



THE SWAN, CYGNUS, FLIES OVERHEAD

from the sun and Saturn revolves around it at an average distance of 885,900,000 miles. However, its orbit is not truly round but rather eccentric and its distance from the sun varies by about 100,000,000 miles. When closest to the earth it is only 745,000,000 miles from us but it can recede to a distance of more than a billion miles.

Saturn is far larger than the earth, having a diameter of 71,500 miles, a little more than nine times that of our own planet. But the remarkable thing about Saturn is revealed by a small telescope. This is its system of rings which surround the planet.

### Three Rings

There are really three of them. The outer one is 171,000 miles in diameter and about 10,000 miles wide. Then comes a gap about 8,000 miles wide known as "Cassini's division" after the famous French astronomer who discovered it in 1675. Next is the ring B, about 16,000 miles wide, and much brighter than the other two. After that comes a narrow gap, probably not more than a thousand miles wide, and finally the inner ring, which is very faint and difficult to observe, except with a large telescope. This is sometimes called the "crepe ring" and is about 11,500 miles wide. This makes the entire system about 41,500 miles in width and leaves a space of some 7,000 miles between them and the surface of the planet. In other words, their size is such that four balls each the size of the earth might be rolled around on the rings, one each on the outer and inner rings, and two, side by side on the second one.

However, this is an experiment that could not be made, even if it were possible to get the earth-size marbles. The rings are not the solid flat structures they appear when viewed in the tele-

scope. Instead, they are swarms of tiny moons, so small and close together that even the most powerful optical aid fails to reveal the individual particles. And in addition, Saturn has nine other moons, of a more conventional size, so that this planet is entitled to rate as one of the most remarkable of celestial bodies.

Returning to the stars, let us give our attention again to Cygnus. With a pair of binoculars or even an opera glass the region of Cygnus is most interesting, for it is right in the heart of the Milky Way and swarms of stars, though occasional dark gaps can be seen. One of these, sometimes called the "coal sack," is just to the south of Deneb in the right triangle formed by the upper part of the cross and the arm to the southeast. At one time this and other similar objects were thought to be actual holes in the sky, regions devoid of stars. But now it is believed that they are clouds of dark matter, cosmic dust, obscuring the stars beyond.

With a more powerful aid to the vision such as a small telescope the star Albireo is most interesting. It is one of the large class of double stars, pairs of suns which revolve around each other. Its chief feature, aside from its brilliance, is that the two bodies which constitute it are not of the same color, but one is yellow and the other blue, so that it is one of the most beautiful telescopic objects in the sky. At this time of the year it is being shown in the many observatories that are regularly open to the public.

The moon during September is at first quarter on the seventh, full on the fourteenth, at last quarter on the twenty-second and new on the thirtieth. On the fourteenth when it is full it will pass partly into the shadow of the earth, and there will be an eclipse of the

moon. Unfortunately, it will not be visible from the United States because it will be at its height at 4:05 p. m., eastern standard time, and will be completely over by sunset here when the moon rises. It will be seen, however, from most of Europe and Africa and the Atlantic Ocean, while the end will be seen from Newfoundland and the easternmost part of South America.

Early in the morning of September 23, at 1:16 a. m., eastern standard time, an interesting event happens when the sun passes into the zodiacal sign of Libra. This point is called the autumnal equinox and is taken as the beginning of autumn. At this time of year, the sun rises directly east, and sets directly west, so that it is above the horizon just as long as it is below, and the days and nights are of equal length. After this the sun continues its southward motion through the sky, and the days will continue to get shorter and the nights longer until December.

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### ANTHROPOLOGY

## Indian Drum Religion is Thriving American Cult

**A** RELIGION which centers about a drum is the curious cult adopted by Menominee Indians of Wisconsin. Songs which are an important part of this modern Indian religion have just been recorded for scientists by Miss Frances Densmore, collaborator of the Smithsonian Institution.

Reporting the results of her investigation among these Indians, Miss Densmore says that the drum religion combines old Indian thought with some features of Christianity. Rites of the cult require use of a sacred drum which "has a heart inside it." The heart is the tongue of a pony bell which rings as the instrument is beaten. At a certain point in the ceremony the drum is struck, and the answer of the bell inside is said to mean that the drum has heard what is said and will answer the petition.

Among the teachings of the cult, as described by one leader in the drum religion, are: "If any one tries to quarrel with you, walk away. If any one is talking bad about any one, walk away. If a bad scheme is afloat, walk away. The drum religion is strictly against moonshine, and teaches that men must not steal."

An important feature of the ceremonies, Miss Densmore found, is the practice of contributing money to the

drum. This money is an insurance fund. Any member of the drum lodge who is sick or in need can draw upon the fund with the consent of the others.

Some of the Indians say that the drum religion was started by an inspired prophetess of the Sioux tribe, about fifty years ago. This prophetess told her people to put away their small drums they used, and to stop their war dances and pipe dances, and to dance only the new dance which the spirits had taught her. She taught the people how to make a big drum, big enough to keep away the bad spirit.

Miss Densmore made scientific records of the songs used in the drum ceremonies, and also songs of the medicine lodge, the rival of the drum religion among the Menominee.

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#### ORNITHOLOGY

### Florida Noddy Terns Change Nesting Habits

**"TOUCHING WOOD,"** a potent magic ritual in children's games, seems to be a necessity in the family of the noddy tern of Florida. At least, this would seem to be indicated by observations made recently on Bird Key, celebrated Florida rookery, by Dr. Paul Bartsch of the Smithsonian Institution.

The noddy tern colony on this island had long nested in the branches of the bay-cedar trees, building loose, rather crude nests of sticks, sometimes lined with shells and coral. During the past few years, however, practically the whole tree and bush vegetation of the island has been swept away by hurricanes, and the birds were confronted with the choice between migrating to a new nesting ground where trees still grew, or remaining where they were and adapting their habits to nesting on the ground.

They elected the latter course. But the old instinct for a wooden nest has stuck with them, and Dr. Bartsch reports that they still gather sticks and assemble them into the semblance of nests on the ground. Sometimes they lay their eggs on pieces of bare board. Anything seems to be satisfactory, so long as it is wood.

The noddies are stout defenders of their homes, Dr. Bartsch states, attacking all comers who approach their nests, regardless of size or formidability.

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Ten miles up, air is cooler over the equator than over temperate zones.

#### MEDICINE

## Whooping Cough Relieved By Inhaling Carbon Dioxide

**I**NHALING carbon dioxide, diluted in air or oxygen, has been helpful in relieving the paroxysmal or whooping stage of whooping cough, Prof. Yandell Henderson of Yale University has just reported to the American Medical Association.

The treatment was successfully given to ten children, ranging between nine months and seven years of age. In all of them after three or four days of inhalation the paroxysms were considerably lessened in severity and frequency and by the eighth day the coughing became so infrequent that the treatments could be stopped.

A mixture containing between six and seven per cent. of carbon dioxide in air or a mixture of seven per cent. carbon dioxide and 93 per cent. oxygen was used. The mixture was inhaled through a mask attached to a standard anesthesia machine. A small tent having a capacity of about one cubic foot was used for some children who did not like the mask. The tent apparatus was left in the home and used by the nurse or mother.

#### FORESTRY

## Better Trees Being Bred For Future Forest Crops

**P**INES and walnut trees are being bred like corn or wheat, to be the crops on forest land in the coming days when forests will have to be raised as grain is raised now. Progress in this work was described by Lloyd Austin, director of the Institute of Forest Genetics at Placerville, Calif., speaking before the Sixth International Congress of Genetics.

In their endeavors to get new, faster-growing and otherwise more desirable kinds of pines, the workers at the Institute have resorted to hybridization. This requires the bagging of the cone-forming flowers after they have been pollinated to keep alien pollens borne by the wind from getting in and mess-

The child inhales the gas mixture for ten or fifteen minutes twice a day either just before a meal or two hours after the last meal. If the child starts to have a paroxysm of coughing at the moment the mask is put over his face, it is best to wait until the spell is over before giving the treatment, Prof. Henderson advised.

The use of carbon dioxide inhalations for whooping cough grew out of the similar treatment found successful for treating certain stages of pneumonia and for other lung diseases in infants. In whooping cough the idea is not only to prevent the development of pneumonia but to lessen the whooping stage.

Pneumonia after whooping cough probably comes from the obstruction of the bronchi or bronchioles by mucus, Prof. Henderson explained. The cough and whoop are due to irritation by clinging particles of mucus. Clearing the lungs by deep breathing should not only prevent pneumonia but also have the immediate advantage of diminishing the paroxysms of coughing.

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ing up the results. Since the pine flowers are borne on high, wind-tossed parts of the trees, it has been necessary to devise especially strong bags for this work. These have been fitted with unbreakable transparent windows, so that the progress of the young cones can be watched.

Another technique which has been developed is the bud-grafting of pine trees, hitherto not considered practicable. It is hoped that this can be used in the propagation of especially desirable varieties of hybrid pines, which would not breed true from seed.

Tree seeds may be chosen from selected individuals in the future, instead of being taken wholesale from all the