

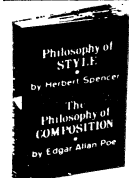


We first saw this beautiful fan in Cousteau's movie, "World Without Sun". It kept "ocean-aunts comfortable deep beneath tropical seas. ■ Solid body and soft, soft plastic blades can't hurt baby or pets. Chrome frame with rubber cushions for table or wall. ■ Two-speed noiseless motor runs continuously without heating and provides authoritative cooling ■ A gem of Italian design.

Mail to: Haverhill's, Dept. SN-0812
526 Washington St., San Francisco, California 94111
Add \$1.00 for insurance and postage (Calif. Residents add 4% Sales Tax). Send check or money order. If Diners' or Amer. Expr. give Acct. #. Satisfaction guaranteed or money back.

WRITERS Sixth Printing

Enrich your style through Herbert Spencer's and Edgar Allan Poe's classic principles that have influenced many of the world's great authors. Indispensable for writers eager to get published! Send \$1.00 to Pageant Press, Dept. SN 101 5th Ave., New York 3



TELLS HOW TO SELL YOUR INVENTION

If you have an invention that you believe has merit, write us at once for copy of copyrighted booklet "How to Go About Selling Your Invention." We work with manufacturers, and booklet reveals present markets, qualities of a saleable invention, current royalty rates being paid by manufacturers. Booklet is FREE, is offered to encourage new ideas we might submit to manufacturers. Just send name (no drawings please) to Keester Sales Corp., Dept D-418, Fremont, Ohio 43420

FRUSTRATED?

Earning *just* a salary? Want to share in profits of *your* new ideas and inventiveness?

Client outside U.S.A. seeks *new* processes and equipment in the Re-prographic field. All replies in strictest confidence.

Write to: **CRADCO, Inc.**
100 North Fifth Avenue
Highland Park, N.J. 08904

MOLECULAR PHYSICS

Mysterious 'Twist' in Magnetic Field

The twist may be old hat as far as dances go, but scientists have found a new twist they cannot yet explain. It may well represent a new physical phenomenon.

The puzzling twist occurs because gas molecules can cause a nonmagnetic metal rod hanging by a thread to turn slightly in the presence of a weak magnetic field. Depending upon the gas used, the rod will twist sometimes in one direction, sometimes in the other. Some gases do not affect the rod at all.

The twisting effect was first noted by Gifford G. Scott of General Motors Research Laboratories, Warren, Mich., using equipment built for the late Charles F. Kettering. The equipment is contained within very rigidly designed Helmholtz coils that cancel out the earth's magnetic field.

Harry W. Sturmer, also of the GM Laboratories, and Dr. Robert M. Williamson of Oakland University in near-by Rochester, Mich., joined Scott in tests to determine the varying effect of different gases. They report in *THE PHYSICAL REVIEW* (June 5).

In their experiments, the physicists suspended a warm brass rod in a cool gas. When they applied a weak magnetic field in a direction parallel to the rod, a slight twisting force, or torque, resulted. Evidently, the magnetic field changed the way gas molecules hit the rod.

Gases such as oxygen or nitrogen twist the rod one way, whereas such gases as methane, butane and propane twist it in the opposite direction. Another group of gases, including argon, water vapor and ammonia, have no effect.

Physicists in Holland, Canada, Russia and Germany are refining their theories to try to explain the details of why different gases have such widely varying effects.

There is no doubt the differences are related to the shapes of the impinging molecules, seemingly because they are slightly aligned due to the magnetic field, but exactly how or why the molecules' shape should have this result and why the molecules should be aligned are still under investigation.

Dr. Williamson likens the puzzling gas torque to what happens when a "super ball" is bounced against a wall: if the ball has a spin, it will bounce sideways. Some theoreticians suspect that asymmetric gas molecules may have a minute spin in the presence of a magnetic field, thus causing the slight

twist when they bounce off a nonmagnetic material.

The highest torques measured by the three scientists were quite small, only about one-fiftieth of a dyne-centimeter. This is a force roughly equal to that exerted by a grain of salt placed on the end of a lever one-eighth of an inch long.

Ann Ewing

FROM LONDON

Comets and the IQSY

All reports from the 53 nations cooperating in the International Year of the Quiet Sun, which lasted from Jan. 1, 1964 through Dec. 31, 1965, have now been made, most recently in London at the COSPAR/IQSY meeting in late July. (See p. 155)

The work of studying how the sun affects earth and its space environment, however, will continue as a long-term activity under the auspices of the Inter-Union Commission on Solar-Terrestrial Physics, which hopes to line up a large number of small groups around the world to make coordinated studies.

The first international scientific probe was the Polar Year of 1882. The second Polar Year was 50 years later.

Then, celebrating the 75th anniversary of the 1882 venture, came the International Geophysical Year, pronounced "Iggy," which lasted from July 1, 1957, through Dec. 31, 1958. Results from this international cooperative effort were so promising, including the launching of the first satellites and verification of the existence of radiation belts surrounding earth, that scientists agreed to take a thorough look at sun-earth relationships during a period of low solar activity.

This fourth-generation program was IQSY, pronounced "Icksy."

Among the final reports on IQSY was one from S. K. Vsekhsvyatskii of the University of Kiev, U.S.S.R., who stressed the importance of comets as natural probes into the solar system.

He said that about 25 comets were observed during IQSY, including some remarkable for their peculiarities.

"The organization of the comet service during the IQSY period resulted in a considerable growth in the number of observatories taking part and in the number of observations," he said.

"It is quite clear that integral comet brightness variations, together with studies of plasma comet tails, provide an important indication of solar activity.

"The study of Comet Schwassmann-Wachmann I . . . suggested the existence of a 25-to-30-day recurrence of cometary flares (a brightening of comet tails), and discloses a direct relation between comet brightness and geomagnetic perturbations." F. C. Livingstone