

## ASTRONOMY

## Pluto Appears Again In Predicted Place

**V**ISIBLE for the first time since May, the transneptunian planet Pluto has been observed recently by Dr. George van Biesbroeck, astronomer at the Yerkes Observatory, Wisconsin. His three measured positions are found to fit exactly the orbit computed by Drs. E. C. Bower and F. L. Whipple of the Students Observatory at the University of California.

The Earth will be on a line between the Sun and Pluto early in January. Even at this time of close approach, Pluto will be so far distant from the Earth that its light will require a quarter of a day to reach us, though traveling at the rate of 186,000 miles per second. Pluto itself moves so slowly that it requires 20 years to pass through the zodiacal constellation of Gemini, the twins, in which it is now sojourning.

Reappearing from behind the sun, Pluto has fully confirmed the accuracy of the orbit computed by Drs. Bower and Whipple from the 100 observations of 1930, as well as those found on Mt. Wilson plates of 1919 and Yerkes Observatory plates of 1921 and 1927. Much of the success of their calculation was attained by considering the masses of the eight other large planets concentrated at the center of the Sun. This innovation in orbit theory was necessitated by Pluto's unique position on the extreme limits, so far as is known, of the solar system.

Although the orbits of the eight major planets all lie in practically the same plane, the path of Pluto makes an angle of 17 degrees with this plane. This fact explains why the transneptunian planet escaped discovery for so many years in spite of careful search.

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## PHYSIOLOGY

## Some Rats Are Born With Superior Abilities

**R**ATS differ in the readiness with which they learn to choose the correct path leading to food, and this difference seems to be due to native ability, not to the amount of previous practice.

Experiments leading to this conclusion were conducted by Prof. Joseph G. Yoshioka of the Institute of Juvenile Research, Chicago, and will soon be reported by him in the *Journal of Comparative Psychology*.

Prof. Yoshioka first allowed the rats to reach food by following either of two runs of equal length. He found that the majority of the rats showed a definite preference for either the right or left path. Some of the rats therefore had more practice on the left path, some became more used to the right.

Prof. Yoshioka then took away the food from the end of one of the runs. He found that the rats differed considerably in the ease with which they learned to take the new route, but that the number of times they had chosen that route before did not apparently affect their rate of learning.

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## ORNITHOLOGY

## Devious Courses Often Leads Birds South

**B**IRDS do not always fly south in autumn, sometimes they fly east or west. In a Science Service radio talk, prepared by Dr. Paul G. Redington, chief of the U. S. Biological Survey, and, in the absence of Dr. Redington, read by Dr. Edward A. Preble, senior biologist of the Survey, over a nation-wide network of the Columbia Broadcasting System, it was stated that birds do not always fly over the shortest route when on their way to winter quarters.

"In general, birds fly south in autumn, but a study of migration reveals many exceptions to this rule," said Dr. Redington. "Certain species may take a general southward course for hundreds of miles, and then turn at right angles eastward or westward to some favored wintering or resting ground. In completing a trip of several thousand miles they may make a long journey by easy stages, or they may stop at only a few well-stocked feeding grounds. Thus the blue goose, nesting solely in a rather limited area recently discovered in Baffinland, stops regularly at only a few places in the southern part of Hudson Bay during its long journey southward to the Louisiana marshes, where nearly all its legions winter.

"Some species nest only in the freshwater marshes of the far interior, but in winter cling closely to the ocean. Some pass over the highest of mountain ranges in their chosen paths. Some may gather during both their breeding and their wintering seasons in restricted areas thousands of miles apart. Many follow different routes in their northward and southward journeys."

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# IN SCIENCE

## BACTERIOLOGY

## Clean Skin Is Found to Kill Dread Disease Germs

**H**UMAN skin is more than a mechanical protection against infectious diseases. It is an efficient external organ for killing pathogenic microorganisms, or disease germs.

Drs. Charlotte Singer and Lloyd L. Arnold of the Research Laboratory, State Department of Health, Chicago, applied broth cultures of disease-producing bacteria to skin surfaces. They found that within ten minutes from 90 to 95 per cent. of all the bacteria were killed. The germs of typhoid fever were among the bacteria most readily killed by human skin.

These results, however, were obtained only with clean skin. On dirty or greasy skins the same bacteria survived for many hours. The finger-nail region was deficient in bacteria-killing power.

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## ENTOMOLOGY

## Sap Protects Cuban Wood From Ravenous Termites

**S**OME peculiar quality characterizing native woods saves structures made of Cuban lumber from attack by white ants or termites which destroy woods imported to that country.

In the Episcopal Cathedral in Havana is a new and very beautiful organ. In order to insure its lasting for generations to come, the wood used is native mahogany and cedar, which was shipped from Cuba to the United States for manufacture of the organ.

A lumber man in Havana states that if wood in Cuba is cut while the sap is in the wood, then dried, it will not be troubled by termites but that if it is cut when dry, it is not safe from the pests. From this circumstance he concluded that native woods in Cuba contain some sort of oil which is disagreeable to termites.

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# CE FIELDS

ARCHAEOLOGY-SURGERY

## Archaeologists Find Patient Peruvian Surgeons Lost

(See Front Cover)

ONE of the most interesting of the many ancient skulls that have been brought out of Peru bears what is probably the earliest known gauze compress—certainly the earliest surgical dressing of the kind that has been discovered on this continent. The bold cranial surgery of the Peruvian medicine men has long been known, both in the treatment of head wounds and in trepanning, probably for ceremonial purposes. But here was a case that defeated their skill; the patient died, and was laid away with the bandage still in place, tied with cords of llama hair.

The skull was collected by Dr. Ales Hrdlicka, of the Smithsonian Institution.

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ARCHAEOLOGY

## 110 Indian Sites Unearthed In New England Cities

AN archaeological expedition which has spent the summer digging in back yards and orchards, gardens and public parks of busy New England towns has unearthed 110 sites occupied by Indians. These 110 sites, placed on government maps for the first time, are mostly prehistoric, Prof. Warren K. Moorehead of Phillips Academy, Andover, stated in announcing the results of the survey.

The expedition set out to find what traces remain of the Indians who lived in the Merrimack Valley in Massachusetts and New Hampshire. The expedition labored under great disadvantages because cities and towns occupy all the principal Indian sites, Professor Moorehead explained. But among the 400 land owners visited, only four refused permission for excavation, which the archaeologist pronounced a remarkable record. More than 13,000 test pits were sunk in sites that appeared to be Indian.

"Several important conclusions were reached," Professor Moorehead stated.

"Contrary to general belief, there appear to be no large Indian cemeteries, and very few small ones in the entire valley. During the entire period of the survey, but three decayed skeletons were found, not one of which could be preserved. Information obtained from older citizens and from records indicate that not more than 50 skeletons have been discovered in the entire valley. This leads to the conclusion that burials were made in small wooden structures upon the surface."

The art of the Indians of the Merrimack Valley is rather low, not equaling that of the Indians of the Penobscot Valley in Maine, Professor Moorehead stated. Many of the objects found appear to be very old and heavily patinated. Some of the objects indicate contact with tribes in New York state or Pennsylvania.

Notwithstanding popular tradition, there are no mounds and apparently no rock shelters, he said.

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ARCHAEOLOGY

## Double-Walled Indian Fort Preserved in Canada

THE SOUTHWOLD Earthworks in Ontario, declared by Canadian archaeologists to be the only double-walled Indian fortification existing in America, have been acquired by the Canadian Government and set aside as a national historic site.

The new reservation contains the ruins of a unique double-walled fort erected by the Attiwandaronk or Neutral Nation of Indians. The fort itself was protected by a double line of earthworks which completely enclosed it. Between the walls lay a moat 30 feet wide. It is believed that the superstructure of the earthworks was a palisade of high sharpened logs.

This old stronghold is thought to be the place at which the Attiwandaronks made their last desperate stand against the Iroquois Indians, who finally drove them from Ontario about 1650. Although these Indians were visited by French traders, the ruins have yielded nothing that would indicate contact with European civilization. Flint arrowheads and bone needles of the most primitive type have been unearthed.

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PUBLIC HEALTH

## More States Report Cases In Paralysis Gain

THE EXPECTED drop in the number of cases of infantile paralysis has failed to materialize. For the week ending October 4, 647 cases were reported to the U. S. Public Health Service in Washington. This is an increase of 53 cases over the number reported the week before. The increase has come chiefly in states which heretofore have not reported many cases, so that the outbreak is now nearly nation-wide.

The highest figure for the week was reported by Kansas with 87 cases. New York reported 50, Nebraska 60, and Ohio 75. The largest gains, however, have been in South Dakota, Nebraska, Wyoming and Indiana. These states gained from 10 to 24 cases each over the total number reported the previous week. Southern states, particularly those in the South Atlantic group, have continued to be fairly free from the disease.

Apparently no widespread outbreak of this disease is occurring in other countries. From Denmark, Sweden and Holland a few cases have been reported during the last month, but the figures are not considered above the normal for these countries. In Alsace-Lorraine the disease is disappearing. Other countries have not reported any cases recently.

Health officials continue their warnings to parents to keep children away from sick people and from strangers. No further precautions can be advised, because the exact way in which the disease is passed from one person to another is not known.

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ZOOLOGY

## Herds of Wild Elk Block Traffic on Highway

HERDS of wild elk from their haunts in the foothills of the Olympic mountains have moved down to graze along the highway to Lake Quinalt. So many of the large animals cross and re-cross the road as to frequently halt automobile traffic. Unlike the elk herds in Yellowstone National Park, the Roosevelt elk of the Olympics have abundant winter pasturage unhampered by heavy snows. They have increased until there is a possibility of an open season during the autumn of 1931.

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