

WILDLIFE

U. S. Handling of Seal Herd Studied by Uruguayan

► URUGUAY possesses the only surviving fur seal herd in the South Atlantic, and for this reason that country's Fisheries Service has had one of its young biologists, Dr. Raul Vas-Ferreira, journey to the far-off Pribilof islands in the Bering sea, to study American methods of management of the great seal herd there. Dr. Vas-Ferreira is now in Washington, completing his studies at the U. S. Fish and Wildlife Service and the National Museum.

The Uruguayan fur seal herd has its shore bases on three groups of small islands off the coast: Lobos, Polonio and Coronilla. Its numbers are not accurately known; Dr. Vas-Ferreira states that estimates vary from 20,000 to 50,000 animals. These, with a few more on islands in the South Pacific area, are the sole survivors of the once numerous herds that were practically exterminated by American and British sealers a century and more ago.

In addition to the fur seals there are on the Uruguayan islands about 10,000 sea lions, and smaller numbers of Antarctic species of seal, as well as a few sea elephants. Numbers of penguins come up from the south every year, drifting on the Falkland current; but they cannot stand the hot summers and invariably die.

No pelts are taken at present from the Uruguayan seal herd, but after Dr. Vas-Ferreira's results have been evaluated and applied, systematic harvesting will begin. The pelts will be sent to this country, to be marketed in St. Louis.

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FISHERIES

Clams May Join Oysters As Cultivated Sea Crop

► SUCCULENT softshell clams may soon join oysters as a cultivated sea-crop on tidal flats now yielding no food products, if experiments now in progress under the supervision of scientists at the Woods Hole Oceanographic Institution fulfill their present promise.

Vast areas along the North Atlantic coast that once yielded abundance of clams have been completely "clammed out," and will have to be re-colonized with seed clams if they are to be made productive again. The one town of Barnstable on Cape Cod, once famous for its softshell clams, now looks out on

more than a thousand acres of such desert clam flats.

Barnstable's Selectmen decided to do something about it. With typical New England caution, they started with an experimental 75 acres which they leased to a number of local cultivators.

A year ago about a thousand bushels of seed clams, taken from the polluted waters of Boston Harbor, were planted on these plots. The clams soon rid themselves of pollution. Snugly buried in their new home, they have already doubled in bulk, and by next year the volume is expected to be trebled. Various methods of soil improvement bid fair to speed growth and hasten the increase in number of young clams.

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ENGINEERING

Spinning Steel Balls Being Used to Test Paint

► STEEL balls, spinning at a speed of approximately 1,800 miles an hour, are being used to test the ability of paints to stick to a surface in a Navy project at the University of Cincinnati.

The tiny steel balls are only a quarter inch in diameter. Dots of paint are put on the balls which spin at a top speed of 2,400,000 revolutions per minute, suspended in a vacuum and driven by a rotating magnetic field. The device in which the balls spin is called an "ultra-centrifuge."

When the ball spins in the ultra-centrifuge, the dot of paint flies off. The speed at which this takes place is used to calculate the adhesive qualities of the paint under test. Dr. Walter Soller of the University's Applied Science Research Laboratory devised this paint-testing method.

Paints undergoing the centrifuge test are designed for highspeed aircraft. Aircraft paints, spread over the entire surface of the plane, add to the weight, so a light coating only one-thousandth of an inch thick is used. This thin coat tends to come off at high speeds, altering the weight and airflow of the airplane.

Chief factor in making paints stick to the surface of aircraft at high speeds is the adhesiveness, which is tested with the centrifuge.

In the future, the paint which goes on your house may be rated for adhesive qualities by this test, as the American Society of Testing Materials is studying the new method.

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IN SCIENCE

AERONAUTICS

Young Scientists Told of Race for Jet Supremacy

See Front Cover

► PROMISING future scientists were told of the dramatic struggle to develop jet engines by pioneer jet men from the Westinghouse laboratories, in the first day's program of the Science Talent Institute in Washington (Feb. 27) attended by 40 high school seniors from all over the country who are winners in the Seventh Annual Science Talent Search.

Revealed to these science-minded students were the intricacies of jet propulsion and gas turbines by men who "started from scratch" and built up one of the best-equipped jet laboratories in existence.

Reinout P. Kroon, manager, and Mark Benedict, both of the Engineering Department, Aviation Gas Turbine Division of the Westinghouse Electric Corporation, Philadelphia, demonstrated tiny jet racers, small ram-jets in action and the heating of metals to white heat to illustrate the metallurgical problems encountered in building jet engines.

Mr. Kroon said in his opening address that "Jet engines with enough power to push planes to twice the speed of sound—about 1200 miles per hour—will be possible in the next six years if development continues at the pace attained in the six years since America entered the international race for jet supremacy."

He added that "so rapid has American progress been in supplying ever increasing engine powers demanded by military air services, that in the time usually needed to double a conventional engine's power we have increased power four-fold."

Mr. Kroon was the leader in developing what he thought was an original model of the "axial flow" compressor for turbo-jets, until captured Nazi models showed that they had it, too.

On the cover of this week's SCIENCE NEWS LETTER is shown an assembled Westinghouse axial-flow gas-turbine jet propulsion engine getting its rotation test.

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E FIELDS

CHEMISTRY

New Element, Technetium, Isolated as Pure Metal

► THE WORLD'S first samples of metallic technetium, chemical element number 43, have been isolated by Dr. Sherman Fried of the chemistry division of the Argonne National Laboratory, Chicago.

One of the last four of the 96 elements to be named, technetium is now revealed to be a silvery substance similar to the other rare metals, rhenium, osmium and ruthenium, which are located near it in the scheme of the periodic table of elements.

Two tiny quantities of the metal have been carefully prepared from compounds manufactured in the atomic "furnaces" at Oak Ridge and made available for this purpose by Dr. G. W. Parker of the Clinton Laboratories. Dr. Fried reports the isolation of the new metal in a communication to the *Journal of the Chemical Society*, (Jan.).

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ENGINEERING

Building Better Fire Is Goal of New Research

► BUILDING a better fire—one which will burn faster, give off more heat and waste less fuel than any fire in the world—is the goal of a group of scientists at the Westinghouse Research Laboratories, Pittsburgh.

If they succeed, the better fire will mean faster, cheaper travel in the future. Better fires could be utilized by jet engines in aircraft and gas turbine locomotives and ships of the future.

The combustion research is headed by Dr. Stewart Way. His group is making a four-way attack on the problem of more efficient fires. Here are some of the problems in building a better fire:

1. How fire burns under various conditions of temperature, pressure and fuel mixture.
2. Should air be injected into a fire at angle, with a swirling motion or in a circular fashion?
3. Constructing better chambers in which to build more effective fires.
4. Development of fuel nozzles to most efficiently spray fuel into the fire.

Even measuring how fast a fire burns is a tough job. Westinghouse scientists are doing it with mirrors. Test fuel is burned in a Bunsen burner, and rays of light from a 1,000-watt mercury vapor lamp, reflected with mirrors, are used to produce an image which can be photographed and studied.

Flames have been found to travel rather slowly at about two to five feet a second in a non-moving gas. But a stream of air will speed up the flames.

Air can also make the fuel burn faster by ripping up the fuel. This is done with an oil "atomizer," which generates a miniature cyclone of air. Up to 96% of the fuel can be converted into useful heat energy with a nozzle developed by these scientists.

Instead of a standard boiler, Westinghouse scientists have made a slender, nickel-chrome steel "sleeve" for a combustion chamber. This new jet furnace has a heat release 15 times greater than that from a steam boiler for its size.

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ENGINEERING

New Process Uses Steam To Extract Oil from Shale

► WITH the nation shivering in the first real pinch of an oil shortage, efforts are being redoubled to find a high-efficiency, low-cost method for getting oil out of the billions of tons of our still-unused oil shales. A different approach is embodied in U. S. patent 2,434,815, which has just been granted to Richard J. Shaw of Redondo Beach, Calif.

Instead of trying to extract the oil by roasting or other external heating process, Mr. Shaw treats the crushed shale with low-pressure superheated steam as it slowly slides over a perforated plate underlain with crushed rock. The rock traps powdered shale particles in the oil that flows out, leaving the filtered oil to flow on downward into a collector. Volatile hydrocarbons mixed with the steam are condensed out and added to the oil stock, while the water from the condensation is led off for the extraction of ammonia and other valuable byproducts.

The residue of the shale, still containing unextractable but combustible solids, is discharged into a firebox, where an air blast forces it to yield the last of its fuel value for the production of more superheated steam.

The inventor has assigned his patent rights to the Union Oil Company of California.

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PSYCHIATRY

First Psychiatric Aide Award Given to Attendant

► A MILESTONE on the road to better care for patients in mental hospitals has been passed with the selection of the recipient for the first Psychiatric Aide of the Year Award. He is Walter Starnes of Winter Veterans Administration Hospital at Topeka, Kans.

The psychiatric aide, better known as the mental hospital attendant, is the man or woman who can be the daily and nightly friend, prop and helper of the mentally sick patient. Or the aide can be the daily and nightly terror of the helpless patients in mental hospitals.

To encourage better standards of care in mental hospitals by recognizing the value of a good attendant's services, the National Mental Health Foundation of Philadelphia has established its Psychiatric Aide of the Year awards. In their field they are the equivalent of a Nobel Prize or Hollywood's Oscars.

The award consists of \$500 and a citation. Five candidates for honorable mention have also been cited and will each receive \$50. They are: Miss Elizabeth Johnson, Ypsilanti State Hospital, Ypsilanti, Mich.; Dee Fletcher, VA Hospital, North Little Rock, Ark.; Mrs. Viola M. Griffith, St. Elizabeth's Hospital, Washington, D. C.; William Finn, VA Hospital, Northampton, Mass.; and Roy Kimberling, Middletown State Hospital, Middletown, N. Y.

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PHYSICS

Radioactive Soil Buried After Agriculture Tests

► RADIOACTIVE elements used in fertilizer tests on plants by U. S. Department of Agriculture scientists have necessitated a revolution in handling used soil and its greenhouse containers afterwards. Too "tricky" to be kept for re-use, both soil and containers are deeply buried.

The "trickiness" does not consist so much in danger to the experimenters (though that might enter the problem, in some cases) as in the fact that some of the stuff remains radioactive for a long time afterwards, and would falsify readings on Geiger counters if it were left lying about.

Because of this once-only use, cheap tin cans coated with enamel have replaced the familiar clay flowerpots and jars.

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