GEOPHYSICS

Scientists Plan Arctic Expeditions

➤ TWENTY-TWO PARTIES of scientists are packing gear and laying plans for expeditions to the air-conditioned Arctic.

These 1955-56 expeditions bring to more than 180 the number of field projects sponsored by the Arctic Institute of North America in the last 10 years.

A third of the expeditions will be based at the Arctic Research Laboratory of the Office of Naval Research, Point Barrow, Alaska. This is the northernmost laboratory on United States soil.

Others will be scattered throughout Alaska and northern Canada.

The scientists will work on problems ranging from the nature of radio waves from outer space to the kinds of insects that populated Alaska 60,000,000 years ago.

Robert L. Usinger, entomologist at the University of California, will look near Point Barrow for amber deposits from the Cretaceous Age, 60,000,000 years in the dim past. Amber occasionally contains fossilized insects so well preserved they may be studied in nearly as much detail as modern ones.

The oldest amber-preserved insects now known are a mere million years old. Finds of insects in amber from the Cretaceous Age could advance knowledge of insects greatly.

To learn more about radio transmission disturbances, C. T. Elvey, director of the Geophysical Institute, College, Alaska, will record the relative strength of radio waves from outer space, trying to correlate them with radio blackouts. (See SNL, July 2, p. 3.)

In Canada, scientists will study the bird life of the MacKenzie District, the marine vegetation of Ungava Bay and the biology of Arctic coast waters.

Albert M. Day, former director of the U. S. Fish and Wildlife Service, will study the programs and policies of agencies affecting the breeding, protection and perpetuation of migratory waterfowl in North America, in a two-year survey for the Arctic Institute.

The Arctic Institute's 22 projects will be supported by the Office of Naval Research, the Sir Frederick Banting Fund and private contributors.

Science News Letter, July 30, 1955

PSYCHOLOGY

Failure Is "Bad Habit" That Can Be Broken

➤ PSYCHOTHERAPISTS can treat failure as a "bad habit," replaced as easily as other habits, Dr. Gerald Pascal, visiting professor of psychology at the University of California at Los Angeles, has found.

"We have learned from experiments with rats and mice that habits can be replaced by other habits through a re-learning process," he said. "The same general principles can be applied clinically to human beings."

As an example, Dr. Pascal cites the case of a new mother who was failing to carry out her motherhood responsibilities. Analysis of the situation revealed she had a strong father attachment and was markedly hostile toward her mother. Therefore she unconsciously rejected motherhood.

Through a sympathetic approach, the psychotherapist was able to project himself in the role of a father figure. With his guidance, the woman became in her mind a little girl again and was able to relearn and to develop new attitudes toward the role of wife and mother.

These new attitudes bred confidence, and successful performance as a wife and mother strengthened the confidence. Eventually habits of failure were replaced by habits of success.

Science News Letter, July 30, 1955

INVENTION

Oil and Water Filter Is Aid to Motorists

➤ MOTORISTS can expect better engine performance from a combined oil filter and water filter now patented.

The combination conditioner, a single unit, employs two filters having a common base. The water filter jackets the oil filter and, in cold weather, acts as warmer for the lubricating oil. For repairs or changes, either filter can be removed without disturbing the other.

Invented by William S. James of Birmingham, Mich., the two-filter unit was awarded patent No. 2,713,422. Mr. James assigned the patent rights to the Fram Corporation of Rhode Island.

Science News Letter, July 30, 1955

AERONAUTICS

Turboprops Begin Service in U. S.

➤ THE COMMERCIAL jet age began in the United States on July 26 with the first scheduled airline flight of a British Viscount turboprop powered plane.

The turboprop engine is not really a jet. The jet blast stays mostly inside the engine and its thrust is used to turn the plane's propellers. Capital Airlines has ordered 60 of the aircraft, built by Vickers-Armstrong, Ltd. and powered by four Rolls Royce Dart engines.

The plane is said to give a smoother and quieter ride, and has proved popular in airline service abroad.

The Viscount's popularity has led the way to development of other turboprop liners in the United States and elsewhere. The Bristol Britannia, larger than the Viscount, is now undergoing tests in England and is scheduled to be introduced into airline use next year. The Dutch Fokker, smaller than the Viscount, is also under development.

Science News Letter, July 30, 1955

IN SCIEN

TECHNOLOGY

Tiny Battery Gives Power for Two Years

➤ A BUTTON-SIZED battery that can deliver electricity at constant voltage continuously for two years has been developed.

The "micro-cell" was designed by the Elgin National Watch Company, Elgin, Ill., to power an electric wrist watch now under development, but the battery could also run such devices as a photoflash unit, a hearing aid, a miniature dictating machine or a portable radio.

Using the element indium, a soft and silvery metal, for the battery's anode eliminates the gassing and leakage that normally plagues other miniature cells.

The new battery, a half circle that occupies the volume of a penny, has 25% more capacity than any other comparable sealed cell yet developed, the manufacturer said. It reliably delivers a constant 1.15 volts for two years.

Science News Letter, July 30, 1955

TECHNOLOGY

Vanishing Germanium Sought in Waste Study

➤ TRAPPING THE rare element germanium, which could be used for electronic transistors if it did not vanish up smokestacks of coal-fired power plants, is being studied at the Fuel Research Station at Greenwhich, near London.

Fifty parts per million of germanium is found when coal is burned in the laboratory, where all the products of combustion are recovered. Only three parts per million of germanium, on the average, is in the ash of similar coal from commercial boilers.

Dr. K. V. Aubrey of the Greenwich research station, trying to find the lost parts, discovered more germanium in boiler deposits on steam-generating tubes than had previously been thought was there.

High velocity of waste gases shooting up the smokestack may carry much of the lost germanium along as fine dust rather than as a volatile product that will later condense on a nearby cool surface.

Part of the loss may actually be more apparent than real, Dr. Aubrey suggested. He found more fly-ash may be collected from one power plant than another, giving a smaller proportion of germanium metal in comparison to the total ash amount.

The continuing hunt for the escaping germanium and the best way of capturing the elusive element is reported in *Nature* (July 16).

Germanium occurs in coal because the plants that millions of years ago formed the coal absorbed it from the soil.

Science News Letter, July 30, 1955

CE FIELDS

ENTOMOLOGY

Chinch Bugs Strike At Nation's Corn Crop

➤ THE CHINCH BUG, one of the most completely destructive insects to corn in outbreak stages, is moving from small grains to corn in several northern areas, while corn fields in the South already show infestation.

In Pennsylvania, Nebraska and Kansas, chinch bugs have been leaving their early feeding grounds of wheat, rye and other small grains to strike at maturing fields of corn and sorghum, the U.S. Department of Agriculture reported. The migration is completed in many areas.

South Carolina counties have chinch bug infestation ranging from "common" to "extremely numerous," and there are scattered areas with the insect pest in Missouri. Lawns and large sodded areas are under chinch bug attack in Mississippi.

The striking black and white chinch bug, *Blissus leucopterus,* feeds by sucking the juices of grass family plants, including corn and sorghum, which they may devastate in short order.

Adults winter over in clumps of bunch grass, emerging in spring when they fly to fields of small grains in the north, or directly to corn and sorghum in warmer areas. Once in cultivated plants, they mate and lay eggs on plant leaves or in soil. One female may lay 200 eggs within three to four weeks.

After the eggs hatch, the young chinch bugs feed on the plants and, if in small grain, migrate into corn and sorghum fields when the grain begins to ripen. A second generation is usually produced later in the summer.

Science News Letter, July 30, 1955

TECHNOLOGY

Gyroscope and Fins Stop Ship's Rolling

➤ ENGINEERS HAVE found a way to stop ships from rolling on the high seas, the best cure for seasickness.

A gyroscope mechanism stops the pitching and tossing. It can eliminate moderate roll completely and stop up to 90% of the severest tossing, according to the Sperry Gyroscope Company, Great Neck, N.Y., where the instrument was developed.

Heart of the system is a small gyroscope, a delicate top that keeps spinning on the same axis no matter which way it is moved. The gyroscope is linked by power drives to underwater fins, one on each side of the hull.

In operation, as soon as a ship starts rolling in one direction, the gyroscope senses the motion. A series of anti-roll signals are sent to hydraulic actuators, changing the angle of the fins at the boat's side.

The system can be worked automatically and continuously, or the fins can be folded back into the hull during the time the ship is docked.

For merchant vessels, each of the two underwater fins can create 3,000 foot-tons of anti-rolling force within two seconds. The whole apparatus weighs 95 tons, and uses about 80 horsepower to operate the fins, the electronic calculator and the hydraulic "muscles."

On a typical ship, the fins would be seven feet wide and reach out 14 feet from the hull. They have the same gentral shape as airplane wings.

The balancing system, known as the Sperry Gyrofin Ship Stabilizer, will also be able to reduce much of the cargo damage caused by heavy seas.

Science News Letter, July 30, 1955

PSYCHOLOGY

To Help Others, Understand Self

➤ PARENTS and others trying to help a crippled child or anyone at any age who is handicapped physically or emotionally need to understand themselves. They must know their own attitudes and feelings toward the handicapped they are trying to help.

Self-understanding is crucial in helping toward the healthy rehabilitation of others, Dr. William S. Menninger of Topeka, Kans., said in a report to the *Crippled Child* (April), publication of the National Society for Crippled Children and Adults.

Citing the enormous strides made in helping the crippled scientifically in physical rehabilitation, Dr. Menninger said that all too often psychological rehabilitation is "hit or miss."

"Despite some superficial differences between us, we are all basically alike," he pointed out, "with the unconscious part of us, the well-spring of our strongest emotions . . . and with the body and mind as inseparable parts of each one of us."

In the scientific approach to emotional rehabilitation, Dr. Menninger said, "general precepts are not enough . . . each individual patient's emotional needs must be studied and ministered to scientifically."

At the same time, he said, it must be coupled with objective evaluation by parents and professional workers of their emotional relationships with the patient.

An examination of some of the unhealthy attitudes which handicap parents and workers in their efforts to help the crippled and a view of the crippled person's own feelings turn an effective searchlight into the inner make-up of everyone who wishes to attain emotional maturity.

"A deep faith in the job" and "development of positive aspects of personality" are among the needs mentioned by Dr. Menninger for achieving the maturity necessary for working with the crippled.

Science News Letter, July 30, 1955

PHYSICS

Atomic Energy Used To Generate Electricity

See Front Cover

➤ FROM A huge black balloon designed never to leave the ground, atomic energy has begun to repay the debt of energy so far fed into nuclear installations by public and private power generators of the nation.

Ordinary electric current surged outward over the power line in use since 1951 to feed power to General Electric Company's Knolls Atomic Power Laboratory, West Milton, N. Y., but on July 18 the atomic energy generated by GE's experimental reactor fed current back to the Niagara Mohawk Power Corporation.

Members of the Atomic Energy Commission, the U.S. Navy, the two companies and guests saw Adm. Lewis Strauss, chairman of the AEC, throw a switch turning atomic power to peaceful instead of military use, symbolizing a new milestone in development of power from the atom.

Inside the great balloon, shown on the cover of this week's SCIENCE NEWS LETTER, is the reactor that was the experimental laboratory for General Electric's development of the power plant for the submarine USS Sea Wolf, launched July 21.

The experimental work is now completed, and the reactor will spend its old age furnishing electricity for the power network of nearby communities. Enough experience has been accumulated in the 13 years since the first fission chain reaction so that major hazards can be insured against.

The black balloon is itself a form of insurance. Completely enclosing the reactor, it would imprison radioactive products in the unlikely event the reactor should explode.

Science News Letter, July 30, 1955

INVENTION

Patent Way to Make Pulp From Hardwood

➤ TWO SYRACUSE UNIVERSITY professors have invented a method for producing groundwood pulp from hardwood. Profs. Clarence E. Libby and Frederic W. O'Neil of the New York State College of Forestry were awarded patent No. 2,713,540 for a chemical-mechanical process they claim has not previously been used to make pulp.

"The pulps produced by our process are so distinctive that we have found it desirable to give them their own names," the scientists said.

They call the product from their single cycle process "chemigroundwood," and the product of their double cycle process "di-chemigroundwood." Hardwoods from poplar to beech, birch and maple can be treated by varying the chemo-mechanical process.

The Syracuse researchers assigned their pulping process patent rights to the New York State College of Forestry at Syracuse, N. Y.

Science News Letter, July 30, 1955