UNESCO
Organisation des Nations Unies
pour l'Education, la Science et la Culture
nous aide financièrement pour la publication de
ce Bulletin

This Bulletin
is published with the financial help of the
United Nations Educational, Scientific
and Cultural Organisation
UNESCO
INFORMATIONS

Comité National Danois 1
Comité National Américain 1
Conseil International des Unions Scientifiques. 3

COMMISSION II Evanouissements brusques : 5

Comité National Marocain

DOCUMENTS — TRAVAUX :

Australie 6
Argentine 7
Belgique 7
Chine 10
Etats-Unis d'Amérique 10
Grande-Bretagne 23
En séance du 22 mars 1948, ce Comité a été réorganisé et constitué comme suit :

At a meeting held on March 22nd, 1948, this Committee has been reorganized and constituted as follows :

Président-President : Professor Jörgen Rybner, Danmarks Tekniske Hojskole, Laboratoriet for Telegrafi og Telefoni, Oster Voldgade, 10, Copenhagen.

Secrétaire-Secretary : Ing. Heegaard, Radiohuset, Copenhagen.

Membres-Members : Professor J. Oskar Nielsen; Mr. Gunnar V. C. Pedersen; Professor Bengt Strömgren.

Nous signalons à l'attention des Comités Nationaux l'extrait suivant du document n° B/148, signalé à la page 18.

We draw the attention of the National Committees on the following abstract of document n° B/143 mentioned page 18.

"Radio is unique among the fields of scientific work in having special adaptability to large-scale international research programs, for the phenomena that must be studied are world in extent, and yet are in a measure subject to control by the experimenters. The U. R. S. I. has in this a distinct field of usefulness in furnishing a meeting ground for the numerous workers on the various aspects of radio research; its meetings and committee activities have furnished a valuable means of pro-"
moting research through exchange of ideas.

The American Section holds an annual spring meeting in Washington, D.C., jointly with the Institute of Radio Engineers, at which papers on the fundamental phases of radio are presented. Last year the precedent was set for a second similar meeting in October. The American Section was organized in 1920, under U.S. National Research Council. It is made up of a general membership of about 700 and an Executive Committee.
Union Internationale de Mécanique Théorique et Appliquée :
Une réunion s'est tenue à Paris, le 4 mars 1948.

Union Internationale de Chimie Pure et Appliquée :
Une réunion de la Commission de Chimie Macromoléculaire aura lieu à Bruxelles, le 5 et 6 avril 1948.

Un colloque sur la chimie et la physique des très grosses molécules aura lieu à Liège, les 6, 7 et 8 avril 1948.

Grants-in-aid allocated by Unesco to I. C. S. U. and the Scientific Unions which it federates — 1948 :

The general conditions attached to these grants-in-aid are the following:

1. In accordance with Article VIII (a) of the Formal Agreement with the International Council of Scientific Unions, Unesco expects to be notified of all meetings of committees concerned with expenditure of Unesco grants, in sufficient time in advance for Unesco to have the opportunity of sending a representative.

2. Unesco expects to receive a report on the activities supported by the grants-in-aid, before the end of September, for presentation to the General Conference; a financial report with audited balance sheet before the end of January 1949; and a statement of the unspent and uncommitted residue, if any, before the end of the first week of January, 1949.

3. Unesco expects to receive acknowledgments of grants in a suitable way on all publications issued by organisations in receipt of grants when these are used for publication expenses.

4. While the selection of invited participants to the General Assemblies is in the hands of the Executive Committees of the Unions, Unesco desires that preference should be given to scientists from war devastated countries and also to young scientists.

5. No portion of these Unesco grants is to be used for purposes other than those specified in the breakdown sent to each Union, without the previous consent of Unesco. Per diem living allowances to scientists attending meetings are not considered to constitute travelling expenses.
**CALENDAR** (Abstract)


28 juin - 3 juillet 1948 - Lyon : Colloque International sur le Calcul des Probabilités et Statistiques Mathématiques.


Le Comité National Marocain nous fait part de la communication suivante :


Le même jour, à partir de 10 h. 15, le trafic était arrêté au centre d'écoute des P. T. T., à Rabat, qui travaille dans les bandes des 20 et 25 mètres. Les opérateurs estiment qu'ils se sont trouvés brusquement dans une zone de silence.
Les documents ci-après ont été envoyés aux Secrétariats des Comités Nationaux.

Les Membres des Comités Nationaux que ces documents intéressent particulièrement et désirent d’en recevoir un exemplaire, sont priés de s’adresser au Secrétariat Général.

The documents hereafter mentioned have been sent to the National Committees secretaryship.

Members of National Committees particularly interested by these documents and wishing to receive a copy, are requested to apply to the General Secretary’s Office.

AUSTRALIE — AUSTRALIA


Summary:

Experimental studies of solar radiation on a frequency of 200 Mcyc./sec. are described.

This radiation has characteristics similar to those of thermal radiation but is always hundreds of time greater than the thermal radiation anticipated from the photosphere and sometimes greater by a factor of 10'.

The day-to-day intensity variations over a period of six months confirm a correlation with sunspots. The received intensity of radiation is subject to rapid fluctuations; sudden increases, or « bursts », of duration from a fraction of a second to a minute are characteristic. These rapid fluctuations are similar at widely-spaced receiving points, and it is concluded that most of them are extra-terrestrial, and presumably solar, in origin.

Directional observations, based on the interference phenomenon as the sun rises over the sea, indicate that the radiation originates not uniformly over the sun’s disk but in restricted areas in the immediate vicinity of a sunspot group.

Values of received intensity are at times too great to be accounted for in terms of thermal radiation, so that another mechanism producing radiation must exist. Radiation from gross electrical discharges is suggested.
Les documents suivants ont été reçus au Secrétariat Général pendant le mois d’Avril 1948.
Les membres de l’Union, désireux d’obtenir l’un ou l’autre de ces documents sont priés de s’adresser au Secrétariat Général.

The General Secretary’s Office has receiveb during April 1948 the following documents.
Membres of the Union wishing to receive some of these documents are re-quested to apply to the General Secretary’s Office.

ARGENTINE


BELGIQUE — BELGIUM

Dans le courant du mois de mars, le C. C. R. M. a commencé à remplacer l’anciennne installation de mesure de fréquence par de nouveaux appareils entièrement différents. Il s'écoulera plusieurs semaines avant que la nouvelle installation soit complètement installée, et pendant ce temps les veilles seront réduites. Par conséquent, le nombre de résultats publiés pour le mois de mars et d’avril sera inférieur à ce qu’il est normalement. Dès que la nouvelle installation sera terminée, une notice spéciale sera publiée, qui décrira les nouvelles possibilités.

Le rapport comprend les résultats des mesures de fréquence effectuées à Bruxelles sur les transmissions des stations suivantes :

A. Radiophares Européens d’Aviation travaillant en ondes moyennes.
B. Stations Aéronautiques travaillant dans les bandes de fréquence suivantes :
   6.200 — 6.676 Kc/s
   8.200 — 8.500 Kc/s
   12.300 — 13.350 Kc/s
C. Stations d’Aéronef travaillant dans les bandes de fréquence suivantes :
   320 — 365 Kc/s
   6.200 — 6.675 Kc/s
Les résultats des mesures sous A et B sont représentés sous forme de graphiques, ceux sous C sont mis sous forme de tableaux.

Le rapport comprend les résultats des mesures de fréquence effectuées à Bruxelles par le C. C. R. M. pendant le mois de mars, sur les transmissions des stations suivantes :
A. Radiophare maritimes.
B. Stations côtières travaillant dans les bandes de fréquence suivantes :
   - 365 — 485 kc/s
   - 485 — 515 kc/s
   - 8.200 — 8.900 kc/s
   - 12.300 — 13.350 kc/s

C. Stations de navire travaillant dans les bandes de fréquence suivantes :
   - 365 — 515 Kc/s
   - 8.200 — 8.900 Kc/s

Les résultats des mesures sous A et B sont présentés sous forme de graphiques, ceux sous C sous forme de tableaux.


Sommaire :
- L’œuvre météorologique de T. A. Mann (1735-1809), L. Dufour.
- La Phisicochimie des Cmètes, P. Swings.
- Le Temps en septembre, octobre, novembre, R. Sneyers.
- Le maximum d’activité solaire, G. Coutrez.

Observation des taches solaires :
- Rotations n° 1253 du 31, 34 juillet au 27, 57 août 1947;
- 1257 du 27, 57 août au 23, 83 septembre 1947;

Les renseignements publiés contiennent :
- les dates et heures d’observation,
- le nombre de groupes et de taches,
- le nombre relatif de Wolf,
- un tableau contenant les divers renseignements relatifs à la position des groupes,
- les caractéristiques des principaux groupes,
- une table d’évolution des groupes de taches.

Ephémérides astronomiques, février, mars 1948.


Sommaire :
- La courbure de l’Espace, J. Gorren.
- Mission astronominque et géodésique.
- Quelques considérations sur l’œuvre météorologique de A. Quetelet (1796-1874), L. Dufour.
- Une comète brillante observable en Belgique.
- Un Astrolabe latin du XIIe siècle, P. Michel.
- L’année Astronomique 1948, P. Humbert.

Observations des taches solaires :
- Rotations n° 1259 du 21, 12 octobre au 17, 42 novembre 1947;
- 1260 du 17, 42 novembre au 14, 74 décembre 1947;
- 1261 du 14, 74 décembre au 11, 07 janvier 1948.

Ephémérides astronomiques, avril et mai 1948.
Sommaire :

L'Observatoire et le Laboratoire du Houga, J. Peridier.
Les débuts de l'aérologie en Belgique, L. Dufour.
L'œuvre météorologique de C. M. V. Montigny (1819-1890), L. Dufour.
Le temps en mars 1948, R. Sneyers.
Récapitulation des observations exécutées en 1947.
Observations des taches solaires, G. Coutrez.
Rotation n° 1262 du 11,07 janvier au 7,07 janvier au 7,49 février 1948.
Comptes rendus de séances.
Ephémérides astronomiques pour juin et juillet 1948.

Table des matières :

Introduction :
Informations générales pour l'utilisation des prévisions ionosphériques.

Uccle — Fréquences critiques.
Liaisons au départ de Bruxelles.
1. Europe.

1. Bruxelles — Copenhagen

2. Amérique.
   Bruxelles — Albany
   Bruxelles — Washington
   Bruxelles — San Francisco
   Bruxelles — Dorval
   Bruxelles — Sao Paulo
   Bruxelles — Santiago
   Bruxelles — Rio de Janeiro
   Bruxelles — Buenos-Ayres

3. Afrique.
   Bruxelles — Casablanca
   Bruxelles — Coquillhatville
   Bruxelles — Afrique du Sud

4. Asie.
   Bruxelles — Calcutta
   Bruxelles — Bombay

5. Océanie.
   Bruxelles — Batavia

Léopoldville — Fréquences critiques.
Liaisons au départ de Léopoldville.

1. Europe.
   Léo — Bruxelles
   Léo — Constantinople
2. Amérique.
   Léo — Albany
   Léo — New York
   Léo — San Francisco
   Léo — Buenos Ayres
   Léo — Santiago

3. Afrique.
   Léo — Le Cap

4. Océanie.
   Léo — Batavia

Emissions et réceptions centrées à Bruxelles.
Cartes par directions (de 30° en 30°) de 0° à 330° pour distances de 0,500, 1,000, 2,000, 3,000 et 4,000 km.
Cartes par heures (de 2 en 2 heures) pour distances de 0 à 4,000 km.
Emissions et réceptions centrées à Léopoldville.
Cartes et directions (de 30° en 30°) de 0° à 180° pour distances de 0,500, 1,000, 1,500 et 2,000 km.
Cartes par heures (de 2 en 2 heures) pour distances de 0 à 2,000 km.

CHINE — CHINA

F ionization and Geomagnetic Latitudes, P. H. Liang.


ÉTATS-UNIS D'AMÉRIQUE — UNITED STATES AMERICA

N° B/141. — Program Joint Meeting International Scientific Radio-Union American Section and Institute of Radio Engineers. May 5, 6 and 7, 1947.

Communications Systems, Modulation and Radar.

1. Some Practical Considerations Affecting FM Broadcast Station Coverage, P. A. de Mars and Thomas A. Wright, Raymond M. Wilmott, Inc., Washington D.C.


3. Transmission of Audio Frequencies by Telegraphic Code, Elmer Baem, Coles Signal Laboratory, Red Bank, N.J.


5. Telephony by Pulse Code Modulation, W.M. Goodall, Bell Telephone Laboratories, Inc. New York, N.Y.


15. DOVAP — A Continuous Wave Doppler System for the Determination of Velocities and Spartial Positions of Guided Missiles L. G. de Bey, Ballistic Research Laboratories, Aberdeen Proving Ground, Md.


18. Temperature Telemetering, Richard Ellis, Applied Physics Laboratory, The Johns Hopkins University, Silver Spring, Md.


21. Study of the Electrical Circuit Constants of Quartz Plates in Thickness-Shear Vibration, Gunnar Hok, Wesleyan University, Middletown, Conn.

**Ionospheric Propagation**


Measurement Methods

32. An Improved Conductance Meter, W. A. Mc. Cool, Naval Research Laboratory, Washington, D.C.

33. A reflection Grating for Measuring Wavelength in the Millimeter Region, Harold Herman and R. J. Coates, Naval Research Laboratory, Washington, D.C.


35. Measurement of Surface Current and Charge Distributions on Metal Surfaces at Microwave Frequencies, Beverly C. Dunn, Jr. and Ronald King, Curt Laboratory, Harvard University, Cambridge, Mass.

36. Megacycle Stepping Counter, Charles B. Leslie; Naval Ordnance Laboratory, Washington, D. C.


Geophysical and Cosmic Phenomena


41. Some Experimental Results obtained by Ionospheric Investigations in Sweden during the Total Solar Eclipse of the 9th July, 1945. Sven Gejer and Per Akerlind, Royal Board of Swedish Telegraphs, Stockholm, Sweden.

42. Recent Large Sunspots, Edison R. Hoge, Mt. Wilson Observatory, Pasadena, Calif.


48. Rate of Production of Ionization in the Ionosphere, S. L. Seaton, Air Material Command, Wright Field, Dayton, Ohio.

49. Virtual and True Height of the F2 Layer, G. R. White, National Bureau of Standards, Washington, D.C.


---

Circuits

51. Harmonic Generation at Microwave Frequencies, P. A. Hower, Polytechnic Research and Development Co, Inc., Brooklyn, N.Y.

52. Harmonic Generation, W. R. Ferris, Naval Research Laboratory, Washington, D.C.


54. An Improved Approach to the Analysis of Vacuum Tube Circuits, Keats A. Pullen, Pratt Institute of Brooklyn, N.Y.


57. Directional Coupler Waveguide Mixer, E. F. Mc. Clain, Naval Research Laboratory, Washington, D.C.

58. A New Approach to Resonant Circuits for the 300 to 3.000 Megacycle Frequency Range, Franck C. Isely, Naval Research Laboratory, Washington, D.C.

59. Transmission Line Networks for VHF and UHF, M. K. Goldstein and A. Brodzinsky, Naval Research Laboratory, Washington, D.C.

60. Transient Phenomena in Wave Guides, Manuel V. Cerrillo, Massachusetts Institute of Technology, Cambridge, Mass.

---

Microwave Propagation

61. Scattering and Attenuation of Microwave Radiation Through Rain, F. T. Haddock, Naval Research Laboratory, Washington, D.C.


65. The Field of a Microwave Dipole Antenna in the Vicinity of the Horizon, C. L. Pekeris, Naval Research Laboratory, Washington, D.C.


69. Results of Horizontal Microwave Angle-of-Arrival Measurements by Phase Difference Method, A. W. Straiton and J. R. Gerhardt, The University of Texas, Austin, Texas.

70. Comparison of Calculated and Measured Phase Difference at 3.2 centimeters Wave Length, E. W. Hamlin and W. E. Gordon, The University of Texas, Austin, Texas.

Theory Calculations and Vacuum Tubes

71. The Calculation of the Magnetic Field, Due to a Steady Current in a Circular Coil or a Solenoid, Frederick W. Grover, Union College, Schenectady, N.Y.

72. Significance of Power Reflection, Bernard Salzberg, Naval Research Laboratory, Washington, D.C.

73. A Matrix Theory of Recurrent Networks, Burton N. David, Naval Research Laboratory, Washington, D.C.

74. Theory and Design of Network Type Pulse Generators, R. A. Herring, Jr., Naval Research Laboratory, Washington, D.C.


76. Reflex Klystrons for Broad Band Application, Paul G. Bohlke, Sylvania Electric Products, Inc., Bayside, N.Y.

77. High-Frequency Parameters of Vacuum Tubes, E. H. Hurlburt, Naval Research Laboratory, Washington, D.C.

78. Characteristics of Hot-Cathode, Mercury-Vapor Rectifier Tubes, Carl S. Roys, Syracuse University, Syracuse, N.Y.


80. Tube Ruggedization, I. L. Cherrick, Naval Research Laboratory, Washington, D.C.

Antennas


82. Wave Length Lenses, Gilbert Wilkes, Applied Physics Laboratory, The Johns Hopkins University, Silver Spring, Md.

83. A Fresnel-Zone Plate Antenna, I. Maddaus and S. Silver, Naval Research Laboratory, Washington, D.C.

84. Broad-Band Antenna Design, R. S. Wehner, Airborne Instruments Laboratory, Inc., Mineola, N.Y.


86. The Directly Fed Vertical Stabilizer as a Zero-Drag Broad-Band Aircraft Antenna for HF and VHF, R. S. Wehner, Airborne Instruments Laboratory, Inc., Mineola, N.Y.

87. Aberrations in Pill-Box Antennas, J. Certaine and I. Katz, Naval Research Laboratory, Washington, D.C.

89. Remarks on Linear Arrays, J. E. Eaton, Naval Research Laboratory, Washington, D.C.

90. Wide-Band Lobing and Non-Lobing Dipole Arrays in the 30 centimeter Region, R. J. Adams, Naval Research Laboratory, Washington, D.C.

**Measurement Methods**

91. An Expansion Theorem for Frequency-Modulated Circuits, Ernst Weber, Microwave Research Institute, Polytechnic Institute of Brooklyn, N.Y.

92. A Substitution Method of Impedance Measurement for the Frequency Range 20 to 100 Mc., Author to be announced, Airborne Instruments Laboratory, Inc., Mineola, N.Y.

93. New Microwave Measurement Techniques, F. J. Gaffney, Polytechnic Research and Development Co, Brooklyn, N.Y.

94. Decrement (Q) Measurements of Low Loss Cavities, John P. Hagen, Naval Research Laboratory, Washington, D.C.


98. Minimum Sparking Potentials of Barium, Magnesium and Alu-

---

**Radio Propagation and Radio Noise**


8. « Extra-Receiver » Noise at 100 Megacycles, J. H. Trexler, Naval Research Laboratory, Washington, D.C.


10. Solar Noise Bursts, 10.7 centimeters, A. E. Covington, National Research Council, Ottawa, Canada.

11. Atmospheric Noise Measurement in the Low-Frequency Range, Robert S. Hoff and Raymond C. Johnson, Engineering and Industrial Experiment Station, University of Florida, Gainesville, Fla.


15. Vertical-Incidence Ionosphere Measurements at 100 Kc/s, R. A. Helliwell, Stanford University, Calif.


**Antennas, Circuits and Measurements**

17. Withdrawn.


27. Some notes on modern Quartz Oscillator Design, Bertram C. Hill, Jr., Naval Research Laboratory, Washington, D.C.

29. Design and Performance of Vacuum-Tube Oscillators, Carl S. Royos, Syracuse University, Syracuse, N.Y.

30. A precise Resonance Method of Microwave Impedance Measurement with Application to Aircraft Antenna Models, Four-Terminal Networks and Waveguides, Ming S. Wong, Aircraft Radiation Laboratory, Wright Field, Dayton, Ohio.

**Tubes and Microwave Techniques and Systems**

31. Variations in the constants of Richardson's Equation as a function of Life for the Case of Oxide-Coated Cathodes on Nickel, Harold Jacobs and George W. Hees, Sylvania Electric Products Inc., Kew Gardens, N.Y.

32. The Memory Tube and its Application to Electronic Computation, Andrew V. Haeff, Naval Research Laboratory, Washington, D.C.


34. Modes in Interdigital Magnetrons, Joseph F. Hull, Signal Corps Engineering Laboratories, Bradley Beach, N.J.

35. Diode Magnetrons as a Reactance Tube for Ultra High Frequencies, L. Greenwald and A. Fischer, Signal Corps Engineering Laboratories, Bradley Beach, N.J.


38. Analysis of Pulses with Frequency Shifts during the Pulse, R. T. Young, Naval Research Laboratory, Washington, D.C.


40. Dielectric Constants of H2O, D2O and Nitrobenzene at 3.2 cm., A. H. Ryan, Naval Research Laboratory, Washington, D.C.

41. Conductivity of Ionized Gases in the Microwave Region, L. Goldstein and N. Cohen, Federal Telecommunication Laboratories, New York, N.Y.

42. Microwave « Q » Measurements in the presence of series losses, L. Malter and G. R. Brewer, Naval Research Laboratory, Washington, D.C.

43. Microwave Test Equipment, W. J. Jones, Signal Corps Engineering Laboratories, Bradley Beach, N.J.

44. R-F Components for Millimeter Wavelenghts, Harold Herman, Naval Research Laboratory, Washington, D.C.

45. Radio Direction Finder Set AN/CRD-1, William Todd, Signal Corps Engineering Laboratories, Bradley Beach, N.J.
Supplementary Program


47. The NBS Primary Standards of Frequency, V. E. Heaton and J. M. Shaull, National Bureau of Standards, Washington, D.C.


49. Transfer Characteristics of a Bridged Parallel-T Network, Charles F. White, Naval Research Laboratory, Washington, D.C.

50. Withdrawn.

51. Withdrawn.

52. Single-Tube Harmonic Generator Design, H. H. Grimm, Naval Research Laboratory, Washington, D.C.


55. Withdrawn.

N° B/143. — Program Joint Meeting International Scientific Radio Union, American Section and Institute of Radio Engineers.

May 3, 4, 5, 1948.

Description of International Scientific Radio Union
Ionosphere Propagation


4. Determination of Source Distances and the Virtual Ionosphere Height through the Graphical Analyses of Loran Pulse Wave, William J. Kessler, Engineering and Industrial Experiment Station, University of Florida, Gainesville, Fla.


8. A Pulse-Type Ionosphere Recorder with Electronically Tracked Units, W. F. Tortington, National Research Council, Ottawa, Canada.


12. Microwave Phase Front Measurements for Over-Water Paths of 12 and 31 Miles, A. W. Straiton, The University of Texas, Austin, Texas.

13. Some Results of Field-Intensity Measurements between 44.1 and 97.3 Mc. Over 70 Mile Propagation Paths, Arthur M. Braaten, Radio Corporation of America, RCA Laboratories Div., Riverhead, L.I., N.Y.


15. Calculation of the Attenuation of Electrical Field Strength, Harold J. Peake, Naval Research Laboratory, Washington, D.C.


17. New Radiosonde for Upper-Air Measurements, Leo Graig, Meteorological Branch, Evans Signal Laboratory, Belmar, N.J.

18. Techniques in the Analysis of Noise, Duncan Harkin, Naval Research Laboratory, Washington, D.C.


---

**Tropospheric Propagation and Radio Noise**

---

22. Microwave Phase Front Measurements for Over-Water Paths of 12 and 31 Miles, A. W. Straiton, The University of Texas, Austin, Texas.

23. Some Results of Field-Intensity Measurements between 44.1 and 97.3 Mc. Over 70 Mile Propagation Paths, Arthur M. Braaten, Radio Corporation of America, RCA Laboratories Div., Riverhead, L.I., N.Y.


25. Calculation of the Attenuation of Electrical Field Strength, Harold J. Peake, Naval Research Laboratory, Washington, D.C.


27. New Radiosonde for Upper-Air Measurements, Leo Graig, Meteorological Branch, Evans Signal Laboratory, Belmar, N.J.

28. Techniques in the Analysis of Noise, Duncan Harkin, Naval Research Laboratory, Washington, D.C.


---

**Microwave Systems**

---


34. The JHU/APL FM-FM Telemetering System, Richard T. Ellis, Applied Physics Laboratory, Johns Hopkins University, Silver Spring, Md.

---

**Antennas**

---


27. Image-Line Measurements of Antenna Impedance as a function of the Gap at the Driving Point, Patrick Conley, formerly Cruft Laboratory, Harvard University, now Westinghouse Research Laboratories.


29. An Experimental Investigation of the Radiation Patterns of Electro-Magnetic Horn Antennas, Donald R. Rhodes, The Ohio State University Research Foundation, Columbus, Ohio.


31. Theory of Single and Multiple Helical Antennas Producing Radiation Fields with Maximum Radiation Intensity Broadside to the Axis of Helix and with Approximate Circular Polarization in all Directions, A. E. Marston, Naval Research Laboratory, Washington, D.C.

32. Development of a Zero-Drag VHF Communications Aircraft Antenna, J. Bolljohn, E. N. Keith, F. E. Boyd, Naval Research Laboratory, Washington, D.C.

33. A Notch Antenna designed for Aerodynamic Surfaces, Ralph O. Tobinson, Applied Physics Laboratory, Johns Hopkins University, Silver Spring, Md.


35. The Determination of the Low-Frequency Radiation Characteristics of Ground-Based Antennas by Means of Models, Ernest A. Jones, The Ohio State University Research Foundation, Columbus, Ohio.

Microwave Techniques


37. Propagation of TE 01 Waves in Curved Wave Guides, W. J. Albersheim, Bell Telephone Laboratories, Red Bank, N.J.

38. A New Microwave Filter, J. R. Pierce, Bell Telephone Laboratories, New York, N.Y.


41. The Measurement of Antenna Impedances through Electrically long Cables by Slotted-Line Methods, K. W. Bewig, Naval Research Laboratory, Washington, D.C.

42. A Method of Measuring Voltage Standing-Wave Radio, A. M. Winzemer, Naval Research Laboratory, Washington, D.C.


Theory of Systems

44. Single Sideband Development, Donald E. Norgaard, General Electric Co, Schenectady, N.Y.


47. High Pulse Density Interrogator-Responder Systems, G. P. Ohman, Naval Research Laboratory, Washington, D.C.


51. A Stabilized and High Sensitivity Type spaced Adcock Medium-Frequency Direction Finder, M. K. Goldstein, Naval Research Laboratory, Washington, D.C.


Circuits


53. An Improved Regenerative Frequency Standard Application F. E. Wyman, Naval Research Laboratory, Washington, D.C.

54. The Magnetic Amplifier, N. R. Castellini, Coles Signal Laboratory, Red Bank, N.J.

55. The Use of G. Curves in the Analysis of Vacuum-Tube Circuits, Keats A. Pullen, Aberdeen Proving Ground, Md.


57. A Network Performance analyser, C. F. White, Naval Research Laboratory, Washington, D.C.

58. A Two-Frequency Oscillator, Leo V. Skinner, Capt. USAF, University of Illinois, Urbana, Ill.

Contents:

Terminology and Scaling Practices.
Monthly Average and Median Values of World-Wide Ionospheric Data.
Ionospheric Data for Every Day and Hour at Washington, D.C.
Ionosphere Disturbances.
American and Zürich Provisional Relative Suspot Numbers.
Solar Coronal Intensities observed at Climax, Colorado.

Errata:

Tables of Ionospheric Data.
Graphs of Ionospheric Data.
Index of Tables and Graphs of Ionospheric Data in CRPL-F.43.


Contents:

F₂ Zero-MUF, in Mc. W., I., E. Zones.
F₂ 4.000-MUF, in Mc. W., I., E. Zones.
E-layer 2.000-MUF, in Mc.
Median fEs, in Mc.

Percentage of Time occurrence for E₂ 2.000-MUF in excess of 15 Mc.
Nomogram for transforming F₂-Zero MUF and F₂-4.000 MUF to equivalent maximum usable frequencies at intermediate transmission distances; conversion scale for obtaining optimum working frequencies.
Nomogram for transforming E-layer 2.000-MUF to equivalent maximum usable frequencies and optimum working frequencies due to combined effect of E layer and F₂ layer at other transmission distances.


Contents:

F₂ Zero-MUF, in Mc., W., I. and E. Zones.
F₂ 4.000-MUF, in Mc., W., I. and E. Zones.
E-layer 2.000-MUF, in Mc.
Median fEs, in Mc.

Percentage of time occurrence for E 2.000-MUF in excess of 15 Mc.

World map showing zones covered by predicted charts, and auroral zones.
Great circle chart centered on equator.
GRANDE-BRETAGNE — GREAT BRITAIN


Contents:

Ordinary Ray Critical Frequencies F2 Zone E, I, W.
M. U. F. Factors for 3,000 km. F2 Zone E, I, W.
Maximum Usable Frequencies for 4,000 km. Zone E, I, W.
Optimum Working Frequencies:

<table>
<thead>
<tr>
<th>Zone E</th>
<th>Zone I</th>
<th>Zone W</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lat. 70° N.</td>
<td>Lat. 70° N.</td>
<td>Lat. 70° N.</td>
</tr>
<tr>
<td>Lat. 60° N.</td>
<td>Lat. 60° N.</td>
<td>Lat. 60° N.</td>
</tr>
<tr>
<td>Lat. 50° N.</td>
<td>Lat. 50° N.</td>
<td>Lat. 50° N.</td>
</tr>
<tr>
<td>Lat. 40° N.</td>
<td>Lat. 40° N.</td>
<td>Lat. 40° N.</td>
</tr>
<tr>
<td>Lat. 30° N.</td>
<td>Lat. 30° N.</td>
<td>Lat. 30° N.</td>
</tr>
<tr>
<td>Lat. 20° N.</td>
<td>Lat. 20° N.</td>
<td>Lat. 20° N.</td>
</tr>
<tr>
<td>Lat. 10° N.</td>
<td>Lat. 10° N.</td>
<td>Lat. 10° N.</td>
</tr>
<tr>
<td>Lat. 0°</td>
<td>Lat. 0°</td>
<td>Lat. 0°</td>
</tr>
<tr>
<td>Lat. 10° S.</td>
<td>Lat. 10° S.</td>
<td>Lat. 10° S.</td>
</tr>
<tr>
<td>Lat. 20° S.</td>
<td>Lat. 20° S.</td>
<td>Lat. 20° S.</td>
</tr>
<tr>
<td>Lat. 30° S.</td>
<td>Lat. 30° S.</td>
<td>Lat. 30° S.</td>
</tr>
<tr>
<td>Lat. 40° S.</td>
<td>Lat. 40° S.</td>
<td>Lat. 40° S.</td>
</tr>
</tbody>
</table>


Monthly Bulletin of Ionospheric Characteristics:
Falklands Islands for December 1947;
Slough for January 1948.


Monthly Bulletin of Ionospheric Characteristics:
Falklands Islands for January, 1948.
Slough for February, 1948.

Contents for both Nr B/148 and B/149:

Terminology;
Note on Ionospheric Absorption Measurements;
Units and Abbreviations;
Tables:
1. Noon Ionospheric Characteristics — Slough.
111. Median Hourly Values of Absorption — Slough.
1V. Hourly Values of hm. in km. for Region F. — Slough.
V. » » » ym/ho » » » — »
VI. of fF2 in Mc/s — Slough.
VII. » » » fEs » — »
VIII. Noon Ionospheric Characteristics — Falkland Islands.
IX. Monthly Mean Ionospheric Characteristics — Falkland Islands
X. Hourly Values of hm. in km. for Region F. — Falkland Islands.
XI. » » » ym/ho for Region F. — Falkland Islands.
XII. » » » fF2 in Mc/s — Falkland Islands.
XIII. » » » fEs in Mc/s — Falkland Islands.

The observing stations are:
Slough, Bucks, England. Lat. 51° 30' N., Long. 0° 34' W.
(Frequency sweep of recorder 0,5 Mc/s to 14,0 Mc/s in 6 minutes supplemented, when necessary, by manually operated apparatus covering 14 Mc/s to 25 Mc/s.)

Port Stanley, Falkland Islands, Lat. 51° 4' S., Long. 57° 51' W.
(Frequency sweep recorder 2,2 Mc/s to 16,0 Mc/s in 1 minute.)