SCIENCE NEWS

Science Service, Washington, D. C.

HOW ANTS COMMUNICATE

WHAT ants say to one another and how they communicate has been studied by Professor von H. Eidmann, of Munich.

Less is known about the social customs of many an obscure race of people than is known about the social customs of ants, but the mode of communication of these little creatures has been found difficult to study. Beyond the fact that the ant language is apparently a deaf and dumb language of signs, little else has been known.

Professor Eidmann made his observations on a colony of ants inhabiting an artificial ant hill in his laboratory, and he chose the incidents of food-finding for his study of their mode of communication. An ant upon finding a particle of food tried to drag it away all by herself, but if that was found entirely impossible, she took the shortest cut back to the ant hill to get help.

In the upper part of the ant hill was a sort of guard room where there were ants always ready for such hurry calls. The scout who had found the food entered and crossed antennae with each ant and thus communicated the glad tidings. The ants swarmed out of the ant hill and ran around aimlessly until the scout who had found the booty reappeared. She had been marked by the experimenter by a white speck on her back, so that her movements could always be followed.

The scout led the way with a trail of ants close on her heels, the antennae of one often touching the ant ahead, and all of them following every motion of the leader and executing a perfect goose step. When the booty was found, it was attacked and broken to pieces or dragged back whole to the hill.

The scout apparently did not tell everything she knew, for when the experiment was repeated and the leader apprehended just as she was about to direct the way to the find and her trail destroyed by putting paper on her track, the others lost their way. Whether she could have given more information had she known what would happen to her is not known.

Professor Eidmann's ants exhibited a number of admirable qualities. First of all, they never ask help of their fellows when they can do the job by themselves. The experimenter sprinkled crumbs of food where a scout could find them. The little creature made in all twenty-three trips back and forth to the ant hill until the last crumb had been delivered.

Another interesting quality is their strong sense of duty. When the good news of the discovery of food has once been communicated and the little troop is on its way, nothing can lead them astray. A drop of honey placed temptingly in their path lost all its charm. A sidelong lick and an askance glance was all it got. This good principle, however, was carried to an absurd extreme. Bigger pieces of better food were passed up because the ants did not know how to change their minds.

This trait explained something that had puzzled the experimenter for a long time. He had often noticed in nature that entire swarms of ants passed over without touching particles of food such as they generally devour greedily. This he now explains as being not within the line of duty.

Ants may seem to have short memories, but in Professor Eidmann's experiments, repeatedly, after the last trace of food had been carried off, the ants returned to look for more. This, however, can be explained biologically, for often where the head of a delectable insect is found the body may be somewhere about. We ourselves are liable to search carefully a spot where lost money has been found.

THE DANGER FROM TORNADOES

THE likelihood of a single house or barn being damaged by a tornado is less than its chance of being destroyed by fire or lightning, even in the districts where tornadoes are most frequent. Official statistics show such a risk, according to Dr. W. J. Humphreys, professor of physics at the U. S. Weather Bureau, in commenting on the severe tornado which resulted in hundreds of fatalities in southern Illinois and Indiana recently.

Two representatives of the Weather Bureau are now in the stricken region carefully studying the effects. Their report may reveal important information concerning the cause of these severe storms.

Usually, a tornado does not damage an area larger than a quarter of a mile in width and thirty miles long, so that great havoc is done only when this swath strikes some populous district. This was the case with the one of March 18, which passed over a number of large towns. The average number of tornadoes per year in Illinois is about five, while in Kansas, where they are most frequent, it is about six and a half. In other states in the Mississippi Valley they occur less frequently. They never occur in, or west of, the Rocky Mountains, but at rare intervals they have been recorded as far east as Virginia; and several years ago a mild one occurred within a few miles of Washington.

A tornado consists of a whirling mass of air which can even lift from the earth large objects coming within its grasp. Just what causes it, or why they occur in the Mississippi Valley and only on very rare occasions in other parts of the world is not known,' but in the opinion of Dr. Humphreys, the Rocky Mountains are partially responsible. Their trend is slightly west of north, so that they tend to deflect cold winds from Canada towards the Gulf of Mexico. Opposed to them are the trade winds from the Gulf, which, unlike the Canadian winds, are warm and humid. Dr. Humphreys believes that the opposition of these two sets of winds gives rise to the conditions which cause a

tornado. He stated further that the Weather Bureau is able to predict in a general way the occurrence of a tornado, but that they can not predict the precise territory that will be affected. Therefore, in order to prevent the people in affected regions from becoming unduly alarmed, the bureau has made it a policy not to issue tornado warnings.

TUTTLE'S COMET

A FAINT comet which may, however, become bright enough within a few weeks to be seen by the unaided eye as a small patch of light, has been discovered by Professor Richard Schorr, of the Bergedorf Observatory, near Hamburg, Germany, according to advices received at Cambridge by Dr. Harlow Shapley, director of the Harvard College Observatory.

The celestial visitor is said to be Tuttle's comet which was first discovered in 1790 by P. F. Mechain at the Paris Observatory. After this, it was lost until 1858 when C. W. Tuttle, then at the Harvard Observatory, rediscovered it and found that it was periodic, returning to the neighborhood of the earth every fourteen years. Now it has returned for the fifth time since his observations.

At present it is of the eleventh magnitude, so that it can only be seen with the aid of a telescope of moderate power. It is in the constellation of the Sextant, below the bright star Regulus, which is directly south about eight o'clock in the evening. Regulus is at the end of the handle of the "Sickle," a group of stars in the constellation of the Lion resembling that gardening implement. The comet is moving towards the northeast so that it is coming into a better position for observation. As it is not a very large comet, however, and when nearest, is farther away from the earth than the sun, we will not get a very close view of it at the best.

THE ENGLISH PLANTAIN AND HAY FEVER

ENGLISH plantain, which, like the English sparrow, has become an agricultural pest in the United States, is now accused of making life miserable for a good many hay-fever victims. Dr. Harry S. Bernton, special expert of the U. S. Public Health Service, who makes the charge, reports that this weed has hitherto received only passing attention from American investigators of hay-fever causes.

In one case which he describes, a patient had suffered from hay fever for 13 years. He had been tested with pollen extracts from different grasses in the hope of gaining immunization from the disease, but apparently none of the grasses was the irritating agent. Dr. Bernton made cutaneous and intracutaneous tests with pollen from English plantain, and the itching, swelling and reddening of the skin showed that the irritating cause had been found. After treatment with the pollen extract, the patient was left 98 per cent. free of the disease.

English plantain has been recognized as a hay-fever plant of the first rank in Washington and Oregon, but in most sections of the country its possible importance has been overlooked. In the region of the District of Columbia, 16 per cent. of a series of patients subject to the vernal type of hay fever were found to be sensitive to the plantain pollen.

The U. S. Department of Agriculture says: "The English plantain, like the English sparrow, seems to stick closely to the thickly populated sections. It is found abundantly along streets in the outskirts of cities, on vacant lots and dump heaps, producing pollen in great abundance from about May 10 to August 1."

THE ABNORMALITY OF CRIMINALS

LESS than one third of the prisoners in the Texas penitentiary are mentally normal, and only 11 per cent. are free from obvious physical disease or defect. These facts are reported by the National Committee for Mental Hygiene following a survey of conditions in the penal institutions of Texas made at the request of the state.

The committee urges a medical and psychiatric clinic for study and treatment of offenders, and better hospital facilities and a training school. It also urges that prisoners be given indeterminate sentences, so that they may be released when they are rehabilitated and are judged ready to become useful members of society.

"Psychiatry," says the committee, "does not subscribe to half-baked theories of pseudo-scientists, like those who recently ascribed all crime to "emotional insanity" which has its seat in the brain, which is inherited and incurable, and can only be prevented by sterilization. Neither does it subscribe to the maudlin sentimentalism which would have no one locked up or punished. The psychiatrist does maintain that the mental and physical condition of the prisoner has a great deal to do with his conduct and that an effort must be made to understand his mind and personality before sound correctional treatment can be administered.

"Experts who have studied the penal situation believe that constructive criminology has reached such a knowledge of the criminal and his rehabilitation that we may safely and wisely make investments in buildings, apparatus and personnel. Additional expense in the interests of crime prevention is true economy in the long run."

The committee's report says that the majority of the Texas prisoners are under 30 years of age and that much can be done to remold the personalities of young offenders into socially acceptable forms.

THE BEE-LOUSE

PRESENCE of the bee-louse in this country has attracted the attention of the U. S. Bureau of Entomology. The bureau reports the need of scientific study of these microscopic stowaways which sometimes slip into the United States on the bodies of queen bees arriving from Europe.

The "cooties" which make life miserable for queen bees, and to a less extent for workers in the hive, are less than six one hundredths of an inch long, according to Dr. E. F. Phillips, government specialist on bees. They are hairy little monsters with flattened heads and no wings. Each leg is equipped with a set of about 30

teeth, like modified claws, and by means of these claws the bee-louse clings to the hairs of the flying honeybee and travels through the air in safety.

Dr. Phillips says that the pests have not been studied extensively and that scientific opinions regarding them differ. It is fairly well settled that the bee-louse was misnamed, as it apparently is not a bloodthirsty parasite, but rather a "guest" insect.

M. Perez, a French scientist, who observed infested bees, reported: "When the louse wishes to feed it goes to the bee's mouth, where the motions of its feet, armed with bent claws, produce a tickling sensation, perhaps disagreeable to its host, but at least provoking some movement of the buccal organs, which slightly open and release a small drop of honey which the louse at once licks up."

Dr. Phillips does not anticipate that this pest will greatly harm American apiaries, but he says that its establishment in this country is unfortunate and that its importance should not be underestimated. "With such a visitant of the bee colony," he adds, "it is impossible to determine in advance what effect it may have in some other portion of the country, and every means should be taken to eradicate it, especially since the infested area seems to be small at present."

MONGOLOID IDIOTS

THERE are about 20,000 Mongoloid idiots in the United States, and these defectives that look like Oriental dolls are increasing, according to Dr. Noble P. Barnes, of Washington. The condition, which is attributed to defective glands, is more prevalent in France, due, it is thought, to endocrine exhaustion of the race.

"These cases may occur in our best families," says Dr. Barnes. "Education, culture and refinement do not insure stability of the endocrine system, but tend rather to exhaust these vital forces."

The Mongoloid child has a small, flat nose, and the face has the appearance of having been "pushed in." Its hair is straight, thin and usually dark. Arms and legs are short, and when the child learns to walk alone, at the age of four or five years, the characteristic gait is shuffling. The Mongoloid is a good-natured idiot, whose smiling face suggests "the possession of a secret source of joy."

An outstanding defect in the Mongoloids studied by Dr. Barnes is a disordered thymus gland. A large amount of phosphorus is needed by the body during early years of life, and according to a current theory the thymus has the important function of supplying this excess of phosphorus. When its work is completed, the thymus is retired, so to speak. The reason for the Chinese features of the white Mongoloid idiot has been ascribed to the fact that oriental diet is low in phosphorus. It is suggested that a long period of dietetic errors in the ancestry of the child is the cause of gland disturbance resulting in Mongolism, Dr. Barnes says.

"The Mongoloid has a defective protective organism and is easy prey to bacterial infections," he explains. "Such persons rarely live to be 20 years old, and the majority die before their cases are ever diagnosed."

Doses of thymus and other selected glands are being given to such children with encouraging results, he reports. One Mongoloid studied and treated from infancy succeeded in completing a high school course, in spite of congenital disease and other handicaps, but this patient succumbed to illness a few years later."

ITEMS

WORD has just been received of the discovery of the largest fossil dinosaur bones on record, by an expedition under W. E. Cutler, of the British Museum, which has for the past year been working in the dinosaur beds in Tanganyika, formerly German East Africa. The prize find so far uncovered is a shoulder blade six feet two inches across. The dinosaur beds of Tanganyika were discovered and partly worked by the Germans before the war, and many interesting remains have been found there. There is a close resemblance between the dinosaur fauna of Africa and that of western North America, especially in the case of the Stegosaurs or armored dinosaurs. Even the newly discovered giant has American kin, though this particular dinosaur is represented in American finds only by two limb bones.

FRIDTJOF NANSEN, the famous Arctic explorer, is returning to the North Pole country after nearly thirty years spent in other work. He has announced that he is to head a German expedition which will make a long flight across the polar regions in a specially constructed dirigible of 5,000,000 cubic feet capacity, or something like twice the size of the "Los Angeles." A crew of fifty men will be carried, and the flight from the Murmansk coast, north of the White Sea, to Alaska and back is expected to occupy four weeks. The principal objectives of the voyage will be scientific. Photographs to become bases for maps of the Arctic regions will be taken, soundings made in the ocean, and other data assembled. It is hoped that the expedition will be able to start in 1927.

CHILDREN with normal eyesight or with moderate defects see better as they grow older. Snellen's eye test given to 9,245 children showed that the percentage of children with normal vision increased as the children grew older and the percentages of those with minor defects decreased. The number of children with markedly defective vision increased, however, with age. Of all the children tested, 63 per cent. were found to be normal, 27 per cent. moderately defective, and only 10 per cent. had poor eyesight. The percentage of boys with normal eyesight was slightly higher than the girls, but the average for those with very poor vision was the same.

MAKING synthetic rubber has resulted in the discovery of a synthetic chemical substitute for cocaine. Tutokain, the new compound, is made from the intermediate products which have been prepared in the manufacture of artificial rubber. The sale of cocaine has been discouraged in Germany because of its habit-forming characteristics. Tutokain is non-poisonous and may be sterilized by heat without decomposition. According to articles in the medical press, it has been used with great success as a local anesthetic.