OCEANOGRAPHY

Laboratory Ship Makes Study of Gulf Stream

WITH SOME four hundred new species of marine animals in her hold, the laboratory ship *Atlantis,* Dr. Albert Parr in charge, has returned after a long cruise in southern waters. Her course took her on a wide sweep into the Atlantic, from the Bahamas through Anegada Passage past the West Indies, into the Caribbean Sea, west to Cuba and up Florida Straits.

The scientists have established definitely for the first time the exact flow of the Gulf Stream in the Caribbean. They state that the Gulf Stream is not merely a current flowing from the Gulf of Mexico past Florida, across the Atlantic to the British Isles and the northern seas, but that it is a vast current that after sweeping to Spitsbergen circles back through the North Sea to the West African coast, where trade winds and equatorial currents turn it westward to the Caribbean and at last to the Gulf of Mexico again, completing its circuit.

In checking up the currents that constitute the Gulf Stream, the scientists concluded that the Bahamas Flow, long regarded as part of the Gulf Stream, is not connected with it but is a separate dynamic current.

Science News Letter, May 20, 1933

ENGINEERING

Accelerator-Brake Pedal To Reduce Auto Accidents

A COMBINING of automobile accelerator and brake pedals into one control upon which the foot can be kept constantly while driving has been invented by Commissioner General of Immigration Harry E. Hull. He urges its use as a safety measure which will reduce the accident rate and result in the saving of many lives.

In a mechanism that Commissioner Hull has developed, the accelerator pedal is so combined with the brake pedal that when the brake is pressed with the foot the accelerator automatically disengages. For an emergency stop there is no need of moving the foot from accelerator to brake and there is no chance of "stepping on the gas" instead of the brake as sometimes happens with today's conventional cars.

New automobiles could be equipped with the new accelerator-brake pedal control at practically no additional cost while old cars could be converted to the new safety device at little cost, Commissioner Hull states.

National Bureau of Standards tests made on the Hull device showed that "the decrease in reaction time is great enough to justify consideration for its adaptation to motor vehicles generally." The time of applying the brake was reduced more for those persons who have slow reaction time when using standard equipment than it is for the faster individuals and thus the device helps most those naturally slow in putting on the brake. The effect of the device is equivalent to increasing the braking ability of the car.

The Bureau of Standards engineers observe that since other studies show that the capacity of a highway is dependent upon the average reaction time of the drivers in a stream of traffic, the universal use of accelerators attached to brake pedals would allow more autos to be carried on a road in a given time.

Science News Letter, May 20, 1933

PSYCHOLOGY

You May Worry More Than You Think You Do

AN INDIVIDUAL is not a good judge of the extent of his own anxiety. You may be so worried as to be seriously affected physically by the emotional disturbance, but be unaware that you are so affected. Or, on the other hand, you may feel terribly wrought up over some problem while impersonal tests reveal no physical disturbance.

These conclusions were based on tests of the rates at which these individuals expended energy while resting without food, under ordinary conditions and then under stress of emotion. They were reported to the Association of Consulting Psychologists by Dr. Charles W. Manzer, of New York University.

Emotions increase the rate sometimes as much as 46 per cent., Dr. Manzer found. Both pleasant and unpleasant emotions affect it in the same way.

Some worries, however, do not affect this metabolic rate, and these seem to be those which are not concerned with the individual so directly. A girl who said she was anxious about her father's success in a business venture showed no change in basal metabolic rate. Contrasted with this record, another who was self-conscious over wearing of new clothes did show such a change.

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IN SCIEN

ENTOMOLOGY

Latest War News From Fight Against Insects

LATEST BULLETINS in man's war on the insects received at the U S. Department of Agriculture:

Grasshopper eggs lived through the winter with great success in North Dakota and Wyoming, indicating heavy attacks by hungry insects later.

Army cutworms attacked tomatoes and Irish potatoes in southern Mississippi, while at the height of a similar outbreak in Kansas 90 worms were concentrated on a single square foot of ground.

Common red spider in a North Carolina district so effectively damaged the strawberry crop that none was harvested.

The most notable outbreak of southern pine beetle since that of 1893 occurred in southern Pennsylvania, western Maryland and northern Virginia

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MEDICINE

Gelatin Diet Teaches About Bright's Disease

A GELATIN diet has given physicians new knowledge about a certain type of Bright's disease. Results of feeding gelatin to patients suffering from this condition were reported by Dr. G. Philip Grabfield of Boston to the American Society for Clinical Investigation meeting in Washington.

The gelatin diet was used because gelatin is one of the protein foods that does not contain sulfur. Dr. Grabfield was investigating the fact that patients suffering from this particular form of kidney disease tend to hold onto the sulfur in the diet even more than to the nitrogen.

Patients who get swollen ankles and legs, known as edema, fail to excrete sulfur as well as nitrogen, while patients suffering from the same disease but without the swelling or edema fail to excrete nitrogen alone, the gelatin diet experiment showed.

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CE FIELDS

SEISMOLOGY

Earthquakes Thick Around Central America

EARTHQUAKES during the past year have tended to cluster thick around Central America, with relatively few on the opposite side of the Pacific Ocean, Prof. Joseph Lynch, S. J., of Fordham University, said in a review of seismic activities during the twelve months, May, 1932, to April, 1933, given before the American Geophysical Union.

The total earthquake epicenters determined by the cooperative arrangement between the U. S. Coast and Geodetic Survey, the Jesuit Seismological Association, and Science Service was 50, about an average figure for a year, Prof. Lynch said. Of these, 41 were in the northern hemisphere and only nine in the southern, an unusually lopsided distribution. And those in the northern hemisphere tended to group themselves most thickly in Central America and southern Mexico, and off the Pacific coast of that region.

During the past year about 2,300 persons lost their lives in earthquakes. Of these, 1,500 deaths occurred in Japan, 350 in Greece, 280 in China, 130 in California and the rest mainly in Mexico.

Science News Letter, May 20, 1933

FORESTRY

Great Tree Gardens To Aid Reforestation

GARDENS of trees, or arboreta, such as are common in the Old World and are becoming more frequent in the New, will be of great usefulness in the work of rebuilding America's forests, as well as in the development of ornamental and orchard plantings. In addition, they have high value in themselves, as places of public instruction and recreation. These and other advantages of arboreta were developed in an address by Prof. Rodney H. True of the University of Pennsylvania, director of the University's new Morris Arboretum.

Although there is a considerable appeal in the idea of replacing our lost forests with new ones made up of native species only, this proposal is not necessarily the most practical or promising of profit. Prof. True called attention to the sad fate of the native American chestnut, now nearly wiped out by the blight disease. He mentioned also the white pines, which are having the fight of their lives with blister rust. It may be best to replace native trees with resistant species from abroad, in some instances at least; and it is in the course of selecting and acclimating these desirable immigrants that a "garden of trees" or arboretum can repay many times over the money and scientific labor invested in it.

Among the arboreta of this country the newest is the Morris Arboretum, of which Prof. True is director. This was originally a large private estate near Philadelphia, on which its owners planted thousands of rare trees.

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AGRICULTURE

Winter Wheat Reduced More Than One-Fourth

WINTER WHEAT in the United States will be a short crop this year, according to the U. S. Crop Report for May, just issued. The estimated yield will be 337,485,000 bushels, as compared with 464,151,000 bushels in 1932, and a yearly average of 539,436,000 for the five-year period 1926-1930. This represents a decrease of 27 per cent. from the 1932 figure, and of 43 per cent. from the five-year average.

This is due partly to a decrease in total acreage and partly to a decline in yield per acre. This year's crop will come from 27,096,000 acres, as compared with 33,656,000 acres in 1932 and 28,560,000 acres for the 1926-1930 period. The yield per acre is expected to be 12.5 bushels, as against 13 7 for 1932 and 14.7 for the five-year average.

Figures for spring wheat are still fragmentary, because the wet spring has interfered with sowing. The spring wheat crop may also be below average in both acreage and per-acre yield. Foreign winter wheat acreage in 24 northern hemisphere countries is reported as slightly below last year's sowings, though a little above the 1931 figures. However, inasmuch as Russian wheat plantings are still largely an uncertain quantity, nothing very definite can be forecast about foreign wheat production.

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ENGINEERING

Speed of A. C. Motors Varied With Vacuum Tube

PROMISING to banish direct current generators and motors now used widely where variable speeds are required, a new kind of electric motor using alternating current was introduced to engineers by its inventor, Dr. E. F. W. Alexanderson, General Electric consulting engineer.

It is synchronous, has no commutator, and operates efficiently at variable speeds by means of a new type of vacuum tube control.

Power was fed into a bank of thyratron vacuum tubes directly from a 4000-volt line, and the tubes varied, as directed, the constant frequency of the incoming power. Thus the speed of the motor, which in an alternating current machine depends on the frequency of the power supply, was controlled.

Efficiency between power line and motor shaft of the new motor and thyratron control was said to be 98½ per cent. while corresponding installations of the present type are only about 90 per cent. efficient.

Among the first applications to be made will be those in ships in which steam turbines will run at full tilt while the captain slows down the propellers by changing the current frequency with controls on the bridge.

Science News Letter, May 20, 1933

ZOOLOGY

Pigmy Chimpanzee Species Discovered in Africa

PIGMY chimpanzees, constituting an animal race entirely new to science, were described before the meeting of the American Society of Mammalogists at Cambridge, Mass., by Harold J. Coolidge, Jr, of the Museum of Comparative Anatomy, Harvard University.

The species, known zoologically as *Pan paniscus* is found south of the Congo River in Africa. It is the smallest chimpanzee in the world, and is characterized by small teeth, close-set eyes, small, almost covered ears and narrow back and shoulders. It resembles the ordinary chimpanzee baby, and is in general the most primitive of its kind. It is exceedingly precocious and has a most peculiar call and cry.

This country's only specimen is in the American Museum of Natural History.

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