

GEOPHYSICS

**Excess Electrons Cause Polar Radio Blackouts**

► TRILLIONS UPON trillions of wandering free electrons in the lowest layer of the ionosphere probably cause the polar radio blackouts that disrupt communications in Arctic regions.

Man's activities, and his safety, in the Arctic depend greatly on reliable radio contact, which sometimes becomes impossible on any frequency. Such disrupted communications occur when radio waves are completely absorbed in the ionosphere, the electrically charged layer of the earth's upper atmosphere that reflects radio waves.

Drs. J. C. Seddon and J. E. Jackson of the U. S. Naval Research Laboratory report to the U. S. National Committee for the International Geophysical Year (IGY) that the first measurements of electron density during a polar radio blackout were made by two rockets launched from Fort Churchill, Canada. Information telemetered earthward from these two rockets flights, plus a third, furnish "very strong evidence that a polar blackout is due to an abnormal number of free electrons in the D-region of the ionosphere."

They also report that moving electric charges play an important role in this effect. The polar blackout seems to involve little change in the E- and F-regions of the daytime ionosphere.

Science News Letter, March 28, 1959

**Questions**

ASTRONOMY—What is an annular eclipse? p. 202.

BIOCHEMISTRY—Where in the body is the melanocyte stimulating hormone naturally produced? p. 197.

PUBLIC HEALTH—How long does it take normal weather processes to remove radioactive debris from the troposphere? p. 199.

Photographs: Cover, George A. Smith; p. 195, U.S. National Committee-International Geophysical Year; p. 197, California Institute of Technology; p. 199, General Electric Company; p. 208, Eastman Chemical Products, Inc.

*Do You Know*

Four states in the U.S., Nevada, Arizona, California and Florida, are expected to have the largest *population* growth between 1955 and 1970.

A U.S. agriculturist recently estimated that the cost of *farm labor* in the U.S. has increased about 400% in the last 25 years.

North America has more than 1,000 kinds of *trees*.

Jobs open to *physicists* outnumber available candidates about five to one in the U. S.

**Special Buy!**



**EXTRA VALUE**  
with inside file \$5.95  
plus 10% F.T.  
When remitting please add 75¢ for postage & handling

**John Surrey, Ltd.** 11 W. 32nd St., Dept. SN-10, New York 1, N.Y.

**ATTACHE CASE**  
**Better Than LEATHER**

- Waterproof
- Scuffproof
- Brass plated fittings
- Hardwood frame construction
- Fully Lined
- 17 x 11 3/4 x 4 inches
- Smart & Practical
- Ginger Tan

Styled by Executives for the carrying of papers, documents and small articles. Appreciated by Students, Salesmen, Accountants, trip takers. Roomy and durable. Practical and Neat.

only **\$4.95**  
plus 10% Fed. Tax

**Free to WRITERS seeking a book publisher**

Two fact-filled, illustrated brochures tell how to publish your book, get 40% royalties, national advertising, publicity and promotion. Free editorial appraisal. Write Dept. SN  
**Exposition Press / 386 4th Ave., N.Y. 16**

**Natural LODESTONE, \$1.00 p.p.**  
Size about 1" x 3/4" x 3/4"

**MAGNETISM SET, only 35¢**  
Get all this material • 2 1/2 x 1 1/2-inch horse-shoe magnet • Soft iron "keeper" • Also iron filings • Plus a 1/2" diameter directional magnetic compass • And a strip of purest nickel. Great fun with magnetism! Dozens of scientific experiments possible—ALL for only 35¢.  
**HARRY ROSS** Scientific & Lab Apparatus  
63 Reade St., N. Y. 7, N. Y.

**WHAT MISTAKES IN DRIVING DO YOU MAKE?**

**C**AN you start a wet motor, take curves without rubbing off miles of rubber, get juice from a battery that seems dead, put out a fire beneath the hood, start on ice without spinning the wheels, pull out of a skid without whirling into approaching traffic?

What common mistakes do you make on flooded roads, on icy hills? What do you do when a car darts out at you from a side road? Do you know how to stop a car **FASTER** when emergency demands you stop on a dime? Do you know how to avoid a sideswipe, pass a truck crawling up a hill, even what to do in that split second you can act when a head-on collision seems inevitable? Do you **KNOW** what to do or will you do the first thing that comes to mind in that moment of panic?

**Are you sure your wife knows what to do—that she can handle the car in any emergency? That your grown-up son or daughter can?**  
Frank Williams' big new book, *How to Drive—and Stay Alive*, is the practical guide to safeguard anyone who drives from trouble on the road, from expensive delays, from emergencies of any kind—and from Sudden Death.

Based on the experiences of America's professional drivers, this book is packed with facts, lessons, and practical advice to save your time, your car, your money—and your life.

Name your driving problems, and in this new big book you'll find the answer; everything from how to get your car rolling if you have road trouble to how to save money on maintenance, insurance, tires, etc., how to buy a new or used car without being "stuck," and more hints than most people pick up in a lifetime on how to avoid the hazards of the road and what to do in every emergency.

When you drive, tomorrow may always be too late. So order today. Price only \$2 on a Money Back guarantee if not satisfied. Use coupon below.

If \$2 was all that anyone asked to help you in any emergency, that would be cheap insurance. So when you're told that *How to Drive—and Stay Alive* costs only \$2 and gives all the following information besides, you know this is a book you've got to own:  
• How to open your car if you're locked out, what engine noises mean, how to avoid dirty oil, push up gas mileage 3 or 4 miles a gallon, get rid of stains, protect yourself against tire theft, even how to make minor repairs.  
• 110 point check-list that just about guarantees you'll get a really good used car, which won't need immediate repairs and will run economically for years. How to avoid hidden costs in your purchase order and instalment contract. Simple clean-up steps that can boost the trade-in value of your car a hundred dollars.  
• **SPECIAL FOR WIVES:** a whole section on *How to Be a Better Driver Than Your Husband*.

**➡ FILL OUT AND SEND AT ONCE FOR QUICK DELIVERY**

Mail to **HARIAN PUBLICATIONS, 102 King Street, GREENLAWN (LONG ISLAND), N. Y.**  
I have enclosed \$2 (cash, check, or money order). Please send me **HOW TO DRIVE—AND STAY ALIVE**. You will refund my money if I am not satisfied.

NAME..... (please print)  
ADDRESS.....  
CITY & STATE.....

