

Films of The Week

Listing is for readers' information, not advertising. For further information on purchase, rental or free loan, write to distributor listed.

The following films were among those shown at the Science Film Theatre of the annual meeting of the American Association for the Advancement of Science held in Washington, D.C., December 26-30, 1966. Further information on individual films may be obtained from the sources indicated.

CONTROLLING VARIABLES: FERMENTATION. 16mm, b&w, sound 25 min. Unrehearsed scenes from a sixth grade classroom as an exercise is being taught from the AAAS elementary science school curriculum (Science—A Process Approach). Davidson Films, 1757 Union Street, San Francisco, Calif.

FORCE, MASS, AND MOTION. 16mm, b&w, sound 10 min. A computer-animated film illustrating the motion of massive bodies under gravity and other forces. Bell Telephone Laboratories, Murray Hill, N.J. 07971.

FRONTIERS OF THE MIND. 16mm, b&w, sound, 23 min. The story of the exploration of the frontiers of the mind through scientific experimentation with chemicals, drugs, electrode implantation, and the explanation of the purpose and benefits of such research. Special edited version of the TV program. Encyclopedia Britannica Films, Inc., 425 N. Michigan Ave., Chicago, Ill.

IN THE WORLD OF SHARKS. 16mm, color, sound, 12 min. Films of sharks in normal modes of behavior in the open seas, shot in the Atlantic 20 to 100 miles off Montauk Point, Island. Blue Meridian Company Inc., New York, N.Y. 10023.

LET US TEACH GUESSING. 16mm, color, sound, 60 min. Dr. George Polya leads an undergraduate class to discover the number of components into which 3-space is divided by five arbitrary planes, and demonstrates along the way the steps involved in "plausible reasoning". Modern Learning Aids, Summit, New Jersey 07901.

LIFE CYCLE OF THE MONARCH. 16mm, color, sound, 11 min. Detailed study of the four life stages of this typical and common butterfly. Includes close-up and time-lapse photography. Ken Middleham Productions, P.O. Box 1065, Riverside, Calif.

MITOSIS IN ENDOSPERM OF HAEMANTHUS. 16mm, color, silent, 4 min. 15 sec. Uses latest techniques in research microscopy to show cell division in individual endosperm cells of the African Blood Lily. Ealing Corporation, Cambridge, Mass. 02140.

MONKEYS OF MYSORE. 16mm, color, sound, 19 min. Studies the social system and daily activity of about 60 bonnet macaque monkeys in the southern Indian state of Mysore, pointing up the importance of the troop as a social unit and the strict dominance hierarchy that determines the stable but flexible social system. University of California Extension Media Center, Berkeley, Calif.

NATIONAL MAGNET LABORATORY. 16mm, color, sound, 28 min. Shows the functioning of this MIT laboratory which provides powerful magnetic fields as extreme research environments for all major divisions of physics. Air Force Office of Scientific Research, Washington, D.C. 20333.

OCEANOGRAPHIC RESEARCH USING THE COUSTEAU DIVING SAUCERS. 16mm, color, sound, 26 min. Shows how five Navy scientists used the Soucoupe Sous-Marine (diving saucer) in physical oceanography and marine biology. U.S. Navy Electronics Laboratory, San Diego, Calif. 92152.

A PAIR OF PARADOXES. 16mm, b&w, sound, 3 min. Demonstrates two paradoxes, one visual and the other aural. A bell which appears to bounce ever upward is accompanied by a sequence of musical tones which appear to ascend indefinitely. Bell Telephone Laboratories, Murray Hill, N.J. 07971.

PELICAN ISLAND. 16mm, color, sound, 28 min. Shows the life cycle of the great white pelican, which nests on an island in the Great Salt Lake in Utah. Nature Guide Films, 64 East Val Verda Road, Bountiful, Utah 84010.

OCEANOGRAPHY

Secrets of Sunken Lands

Submarine studies off the Atlantic Coast are revealing the history and wealth of the shelf. Ancient glaciers and volcanoes are among finds.

by Barbara Tufty

A fascinating new land, rich in minerals and history, is being probed and explored—many fathoms deep in the Atlantic Ocean, just off the coast of North America.

Eons ago, this land was strained and twisted by powerful natural forces. Icy glaciers grated across its northern reaches, and fiery volcanoes spewed ashes and lava over the southern part. Today the submerged land is being invaded by gentler forces—the flow of ocean currents, the growth of fragile sea anemones and other sea life, and the resonant impact of scientific equipment persistently probing the area.

With one of the most comprehensive and thorough studies yet made of any large undersea area, more than 260,000 square miles of the United States continental shelf, extending from the tip of Florida to Nova Scotia, are being studied under a joint program of the U.S. Geological Survey and Woods Hole Oceanographic Institution.

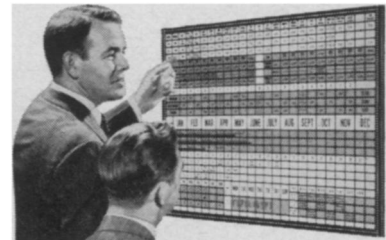
In a quiet but intense multi-year study, scientists are amassing valuable data on submerged petroleum fields, gravel and sand pits, sources of fresh water and aluminum ore—as well as plotting tracks of ancient glaciers, measuring sizes of extinct volcanoes, and surveying many plateaus, trenches, ocean rivers, and other geological features that lie along the continental shelves and slopes that stretch toward the dark abyssal plain of the ocean.

There may be no immediate economic, practical result of the painstaking sampling, analysis, recording and documenting, the scientists well know. But the scientific knowledge they are acquiring is astonishing, and perhaps in the long run, will be of greater economic value.

Whether any of the minerals and materials discovered along the Atlantic coast will be exploited for human use will depend upon future developments in marine engineering, and also upon conditions where the price of materials justifies the cost of extracting them from the sea, says Dr. Kenneth O. Emery, coordinator of the joint Geological and Woods Hole program.

The five-year study, begun in 1962, will continue for at least another five

GRAPHIC VISUAL CONTROL



You Get Things Done Better And Faster

The BOARDMASTER saves time, cuts costs and prevents errors. You see what is happening. Shows facts at eye level. For Production, Scheduling, Inventory, Sales, Traffic, Etc.

Simple to operate. Write on cards, post on board. Fully flexible. Million in use. Price \$49.50 with cards.

FREE 24 Page BOOKLET No. V-10 Mailed Without Obligation

GRAPHIC SYSTEMS, Box 398, Yanceyville, N.C.

Share the Thrills of Exploring Outer Space



All DYNASCOPES, including this superb RV-6, 6-inch available on easy terms!

Now it's easy to join the thousands of serious amateurs who have discovered the excitement of exploring our mysterious universe. Your enjoyment begins right from the start, yet the challenges and rewards go on for years! And it's a hobby that can be shared at modest cost.

Choose from a Full Range Of DYNASCOPES® 4" Starting at \$49.95

Picking a telescope to fit your needs and your pocketbook is simple when you select a DYNASCOPE — the same instruments used by more than 150 schools, colleges and observatories. Prices begin as low as \$49.95, and your satisfaction is guaranteed by a full-refund warranty.

FASCINATING GUIDE YOURS FREE!

Read these valuable facts before buying any telescope. Mail coupon or postcard for your complimentary copy of this helpful guide.



Criterion Manufacturing Co. 331 Church St., Hartford, Conn. 06101 © TM Registered U.S. Pat. Office

CRITERION MANUFACTURING CO., Dept. NL-95 331 Church St., Hartford, Conn. 06101

Please send your free Telescope Guide.

Name _____

Address _____

City _____ State _____

. . . five years are only the beginning



Interior

Petroleum lies beneath the ocean to the east of Cape Fear, N.C.

years, as researchers continue to explore the sunken land by means of such modern technological tools as seismic profiling to determine the contour of the ocean bottom, offshore drilling and coring, radiocarbon dating and direct inspection of the area by scuba divers and manned vehicles.

The field work of the original program has largely been completed. Now laboratory samples will be analyzed, inspected, identified and pieced together to obtain an idea of the ancient history and present configuration of this new land.

Already scientists have learned various astounding facts of the area:

- For instance, during the last million years, glaciers scraped the ocean bottom off the New England coast, exposing rocks some 70 million years old. Huge boulders were brought from far inland and deposited on the shelf by these glaciers, some of which reached as far south as the shoals of Georges Bank, an undersea shelf off Cape Cod.

- Pebbles of bauxite, an ore of aluminum, have recently been found in the glacial debris at Martha's Vineyard, Mass., reports Clifford A. Kaye of the Geological Survey. These pebbles may have been carried southeast by the great glaciers from an original source northwest of Martha's Vineyard. This may mean that undiscovered bauxite deposits exist in places beneath the Atlantic coastal plain.

- The most widespread resource the



Woods Hole

Sealife thrives over glacial debris.

continental shelf may offer is probably sand and gravel, explains Dr. Emery. This material is in increasing demand as concrete material for constructing roads and buildings. From New Jersey to Florida, the shelf is generally carpeted with quartz sand and feldspar in long undersea beaches. Gravel deposits are abundant in an area off New York City, and also on top of the Georges Bank shoals.

- Phosphorite nodules occur along the shelf off the tip of Florida, as well as along the slope between New York City and the Blake Plateau, a

WIDE ANGLE DOOR VIEWER



People inside can see out—get full-length view of anyone outside door. Easy to install in any door up to 2" thick. Tiny $\frac{5}{8}$ " brass cylinder provides vital protection and security against opening door to unwanted strangers. **ORDER NOW!** SHIPMENTS PREPAID IN U.S. SEND \$2.98 TO:

\$2.98
pdd

GIL-MAR ENTERPRISES, INC. Dept. SN-17
P.O. Box 395, Miami Shores, Fla. 33153

SEE MIRACLE OF BIRTH



\$4.98 POST PAID WITH
SIX QUAIL EGGS
(\$3.25 Without Eggs.)

You get the new clear plastic dome CHICK-BATOR with 6 Bobwhite Quail Eggs (available year-round) and Egg Hatcher's Guide Book. Complete — nothing else to buy. Send check or Money Order today

G.G.F. MFG. CO., DEPT. CL, BOX 152, SAVANNAH, GA.

RAY GUN! Want to build a Laser?

You can build our Laser and Power Supply for only \$100. The Laser alone can be built for \$40. It is the lowest cost QUALITY LASER system in the United States. Shoots a pencil-thin beam of light, will burn anything in its path in a fraction of a second, even through diamonds! Not a demonstration model, a real industrially-applicable LASER. Blue prints, directions, price and parts lists, only \$9.95 pdd.

M & J INDEPENDENT RESEARCH COMPANY
1607 W. 24th #2, Lawrence, Kansas, 66044

CLASSIFIED

Classified advertisements are accepted for the following classifications; Books, Business Opportunities, Camps, Colleges, Micro Ads, Personals, Positions Wanted, Services, Travel. All advertisements must be consonant with the character of Science News. Rates . . . single insertion 25¢ a word. Minimum charge is \$5.00. Count 2 extra words for Box and Numbers. Classified advertising is payable in advance. Closing date 3 weeks prior to publication (Saturday).

Employment opportunities are accepted at regular display rates, subject to agency commission. Minimum size 1 inch. Minimum charge \$21.70 per inch. Rate cards available upon request.

To speed up insertion, address classified advertising . . . Classified Ads. Science News, 1719 N Street, N.W. Washington, D.C. 20036

BOOKS

THE PESTICIDE JUNGLE by Laura Tallian dedicated to influencing officials to make mandatory nontoxic pest control. Box 33, Sunnyside, Calif. 92079. \$1.50.

PAPERBACK CATALOGUE, 217 pages, 13,000 titles from 154 publishers, subjects indexed. Send \$1.00. New York Book, 4W West 43rd Street, New York, N.Y. 10036. Open Monday through Saturday.

CAMPS

HIGH/SCOPE—Coed, 11-16. Arts and science program challenges intellect, talent, and initiative. David Weikart, Ph.D., 1305 Sherman, Ypsilanti, Michigan.

MICRO ADS

FAIRCHILD SEQUENCE CAMERA \$75.00. Cost government \$650.00. Send 25¢ for our surplus optics-electronics 82 page catalog. Meshna, Nahant, Mass. 01908.

PERSONALS

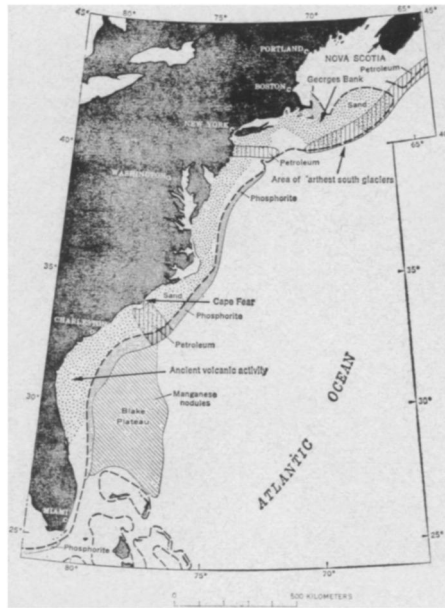
THE FUTURIST, published bimonthly by World Future Society, reports scientists' forecasts for coming decades. Subscription: \$5 yearly. Box 19285-S, Twentieth Street Station, Washington, D. C. 20036.

THE AMERICAN PLAN for World Peace requires Unesco's Esperanto. Text, record etc, loaned Free, Esperanto Library, Dept SN. Middleton, Wis, 53562.

. . . in extent, it's a new continent

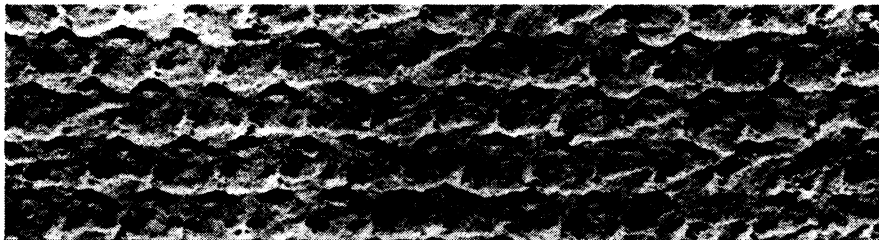
submerged area about 400 miles east of the northern Florida coast. Manganese oxide nodules have been found in abundance on the Blake Plateau. Deposits of petroleum have been found under the sea near Cape Fear, North Carolina, and also just southeast of New York City. A sizable fraction of the oil and gas production of the world already comes from the shallow sea floor off the coasts of the United States and Europe, and in the Persian Gulf, Dr. Emery points out. The Atlantic coastal plain sediments do not have much petroleum, but farther seaward sediments become thicker.

• Clay mineral samples drilled from the shelf off Florida indicate that at one time, some 20 million years ago, volcanoes erupted over an area from what is now northern Florida eastward to the Blake Plateau. Another volcanic area includes the New England seamounts which extend for some hundred miles from Georges Bank toward the southeast.



Riches beneath the Atlantic Ocean.

Nature Note



Electron microscope shows spheres that give fire to opals. Australian News Bureau

Opal Fires

The mysterious cause of the brilliant blue, green, red and yellow fires of gem opals has at last been uncovered by an Australian scientist using an electron microscope.

The rainbow-flashing gemstones actually are composed of orderly layers of tiny amorphous silica spheres, neatly stacked row upon row, according to Dr. J. V. Sanders, with the Commonwealth Scientific and Industrial Organization of the University of Melbourne, Australia. Spaces or gaps occur between each of these spheres, which are bound together by more silica. It is the size of the spheres and the arrangement of the spaces that determine the colors and fires of the stones.

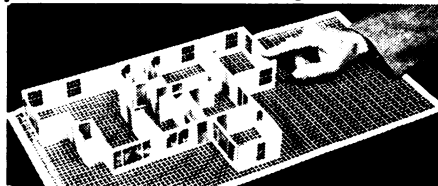
As ordinary daylight or white light penetrates into the transparent spheres, it is scattered by the latticework of the spaces and deflected back to the surface of the opal in various colors, radiating at angles determined by the wavelength. It is the size of the spheres that de-

termines the spaces and hence wavelengths and colors. Opals with uniform small spheres give off color from violet to blue, while opals with larger spheres give off colors ranging from red through green.

By lightly etching an opal with hydrofluoric acid, the "cement" is eaten away, and the spheres can be seen under the electron microscope in symmetrical array, as shown in photo.

There are two general kinds of opals—the more precious gem opals long sought and admired by kings and queens and gem collectors, and the common opals used as abrasives, insulation, fillers or ceramic ingredients in industry. Opals have been found most abundantly in volcanic rocks, especially in areas of hot springs. Some of the finest opals have come from Queensland and New South Wales in Australia, and other varieties come from Japan, Mexico, India, New Zealand and western United States.

Building or Remodeling A Home?



HOME-A-MINUTE KIT

Shows how home will look before you build or remodel. Here's everything to have and know to help save dollars. Dozens of windows, kitchen cabinets, doors, partitions, etc. at 1/4" scale. Arrange furniture, fixtures to suit. Build, dismantle and originate any floor plan. Kit incl. 65 pg. book on costs, financing, etc. \$3.95 plus 35¢ pp. & hold. Send Check or M.O. Satisfaction Guar. No C.O.D.'s. J. W. HOLST, Dept. SN 267, 106 Emery Street East Tawas, Michigan 48730

IT'S EASY to send a gift subscription to SCIENCE NEWS simply fill out and mail this coupon

SCIENCE NEWS

1719 N Street, N.W.
Washington, D.C. 20036

Please send a gift subscription to **SCIENCE NEWS**, in my name to:

Name.....

Address.....

City.....

State.....Zip Code.....

— Check One —

1 year \$6.50 2 years \$11.50 3 years \$16.50

— Check One —

Check or money order herewith Bill Me

Name.....

Address.....

City.....

State.....Zip Code.....

1-21-67