Eng. **25,** 312.
F. Haber, Human flight at the limits of the atmosphere; G-forces and weight in space travel. J. Brit. Interplanet. Soc. **12,** 32.
H. L. Krause, Integration of the equation of motion of a vertically rising rocket after the cessation of firing within the atmosphere. Abstract: Aircraft Eng. **25,** 312.
D. F. Lawden, Escape to infinity from circular orbits. J. Brit. Interplanet. Soc. **12,** 68.
A. M. Mayo, Taking man to higher altitudes. SAE M. P., Los Angeles (Oct.).
W. N. Neat, Limitations on the performance of chemical rockets in astronautics. Abstract: Aircraft Eng. **25,** 312.
M. W. Rosen, A down-to-earth view of space flight. J. Brit. Interplanet. Soc. **12,** 26.
M. W. Rosen and R. B. Snodgrass, Margin for error. Abstract: Aircraft Eng. **25,** 312.
A. E. Slater, Space flight congress. Aeroplane **85,** 230.
K. R. Stehling, Earth scanning techniques for orbital rocket vehicles. Abstract: Aircraft Eng. **25,** 313; Aviation Week **58,** 43 (Feb. 16).
R. C. Truax, An estimate of the situation and a plan of action. Abstract: Aircraft Eng. **25,** 313.
H. S. Tsien, Take-off from satellite orbit. J. Am. Rocket Soc. **23,** 223.

W. von Braun, We need a co-ordinated space flight program. Abstract: Aircraft Eng. **25**, 313; Ordnance **37**, 771.
Rocket motors. Aeroplane **84**, 265.

219. TEST FACILITIES

1950

J. A. Beavan, Recent developments in high speed research at the National Physical Laboratory. J. Roy. Aeronaut. Soc. **54**, 545.
T. W. F. Brown, Marine gas-turbine research in Britain. Mech. Eng. **72**, 379.
K. A. Ehricke, The Peenemuende Rocket Center. Rocketscience **4**, 57 (Sept.); 81 (Dec.).
W. F. Lindsey and W. L. Chew, The development and performance of two small tunnels capable of intermittent operation at Mach numbers between 0.4 and 4.0. NACA Tech. Note No. 2189 (Sept.).
Convair lab tests ramjets at 100,000 feet at Mach 4. CADO Tech. Data Dig. **15**, 8 (July 1).
G. E. dedicates aircraft gas turbine laboratory. Automotive Inds. **103**, 32 (Dec. 1).
High-altitude test chamber. Aero Dig. **61**, 33 (July).
Italian test-house; Fiat plant for experimental and development tests of turbojet units. Flight **58**, 626.
Pratt and Whitney's jet engine testing laboratory now in full operation. CADO Tech. Data Dig. **15**, 14 (Sept.).
RMI rocket test stand simulates flight studies. Aviation Week **53**, 33 (Aug. 14).
Toward the goal posts of tomorrow. Aero Dig. **61**, 42 (Aug.).
Willgoos lab: proving ground for engines. Aviation Week **53**, 46 (Aug. 14).
Wright Aeronautical Corporation ramjet research. Shell Aviation News 12 (May).

1951

D. A. Anderton, AF reveals plans for engineering center. Aviation Week **55**, 13 (July 2).
F. O. Carrol, New development center facilitates aircraft research. Abstract: SAE Journal **59**, 50 (Jan.).
F. C. Durant, III, The Naval Air Rocket Test Station—purpose and progress. J. Am. Rocket Soc. No. 85, 74 (June).
I. E. Highberg, Description of the NOTS aeroballistics laboratory. ASME M. P., Atlantic City.
R. A. Schmidt and D. L. Dynes, Air Force experimental rocket engine test station. ASME M. P., Atlantic City.
W. A. Shrader, Pilotless aircraft research. Aeronaut. Eng. Rev. **10**, 25 (Oct.).
R. E. Stockwell and R. Hawthorne, USAF's missile test center. Aviation Age **16**, 35 (Nov.); 40 (Dec.).
Flying test beds amplify jet data. Aviation Week **54**, 38 (Mar. 5).
G-E aircraft gas turbine laboratory dedicated. Aeronaut. Eng. Rev. **10**, 2 (Feb.).
General Electric aircraft gas turbine laboratory. Engineer **191**, 204.
Jet secrets probed at Nobel test plant. Can. Aviation **24**, 26 (Sept.).
Navy expanding rocket test base. Aviation Week **54**, 16 (Apr. 16).
Pratt and Whitney flying test bed. Shell Aviation News No. 153, 24 (Mar.).
Supersonic missile testing at NACA Ames laboratory. Aviation Age **16**, 9 (Aug.).
Sweden's unique jet engine laboratory. Interavia **6**, 387.
The Forrestal jet research center. J. Am. Rocket Soc. No. 84, 33 (Mar.).
The Nobel gas turbine test establishment. Aircraft **13**, 9 (Sept.).
Tons of conditioned air for jet engine research. Steel **128**, 80 (May 21).
Where services test missiles. Aviation Week **55**, 43 (Oct. 15).
Wilderness Lab serves Avro. Aviation Week **55**, 33 (Aug. 27).
Woomera; post-war progress with British guided missiles. Flight **59**, 429.
100,000-horsepower wind maker. Power **95**, 81 (May).

1952

D. A. Anderton, Forrestal center to study fundamentals. Aviation Week **56**, 21 (June 23).
M. C. Benedict, Timing and phasing in the development of engines and flying test beds. SAE Pre. No. 832, Los Angeles (Oct. 4).
K. D. Brumbaugh, Electric power for jet-engine research. Elec. Eng. **71**, 118.
O. Foss and M. Guidon, The function of a Bootstrap G-T unit in University work. Abstract: Mech. Eng. **74**, 408.

B. Hoffstrom, A modern engine test plant. SAE Pre. No. 762, New York (Apr.).
J. T. Lewis, Guided missile center. Ordnance **36**, 842.
D. M. Ross, Ground facilities—altitude test chambers, advantages and limitations. Shell Aviation News No. 174, 17 (Dec.); Abstract: Aircraft Eng. **24**, 371.
W. E. Stanger, Advantages of the flying test bed in engine development. SAE Pre. No. 833, Los Angeles (Oct. 3).
L. Viaud, Free flight model tests at supersonic speeds. Recherche aéronaut. No. 27, 17 (May/June).
J. B. Wynn, Jr., and S. L. Ackerman, Guided missile test center. Electronics **25**, 106 (May).
A. F. acquires airport for jet test base. Aviation Week **56**, 14 (Mar. 17).
Flying test beds prove jet engines. Aviation Week **57**, 18 (Oct. 6).
Gas-turbine research at Bristol. Aeroplane **82**, 570.
GE plans jet research center. Aviation Week **56**, 17 (Mar. 10).
Jet-engine center. Mech. Eng. **74**, 400.
Peenemunde, 1951. Aviation Age **17**, 33 (Feb.).
Some unusual flying test-beds. Aeroplane **83**, 219.
Test cell protection at Westinghouse jet engine plant. Automotive Inds. **107**, 33 (Oct. 15).

1953

B. N. Abramson, D. S. Bandwein, H. C. Menes, The 350,000 pound rocket test stand at Lake Denmark, N. J. Am. Rocket Soc. Pre. No. 108–53.
D. A. Anderton, AF tests rocket engines in giant stands. Aviation Week **59**, 24 (Aug. 31).
W. A. Fleming and H. D. Wilsted, New techniques aid turbojet research. Abstract: SAE Journal **61**, 95 (Sept.).
F. A. Friswold, Television monitors rocket engine flame. Electronics **26**, 187 (Oct.).
R. F. Gompertz, Experimental testing techniques with high thrust rocket power plants. Am. Rocket Soc. Pre. No. 104–53.
T. L. Greenwood, Missile testing at Huntsville. Aero Dig. **67**, 22 (Sept.).
H. J. Higgs, Some investigations into the design of wind tunnels with gas turbine jet engine drive. Ministry of Supply, Aeronaut Research Council (Gt. Brit.), ARC CP 107.
J. S. Holtoner and F. J. Ascani, Air Force Base tests high-speed aircraft. Abstract: SAE Journal **61**, 56 (Jan.).
J. A. Killick, Winds for wings. Pegasus **20**, 1 (June).
F. Kreith, P. S. Stewart, and E. S. Starkman, Rocket powered wind tunnel. ASME M. P., Los Angeles (July).
B. R. Leonard and J. N. Vivien, Altitude test facilities for aircraft engine research. Chem. Eng. Progr. **49**, 8 (Jan.).
A. W. McCoy and M. J. Brunner, The use of stator blade control to obtain wide range of compressor performance for wind tunnel application. ASME M. P. 53–SA–35, Los Angeles (July).
G. W. Newton, Simulated flight for engines at A. E. D. C. Abstract: Aircraft Eng. **25**, 196.
D. M. Ross, Altitude test chambers. Abstract: SAE Journal **61**, 47 (June).
J. Venn, The instrumentation of rocket motor test beds. J. Brit. Interplanet. Soc. **12**, 213.
F. L. Wattendorf, J. Noyes, and A. I. Ponomareff, High-altitude and speed propulsion wind tunnel at the Arnold Engineering Development Center. Mech. Eng. **75**, 789.
AF gets high speed data from supersonic sleds. Aviation Week **59**, 26 (Sept. 7).
Aircraft test-house and research facilities. Engineering **176**, 150.
A modern jet engine test plant. Aeroplane **84**, 643.
Admiralty test house for gas turbines. Engineering **175**, 385; Engineer **195**, 452.
Allison B–45 tests J71 jet engine. Aviation Week **58**, 20 (Jan. 26).
Compressor testing at Ansty. Aeroplane **85**, 658.
Details of Tullahoma test center. Aviation Week **58**, 36 (June 15).
Jet engine test plant. Engineer **195**, 667.
Jet laboratory unveiled. Automotive Inds. **108**, 21 (May 15).
McDonnell opens jet test facility. Aviation Week **58**, 44 (Apr. 27).
NACA opens lab for giant jets. Aviation Week **58**, 22 (Jan. 26).
Research and development progress. ARDC; foundation for air power. Aviation Age **19**, 32 (June).

Research and development progress. Arnold development center. Aviation Age **19,** 38 (June).
Research and development progress. BUAER centers: where the navy grows wings. Aviation Age **19,** 48 (June).
Research and development progress. NACA; the coordinating agency. Aviation Age **19,** 26 (June).
Research and development progress. Powerplants: performance prime movers. Aviation Age **19,** 102 (June).
Test-beds at Banner Lane. Aeroplane **84,** 604.
Test plants for "Avon" jet engines. Engineering **175,** 588.
The Brown Boveri fluid dynamics and combustion laboratory. Engineering **176,** 600.

220. RESEARCH PROGRAMS

1950

L. Crocco, Instruction and research in jet propulsion. J. Am. Rocket Soc. No. 80, 32.
H. Harvey, United States research project "Squid." Shell Aviation News No. 146, 16 (Aug.).
Hsue-Shen Tsien, Instruction and research at the Daniel and Florence Guggenheim Jet Propulsion Center. J. Am. Rocket Soc. No. 81, 51.
M. G. Whybra, Detroit Rocket Society liquid propellant program. Rocketscience **4,** 67 (Sept.).

1951

D. A. Anderton, British research—quality, no quantity. Aviation Week **55,** 23 (Nov. 19).
H. R. Cox, Some fuel and power projects. Inst. Mech. Engrs. (London), J. and Proc. **164,** 407; Engineer **192,** 664, 685 and 723; Engineering **172,** 726, 793 and 823.
R. McLarren, NACA closes transonic gap. Aero Dig. **62,** 32 (June).
R. McLarren, NACA reveals progress in propulsion. Aero Dig. **63,** 60 (Nov.).
A. McSurely, NACA tunnels bare secrets of transonic. Aviation Week **54,** 13 (May 28).
W. D. Perreault, NACA's high-speed research program. Am. Aviation **15,** 31 (June 11).
C. J. Pierce and W. P. Berggren, Ballistics program at Ohio State University. J. Am. Rocket Soc. No. 84, 33 (Mar.).
H. A. Soulé, High-speed research airplane program. Aero Dig. **63,** 17 (Sept.).
I. Stone, NACA seeks answers to Mach 3.5 speeds. Aviation Week **55,** 20 (Nov. 12).
Aeronautical research. Mech. Eng. **73,** 652.
Current research by the Ministry of Fuel and Power. Engineering **171,** 70.
NACA transonic research. Shell Aviation News No. 158, 11 (Aug.).
NACA—10 years of engine research. Pegasus **14,** 10 (June).
Research at Langley Field. Aeroplane **81,** 154.
Turbine research in Canada. Aeroplane **81,** 641.

1952

J. E. Arnold, Bumblebee program. Aviation Age **17,** 33 (Jan.).
H. L. Dryden, C. M. Bolster, and D. L. Putt, Trends in aircraft development and research at the NACA; in the Navy; in the Air Force. Abstract: SAE Journal **60,** 42 (Mar.).
R. McLarren, NACA previews tomorrow. Aero Dig. **65,** 17 (Sept.).
D. L. Putt, Research and development in the United States Air Force. SAE Quart. Trans. **6,** 304.
J. A. Shortal, NACA's rockets gather data for missile design. Abstract: SAE Journal **60,** 17 (Nov.).
Aerodynamic research with rocket-propelled models. Engineer **194,** 254.
Aircraft gas-turbine research. Mech. Eng. **74,** 21.
Some aspects of research at the Royal Aircraft Establishment. Engineer **194,** 466.

1953

D. A. Anderton, Missile program still lags dangerously. Aviation Week **58,** 83 (Mar. 2).
J. A. Shortal, The NACA's role in guided missile research. Aircraft Eng. **25,** 96.
Engine research in Sweden. Aeroplane **86,** 44.

221. ATOMIC POWER

1950

H. A. Winne, Atomic energy's place in your plans for the future. Gen. Elec. Rev. **53**, 11 (July).
Atomic-weapons effects. Mech. Eng. **72**, 811.
Costs of radiation protection. Nucleonics **7**, 73 (Sept.).
Graphite low-energy pile at Harwell. Engineer **190**, 587; Engineering **170**, 497.
The first atom powered bomber. Am. Aviation **14**, 11 (July 15).

1951

D. A. Anderton, The atom: power for flight. Aviation Week **54**, 21 (May 21); 23 (May 28); 21 (June 4); 21 (June 11).
F. E. Balderston, The economics of atomic power. Mech. Eng. **73**, 317.
N. Scholz, The use of nuclear energy for rocket propulsion. Weltraumfahrt No. 2, 40.
L. N. Thompson, Nuclear-energy propulsion. Flight **60**, 656.
American low-power nuclear research reactors. Engineer **191**, 422.
Atomic plane seen flying by 1954–56. Aviation Week **55**, 16 (Sept. 17).
Atomic power. Mech. Eng. **73**, 226.
Atomic power plants for aircraft. Interavia **6**, 246.
Atomic-powered aircraft propulsion. Aeroplane **80**, 172 and 176.
British experimental pile. Mech. Eng. **73**, 738.
British experimental pile at Harwell. Engineer **191**, 508; Engineering **171**, 464.
Brookhaven reactor construction. Mech. Eng. **73**, 502.
Low-power nuclear reactors. Mech. Eng. **73**, 142.
Nuclear energy in 1950. Engineer **191**, 27.
Nuclear reactors. Chem. Eng. **58**, 113.
P–W to build atomic aircraft engine. Aviation Week **55**, 18 (Dec. 24).
The nuclear reactor at the Brookhaven National Laboratory, New York. Engineer **192**, 238.
Who will build the atom plane? Aviation Week **54**, 15 (Mar. 5).

1952

J. F. Flagg and M. J. Gross, Nuclear fuel for power production. Gen. Elec. Rev. **55**, 9 (Mar.).
H. J. Kaeppeler, On a theory of polar forces as a principle for application of atomic energy to rocket propulsion. Rocketscience **5**, 34, 64 and 83 (1951); **6**, 20 and 41 (1952).
M. C. Leverett, Aircraft nuclear propulsion. CADO Tech. Data Dig. **17**, 19. (Feb.); Shell Aviation News No. 165, 7 (Mar.); Aeronaut. Eng. Rev. **11**, 29 (Jan.).
D. R. Ritchie, Instrumentation and control of a nuclear reactor for rocket propulsion. Rocketscience **6**, 61.
G. Young, The promise and problems of atomic power. Aeronaut. Eng. Rev. **11**, 22 (Aug.).
A new conception. Shell Aviation News No. 165, 3 (Mar.).
Aircraft nuclear propulsion. Mech. Eng. **74**, 20.
Atomic energy in 1951. Engineer **193**, 18.
Atomic energy reactor built at aircraft plant. Automotive Inds. **107**, 53 (Oct. 1).
Atomic energy research at Harwell. Engineering **173**, 686.
Nuclear energy for rockets. Aeroplane **83**, 828.
Oak Ridge pile. Mech. Eng. **74**, 228.
Work of the U. S. Atomic Energy Commission. Engineer **194**, 531.

1953

R. D. Brooks and A. L. Rosenblatt, Nuclear power plants. Mech. Eng. **75**, 363.
W. L. Cisler, The future of atomic energy in industry. SAE Pre. No. 17, Detroit (Jan. 13).
A. V. Cleaver, Nuclear energy and rockets. Aeroplane **84**, 736.
K. Cohen, Key to atomic power. Nucleonics **11**, 10 (May).
N. S. Curry and R. J. Moffett, Atomic aircraft. Can. Aviation, 22 (Aug.).
B. L. Goodlet, The outlook for economic nuclear power. Engineering **176**, 345.
J. J. Grebe, Nuclear power and industry. J. Franklin Inst. **255**, 409.
H. J. Kaeppeler, The problem of cooling atomic rockets using thermonuclear reactions. Abstract: Aircraft Eng. **25**, 314.
E. H. Kerner, The expansion of a fissionable gas as a source of atomic power. J. Appl. Phys. **24**, 815.

A. W. Kramer, Basic facts about industrial power reactors. Power Eng. **57**, 2 (June).
J. A. Lane and S. McLain, Design of nuclear power plants. Chem. Eng. Progr. **49**, 287.
M. McCarthy, Nuclear reactors for rockets. J. Am. Rocket Soc. **24**, 36.
J. E. Pickering, Aeromedical problems for nuclear-propelled aircraft. Aeronaut. Eng. Rev. **12**, 69 (Apr.).
E. Sänger, The theory of the photon rocket. Abstract: Aircraft Eng. **25**, 314.
I. Sänger-Bredt, The thermodynamics of the working gases for atomic rockets. Abstract: Aircraft Eng. **25**, 313.
Atom fusion engine seen for space ships. Aviation Week **58**, 36 (Mar. 9).
Atomic energy in 1952. Engineer **195**, 11.
Industrial atomic power. Mech. Eng. **75**, 230.
Nuclear power feasibility studies. Nucleonics **11**, 49 (June).
Nuclear reactors and their applications. Engineering **175**, 84.
Nuclear reactors for electric power generation. Engineer **196**, 198 and 228.
The vanishing atomic airplane. Am. Aviation **17**, 33 (July 6).
Urge gas turbine for sub atomic engine. Science News Letter **63**, 340.

222. MISCELLANEOUS

1948

S. C. Huddleston, H. D. Wilsted, and C. W. Ellis, Performance of several air ejectors with conical mixing sections and small secondary flow rates. NACA Research Memo. No. E8D23 (July).
R. W. Luidens and H. Hunczak, Preliminary investigation of cone-type diffusers designed for minimum spillage at inlet. NACA Research Memo. No. E7K19 (May).

1949

B. H. Little, Jr., and S. W. Wilbur, High-subsonic performance characteristics and boundary-layer investigations of a 12° 10-inch-inlet diameter conical diffuser. NACA Research Memo. No. L50C02a (May).
Provisional symbols and definitions for aircraft turbines. NACA Tech. Note No. 1508 (March).

1950

A. D. S. Carter, S. J. Andrews, and H. Shaw, Some fluid dynamic research techniques. Inst. Mech. Engrs. (London), J. and Proc. **163**, 249.
M. R. Copp and P. L. Klevatt, Investigation of high-subsonic performance characteristics of a 12° 21-inch conical diffuser, including the effects of change in inlet-boundary-layer thickness. NACA Research Memo. No. L9H10 (March).
H. Davis, H. Kottas, and A. M. G. Moody, The influence of Reynolds number on the performance of turbomachinery. ASME M. P. No. 50-A-99.
R. Hawthorne, Cooling package for a jet fighter. Aviation Age **14**, 30 (Oct.).
H. B. Horne, Jr., Problems facing the rocket industry relative to military planning. J. Am. Rocket Soc. No. 82, 107 (Sept.).
H. R. Hunczak and E. J. Kremzier, Characteristics of perforated diffusers at free-stream Mach number 1.90. NACA Research Memo. No. E50B02 (May).
H. A. Klein, Jets ablaze. Aero Dig. **61**, 30 (Dec.).
O. Lutz, Graphical determination of wall temperatures for heat transfers through walls of arbitrary shape. NACA Tech. Memo. No. 1280 (Apr.).
H. Pearson, The estimation of range of jet-propelled aircraft. Aeronaut. Quart. **2**, 167.
B. Pinkel, R. N. Noyes, and M. F. Valerino, Method for determining pressure drop of air flowing through constant-area passages for arbitrary heat-input distributions. NACA Tech. Note No. 2186 (Sept.).
H. Schlichting, Turbulence and heat stratification. NACA Tech. Memo. No. 1262 (Oct.).
W. E. Scull, Relation between inflammables and ignition sources in aircraft environments. NACA Tech. Note No. 2227 (Dec.).
J. R. Stalder and D. Jukoff, Heat transfer to bodies traveling at high speed in the upper atmosphere. NACA Rept. No. 944.
L. T. E. Thompson, Developing new weapons for air and underwater combat. Ordnance **35**, 193.
H. L. Wheeler, Jr., and P. Duwez, Sweat cooling. Automotive Inds. **103**, 40 (July 15).

G. E. Woods-Humphrey, The application of pressure refuelling to flight. Aeronaut. Eng. Rev. **9**, 20 (Nov.).
Foreign aid jet plane deliveries speeded. Aviation Week **53**, 12 (Dec. 4).

1951

A. N. Clifton, Designing the high-speed fighter. Aeroplane **81**, 706.
G. A. Crocco, Physiological endurance in jet missiles. Termotecnica **5**, 55.
J. D. Derry, High speed flying. J. Roy. Aeronaut. Soc. **55**, 626.
J. C. Evvard and J. W. Blakey, The use of perforated inlets for efficient supersonic diffusion. NACA Research Memo. No. E51B10 (April).
J. Fricker, Air supremacy in a limited war. Aeroplane **80**, 473, 502 and 577.
L. Green, Jr., and P. Duwez, Fluid flow through porous metals. J. Appl. Mechanics **18**, 39.
D. C. Heimburger, Human factors in jet bomber operation. Air University Quart. Rev. **4**, 31 (Summer).
A. F. Hinett, Packaging turbojet engine parts. Aero Dig. **62**, 26 (Apr.).
G. A. Kunznick, Weight growth of jet fighters. Aero Dig. **63**, 30 (Aug.).
DeA. Lindes, Requirements for protection against thermal hazards of high speed flight. J. Aviation Med. **22**, 358.
R. C. Loomis and E. D. Shannon, Flight experience with turbine propeller powered aircraft. Abstract: Automotive Inds. **104**, 106 (May 15).
R. B. Maloy, Advent of turbine and JATO affect C. A. R. Abstract: SAE Journal **59**, 96 (Jan.).
A. Miele, The true stationary turning performance of turbojet aircraft. Riv. aeronaut. **27**, 23.
S. S. Penner, Thermodynamics and chemical kinetics of one-dimensional nonviscous flow through a Laval nozzle. J. Chem. Phys. **19**, 877.
J. W. Railly, The flow of an incompressible fluid through an axial turbo-machine with any number of rows. Aeronaut. Quart. **3**, 133.
R. Sohn, Development of Sabre combat tanks. Aero Dig. **62**, 22 (Apr.).
M. F. Valerino and R. B. Doyle, Method for determining pressure drop of monatomic gases flowing in turbulent motion through constant-area passages with simultaneous friction and heat addition. NACA Tech. Note No. 2328 (Apr.).
B. Warren, Altitude performance of jet fighters. Can. Aviation **24**, 30 (May).
M. Wuthrich, Ground attack missions and the jet. Interavia **6**, 103.
DeM. D. Wyatt and H. R. Hunczak, An investigation of convergent-divergent diffusers at Mach number 1.85. NACA Research Memo. No. E50K07 (Feb.).
A turbine training aid. Aeroplane **80**, 356.
AF readies jets for in-flight refueling. Am. Aviation **15**, 15 (June 25).
All-metal containers replace wooden ones for aircraft engines. CADO Tech. Data Dig. **16**, 12 (Sept.).
Avionics: key to new missile research. Aviation Week **54**, 9 (June 4).
Debate: prop vs. jet for troop support. Aviation Week **54**, 18 (Jan. 29).
Exhaust blast from another plane starts jet engine. Science News Letter **59**, 358.
Flight refueling of fighter aircraft. Engineer **192**, 128.
Fueled in flight. Aviation Week **54**, 13 (Apr. 16).
GM to convert Kansas City plant to jet fighter production. Automotive Inds. **104**, 35 (Jan. 15).
Jet engine cans give protection. Aviation Week **54**, 29 (May 21).
Jet trainer parts go miniature. Aviation Week **55**, 31 (Sept. 3).
New facts on jet combat worry Allies. Aviation Week **55**, 16 (Dec. 3).
Northrop's cost-cutting methods. Aviation Week **54**, 37 (June 4).
School for aeronautical engineers. Aeroplane **80**, 231.
Swedes pooling their jet know-how. Aviation Week **54**, 33 (Jan. 15).
The school of gas-turbine technology. Engineering **171**, 199; Engineer **191**, 284.
Variable wing sweepback. Mech. Eng. **73**, 826.

1952

H. Appleman, The forecasting of jet aircraft condensation trails. Aeronaut. Eng. Rev. **11**, 30 (Aug.).
C. I. Barron, The dangers man faces in flights above 50,000 ft. Abstract: SAE Journal **60**, 24 (July).
S. H. Breslow, Foam rubber dunnage cushions jet engine spares. Iron Age **169**, 150 (Feb. 7).
L. C. Craigie, The air war in Korea. Aeronaut. Eng. Rev. **11**, 26 (June).

F. V. Davies and R. J. Monaghan, The determination of skin temperatures attained in high speed flight. Aeronaut. Research Council (Gt. Brit.) CP No. 123 (Feb.).
P. M. Gallois, The jet bomber confounds the air stategist. Interavia **7**, 127.
H. H. Gardener, Structural problems of advanced aircraft. J. Roy Aeronaut. Soc. **56**, 221.
J. P. Henry, E. R. Ballinger, P. J. Maher, and D. G. Simmons, Animal studies of subgravity state during rocket flight. J. Aviation Med. **23**, 421.
A. W. Jessup, Future Navy air role shaped in Korea. Aviation Week **56**, 18 (Apr. 21).
A. W. Jessup, Korea: field test for tactical air power. Aviation Week **56**, 20 (Mar. 10).
D. Keith-Lucas, The shape of wings to come. Engineering **174**, 349.
E. J. Kendricks, Aeromedicine: the dominant science. Aero Dig. **64**, 72 (Jan.).
B. Lockspeiser, Progress in aeronautical science and engineering. Advancement of Sci. **9**, 171; Engineering **174**, 317 and 357.
E. F. Macks and Z. N. Nemeth, Comparison of high-speed operating characteristics of size 215 cylindrical-roller bearings as determined in turbojet engine and in laboratory testing. NACA Rept. No. 1084.
L. A. Palmer, Airport pavements for jets. Aviation Age **18**, 36 (Dec.).
J. W. Tomlinson, Arrival of jet power brings new language. Can. Aviation **25**, 34 (May).
L. Westrate, Jet age problems aired by aviation industry leaders. Automotive Inds. **107**, 49 (Oct. 1).
F. Zwicky, Morphological features of the isothermal conversion of chemical energy into propulsive energy. J. Am. Rocket Soc. **22**, 339.
A burning question. Shell Aviation News No. 170, 25 (Aug.).
Discussing aeronautics at Belfast. Aeroplane **83**, 424.
Jets and aerodrome surfaces. Aeroplane **83**, 849.
Sealing the Thunderjet. Automotive Inds. **106**, 40 (Apr. 15).
Some gas turbine terms. Power and Works Eng. **47**, 349.

1953

W. E. Braham, The trend of complete aircraft and guided-missile structures toward reinforced plastics. Aeronaut. Eng. Rev. **12**, 37 (Sept.).
D. S. Dean, An electronic trip to prevent overspeeding of a turbo-alternator. Roy. Aircraft Establishment (Gt. Brit.), Tech. Note No. RPD 91 (Nov.).
D. L. Ellis, What is this thing called Mach 1? Aeroplane **84**, 434.
A. A. Hafer, Gas-turbine progress report—materials, cooling and fuels. Trans. ASME **75**, 127.
R. C. Hapgood, A proposed revision of American standard letter symbols for aeronautical sciences. Aeronaut. Eng. Rev. **12**, 41 (Jan.).
W. A. Kilrain, Jets pose airport design problems. Am. Aviation **16**, 37 (May 25).
P. F. Martinuzzi, Gas-turbine progress report—cycle components. Trans. ASME **75**, 137.
H. E. Newell, Jr., and J. W. Siry, Rocket upper air research. J. Am. Rocket Soc. **23**, 7.
W. D. Perreault, Heat-resistant runway material developed. Am. Aviation **17**, 48 (June 22).
H. P. Powell, Speed in the air. Shell Aviation News No. 179, 4 (May).
L. S. Rolls, Techniques for determining thrust in flight for airplane equipped with afterburners. Inst. Aeronaut. Sci. Pre. No. 418, Los Angeles (July).
O. A. Saunders and P. H. Calder, Heat transfer in a nozzle at supersonic speeds. Inst. Mech. Engrs. (London), J. and Proc. **166**, 232.
K. E. VanEvery, An engineering comparison of wing planforms for supersonic speeds. Automotive Inds. **108**, 60 (Feb. 1).
D. Wood, Flying a jet bomber in "combat." Aviation Week **58**, 20 (April 27).
AF to test new jet-resistant runway. Aviation Week **58**, 64 (June 1).
I. A. S. 21st annual meeting: summary of technical sessions. Aeronaut. Eng. Rev. **12**, 28 (April).
Propulsion, research and instruction. Aeroplane **84**, 11.
World speed records. Aviation Age **19**, 6 (June).

U. S. GOVERNMENT PRINTING OFFICE: 1954