SCIENCE NEWS

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ECLIPSE EXPEDITION OF THE NAVAL OBSERVATORY

ASTRONOMERS from the U. S. Naval Observatory, sent to the Philippine Islands to observe an eclipse of the sun on May 9, have arrived at Iloilo. Construction of their instruments is well under way. This announcement is made to *Science Service* by Captain Charles S. Freeman, superintendent of the observatory, following a radio report from the astronomers.

With the party is Professor W. A. Cogshall, of the University of Indiana, veteran eclipse observer. Paul Sollenberger heads the Naval Observatory contingent.

"The expedition has established its station on the grounds of the Philippine Railway at Iloilo," said Captain Freeman. "Here they will have plenty of room to work, and all the mechanical facilities needed. The 60-foot tower which will support the lens of the 65-foot-long eclipse camera is about 20 per cent. completed. This is being made of wood brought from the Navy Yard at Mare Island, California. When completed it will be covered with bamboo to make the camera light-tight."

Seven important projects will be undertaken by the Naval Observatory astronomers during the few minutes on the afternoon of May 9 when the moon covers the bright disc of the sun and reveals the otherwise invisible corona around it. These are as follows:

A series of photographs of the inner layers of the corona will be made with the 65-foot camera. Professor John A. Miller, of Swarthmore College, will make photographs of the same kind with a similar camera from a station in Sumatra. As the shadow of the moon sweeps across Sumatra about an hour before it reaches the Philippines, it is hoped that the two sets of photographs will reveal any changes in the structure of the corona in this time.

Photographs of the middle corona, the medium high layers, will be made with a 46-inch camera. A 38-inch camera will be used to make small-scale photographs of the outermost layers of the corona. Motion pictures will be made of the partial phases of the eclipse, showing the dark disc of the moon covering up the brilliant sun. Visual observations of the exact times of the various parts of the eclipse will be made with a small telescope.

Special visual observations will be made of the shadow bands. These are ripples of light and dark that appear on the ground before and after the total eclipse. Previous observers have reported seeing them during an eclipse as well, but this has been questioned. It has been thought to be due to a persistence of them in the eye. At this eclipse one observer will be blindfolded for about half an hour before the total phase. Just at the moment that the sun is completely obscured, his eyes will be uncovered and so he will not be influenced by what he has seen previously.

Drawings of the corona will be made by a number of observers, as the eye can sometimes trace long streamers of the corona better than they can be recorded on the photographic plates.

MEXICAN EARTHQUAKES

NINETEEN TWENTY-EIGHT was a record year for Mexican earthquakes, and there is no information to show that there was any other year when Mexico danced more. During the first six months over 200 quakes were registered, the first one on New Year's Day.

A seismic geography of the country has been compiled from seismic records, and also from visual observations of such obvious earth modifications as cracks in the ground and landslides, by the Institute of Geology in Mexico City. It contains a seismic map which may have to become a guide to architectural styles in the future, and marks the safe and unsafe areas of the country.

Nervous inhabitants of the capital and the surrounding valley, walled in by "sawed-off" volcanoes long extinct and loomed over by the two snow-capped giants, Ixtaccihuatl and Popocatapetl, make urgent appeals for moral assurance to the Geological Institute when the earth begins its newest step. They believe that "Old Popo," nearly 18,000 feet high and occasionally emitting gloomy-looking fumaroles, is responsible, but the instruments show that the foci of the quakes have been elsewhere. An ancient Indian legend says that Tenoxtitlan, now Mexico City, will some day be destroyed by volcanic fire, and a German scientist, Von Humboldt, declared a century ago that the little hill, "El Penon," in the middle of the valley, may some day do it.

The 1928 Mexican quakes have nearly all been in the southern states of Caxaca and Guerrero, and sometimes in the sea off shore. The inhabitants there have evolved an earthquake complex, from the terrifying noises sometimes accompanying the quakes.

WATCH FOR ICE TO PROTECT ATLANTIC SHIPS

THE annual springtime watch for ice on the North Atlantic, begun in 1914 in order to prevent the repetition of a disaster such as befell the *Titanic*, is now under way. The two U. S. Coast Guard cutters, *Tampa* and *Modoc*, are alternating in the service during March, April, May, June and as much longer as may prove necessary.

The object of the ice patrol service, as announced by the U. S. Navy's Hydrographic Office, is to locate icebergs and field ice nearest to the North Atlantic steamship lanes. The patrol vessel on duty will determine the southerly, westerly and easterly limits of the ice, and keep in touch with these fields as they move southward. Regular radio messages will be sent out daily giving the location of the ice.

Each day at 7:30 P. M., Eastern Standard Time, the patrol vessel sends a report of the ice to the Hydrographic Office at Washington, following it later in the night by

supplementary reports if they are needed. This information is then given publicly by means of the Hydrographic Office's daily ice bulletin, and is broadcast twice each day in code from stations at Washington, Boston, New York and Norfolk. In addition, a ship can secure information about the ice at any time by radio from the patrol vessel itself.

In order to aid the work of the ice patrol the Hydrographic Office has asked that steamships cooperate by reporting to the patrol vessel any icebergs or obstructions that they may sight, and also surface temperatures of the water at intervals of four hours. In this way, it is hoped to locate more accurately the branches of the Labrador current.

TEMPERATURES OF HOUSE-WRENS

THAT wrens often "develop temperatures" has been revealed, along with other facts concerning the life of the wren families that have been under observation for a number of years at Hillcrest Farm, Gates Mills, Ohio, where the Baldwin Research Laboratory is located.

In carrying on experiments in taking bird temperatures thermocouples and mercury thermometers especially adapted for this study were used. Over sixty young birds were observed in the 3,300 readings obtained at Mr. Baldwin's laboratory during the last two summers. In order to secure information on the extent of variation in the body temperature of nestling wrens from day to day, during the developing period, a set of experiments under controlled conditions was devised. The young birds were taken from the nest and carried to the laboratory where they were subjected alternately to air temperatures ranging from 104 to 66 degrees Fahrenheit.

The bird under study was placed in an incubator, and a series of readings taken by inserting the thermocouple deep into its mouth. Each experiment required between two and four hours. Little difficulty was experienced in keeping the thermocouple down the mouth of a very young bird.

Thermometers were used to obtain data on the amount of variation in young birds' temperatures in the nest and increase in their body temperatures from day to day in the developing period.

It was also found that young house-wrens are capable of surviving for long periods without the brooding of the adult. In one case a young bird just hatched was abandoned by the parents; yet it survived for more than three days and nights alone in the nest, and possibly then died more from want of food than from chill.

THE RESEMBLANCE OF TWINS

THE old, old question that scientists are always asking about the rival claims of the influence of heredity and environment has received fresh impetus from the discovery of twin sisters who have been separated since infancy. Dr. H. H. Newman, of the University of Chicago, who has made a special study of twins, has been searching for years for just such a case, of which only one other instance has hitherto been studied and recorded in scientific literature.

The girls, said Dr. Newman in a report in *The Journal of Heredity*, were born about twenty years ago in the Chelsea district in London. When they were eighteen months old their mother died. One of her twin daughters, whom Dr. Newman designates as O, was adopted by relatives who shortly after moved to Canada. The other twin, called A, was cared for by friends of the family and lived in London until her foster parents died, when she rejoined her sister, at her home in a small town in Ontario. They had been separated about seventeen years.

The difference between a small Canadian town and a crowded section of London presents as wide a variation in environment, said Dr. Newman, as one is ever likely to find in the case of separated identical twins. If such circumstances are effective in shaping mental and emotional characters it should show up in such a case.

Physically the less favorable conditions of London, particularly during the lean war years, would appear to have had their effect, for the English twin is about nine pounds lighter than her sister though their resemblance, in spite of her thinness, is very marked.

Both twins received a public-school education through the equivalent of the grammar grades and both took a two-year business course, finishing at sixteen, and have worked in offices ever since. The mental and intelligence tests administered by Dr. Newman and his assistants showed, however, a wide difference in intellectual attainments, with O, the Canadian twin, always rating consistently higher. Yet both the family judgment and psychological tests showed that emotionally and temperamentally they were very much alike.

Just the opposite state of affairs obtained in the first pair of twins to be studied scientifically, described about four years ago by Dr. H. J. Muller, of the University of Texas. These twins were very similar in their mental ability and showed considerable variation in emotional traits. It would be premature, Dr. Newman pointed out, to base any very final conclusions on the study of just these two cases, that either emotional or intellectual characters are more strongly inherited or influenced by such outside factors as environment and training. He has succeeded in running down four other sets of separated twins and hopes from the study of these additional cases to obtain more conclusive evidence on this important subject.

RAYNAUD'S DISEASE

MEDICINE appears to have won another trench in its war against disease with the achievement of the surgical control of Raynaud's disease, just reported by Dr. A. W. Adson and Dr. G. E. Brown, of the Mayo Clinic. Raynaud's disease is painful, disabling and distressing to the patient, aften ending in amputation of feet or hands. It has been compared to frost-bite.

Every one knows what frost-bite is; that the supply of blood to a frost-bitten area is interrupted; that if the injury is severe enough the frost-bitten tissue is not nourished, dies and becomes gangrenous. Raynaud's disease is not frost-bite. It is much more severe and it is not so definitely related to cold. However, the condition it produces looks and feels to the patient who has it some-

thing as frost-bite looks and feels. Until recently, treatment for Raynaud's disease has been unsatisfactory. "The complete surgical control of Raynaud's disease would seem to be accomplished," Dr. Adson and Dr. Brown have now announced. They say "seem to be" and they use the word "control" rather than "cure." Genuine medical investigators do not claim too much too quickly.

However, building on the foundations laid by other investigators, these two physicians in their attack on Raynaud's disease have directed their attention to the autonomic or sympathetic nervous system. This is the nervous system which works without any thought on our part. It helps to control our digestion, our heart-beat and the tension of the walls of our blood-vessels.

These scientists found ways of removing small portions of this nervous system that lie in the back, behind the abdominal organs and in the upper part of the chest. When the right portions are removed, the tightness, or spasticity, of the affected blood-vessels is relieved. This relief seems to be permanent, which gives rise to the hope that scientific medicine and surgery have conquered Raynaud's disease.

ORTHOPSYCHIATRY

THE chief reason for the existence of psychiatrists lies in their hope of changing unsatisfactory personalities, Dr. Karl A. Menninger, of Topeka, Kansas, told members of the American Orthopsychiatric Association at their meeting in New York.

"If psychiatrists did not think the leopard could change his spots, they would not be in psychiatry," he said.

Originally blame for all the evils of mankind was placed on the devil, Dr. Menninger told his audience. Later it was transferred to witches, "original sin," plain "orneryness" and finally to the "solemn theory of responsibility or irresponsibility." In the courts many thousands of dollars are now spent annually to determine whether people have responsibility or do not have it. "If they have it they are locked up. If they do not have it they are locked up also."

Orthopsychiatry, the new psychiatry, recognizes no devils, but shifts away from these old ideas and principles to give its attention to the whole individual, mind and body. However, before orthopsychiatry can treat personalities that are prone to failure, they must be classified. Dr. Menninger presented his classification which includes seven groups of such personalities.

In the first are people predisposed to failure because of organic disease. These are found by physicians. In the second group are the stupid people, the hypophrenics, who are known to the psychologists. In the third group belongs the isolation personality. These individuals have been denied contact with the outside world because of physical deformity, financial difference or geographical location on lonely farms or outposts of civilization. They are unsocial, not asocial. They are usually discovered by the public.

The fourth group, the asocial individuals or schizoids, and the fifth group of moody persons, cycloids, who fail because of incapacity to maintain an even tenor of emotional balance, are found by the psychiatrists.

The sixth group contains the neurotics who are unhappy and at a disadvantage because of misdirection in early life. The neurologists and psychoanalysts discover this group.

In the seventh classification belongs that ever recurring group of psychopathic personalities. These result more from the environment than from qualities in the individual. Dr. Menninger preferred to call these "orthopathic personalities" or "perverse personalities."

ITEMS

IN ancient Peru, no less than in modern America, bad teeth were sometimes to blame for rheumatism. A recent examination of several hundred skulls and jaws in the San Diego Museum shows only one definite example of such an association. A female skull from Cinco Cerros, Peru, presents in the joint between the lower jaw and the skull roughenings of new bony growths which are often seen in rheumatic joints. Chewing was painful. On the left side of the upper jaw there is a huge cavity due to abscess formation and the teeth are all lost. The three teeth remaining on the right side are encrusted with tartar and rendered useless by pyorrhea.

MODEL airplanes will soon be under construction in thousands and thousands of basements in preparation for flights in the national playground miniature aircraft tournament, which opened officially on March 18. Throughout the spring and the summer, the playground boys and girls throughout the nation will construct their aircraft of light wood and bamboo, piano wire, silk, powered by rubber bands. The local contest will select a champion to compete in the national finals at Louisville, Ky., October 18 and 19. Orville Wright and Colonel Charles A. Lindbergh head a committee of aviation leaders who are sponsoring the contest for the Playground and Recreation Association of America.

THAT the moon consists of porous material similar to volcanic ash on the earth, not at all like any solid rock of which we know, is the conclusion arrived at by Dr. Paul S. Epstein, of the California Institute of Technology, using data furnished by measurements of the moon's temperature during a recent lunar eclipse by Dr. S. B. Nicholson and Dr. Edison Pettit, of the Mount Wilson Observatory. A mathematical expression of the way the moon cooled when it entered the dark shadow of the earth, and so received no heat from the sun, gave the value of 120. Dr. Epstein made similar measurements in the laboratory of the cooling of carious materials. Granite gave a value of 16, which meant that it cooled more slowly. Basalt gave 24, and quartz sand 58. Pumice stone, however, gave values of between 100 and 150. As pumice is of volcanic origin, this appears to be new evidence in favor of past volcanic action on the moon.